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Curriculum Council

INFORMATION SYSTEMS

(Year 11 E238)

Teachers' Support Material

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TECHNOLOGY AND ENTERPRISE

TEACHER SUPPORT MATERIAL

YEAR 11

INFORMATION SYSTEMS
D238

This document has been compiled through the collaborative efforts of the Curriculum Council, the Education Department and teachers trialling the subject. Thanks go to the writers of the document who accessed materials from trial teachers and contributed many of their own resources.

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TECHNOLOGY AND ENTERPRISE: INTRODUCTION

Technology and Enterprise is the dynamic study of the application of knowledge, skills and resources to the development of practical solutions which meet the needs and wants of individuals and society. Through the process of technology, students solve real-life challenges through the activities of generating and developing ideas, researching and investigating, evaluating, making models, producing, documenting and critically analysing, all occurring in a dynamic manner. Such activities highlight the interaction between thought and action and contribute to students acquiring an understanding of the principles of design, the elements of design and how to develop design criteria.

The Technology and Enterprise subjects, and recent literature, refer to the technology process as an element of the key learning of this area. In many cases this is often referred to as the technology process or the design process. There has been a recent move away from these to the technology process, as the interpretation of technology process has been too restrictive and has been viewed as four separate components rather than an iterative process of learning, discovery and developing solutions to challenges.

The new post-compulsory subject s in the Technology and Enterprise area provide a range of contexts in which the key learnings in this area can be developed. These new subject s all follow the Common Assessment Framework approach, and teachers implementing these subject s should have a copy of the subjects's syllabus document, *Common Assessment Tasks* booklet and, as it becomes available, the *Technology and Enterprise: Teacher Support Material*. Teachers should also have access to the Curriculum Council's *Key Competencies and Common Assessment Framework* booklet which provides valuable information on the implementation of assessment and grading in subject s developed using the Common Assessment Framework approach.

The following is a collection of material from various teachers involved in the trialling of the new Technology and Enterprise subject s. The teaching and learning programs, assessment tasks, methods of recording and reporting etc. are teacher support material only and are not to be seen as prescriptive. As can be seen by some of the sample approaches and tasks, the new subject s are very flexible in their interpretation, while still preserving the comparability in the outcomes achieved by students undertaking these subject s. These samples are available for use by schools but can be modified to suit the school's clientele and their clientele interests while still addressing the subject outcomes.

Different subject s in the Technology and Enterprise area had varying numbers of schools trialling, and this variation is reflected in the range of examples. Where possible two or more sample tasks have been included for each task, but this has not always been possible when only a few schools have been trialling and they have worked closely together. One reason for the material being presented in files is that as more good examples of tasks and programs are produced these can be added to the file, as can your own material.

What can be seen from the approaches taken is that teachers have responded to the need to change the methods used to assess. Where the emphasis moves to assessing process as well as product, the methods used to monitor, assess and record student achievement of outcomes also change. The section on recording and reporting provides examples of techniques used by teachers to do this.

It is important that you see this document as providing samples and suggestions only and that your school's program is not restricted by material in this document. The subject must be based on the subject outcomes and the Common Assessment Tasks as given in the syllabus: however, the actual activities implemented in doing these tasks and assessing the outcomes are a school decision.

THE TECHNOLOGY PROCESS

One of the special features of teaching in the Technology and Enterprise area is that we can link student progress in cognitive skill development to concrete technological experiences. A strength of this area is the established combination of practical and thinking skills. The tangible results of these technological experiences are the products, systems and environments that students produce.

The technology process is used to help students develop a range of cognitive skills such as creativity, idea generation, model making, problem-solving, reflection, investigation, evaluation, research documentation and critical analysis. The development of these skills must be supported through the teaching of specific techniques: for example, brainstorming to help students generate ideas, or thinking skills to help students reflect on what they are doing. The evidence of the development of cognitive skills is not so obvious, and we often depend on the student portfolio for this evidence. As we go through a folio, the graphics, models, prototypes and notations are a concrete expression of the student's thinking processes and cognitive development. The folio then becomes the record of how students' thought and decision-making processes are developing. For example, the teacher can:

- review it with the pupil to examine where critical decisions are made
- examine the evidence that decisions are based on
- examine the points at which alternatives were possible.

So what is the technology process? In the past, the idea has been that there is a systematic process (eg. technology process) which can be taught and learnt by all pupils who can then apply it to subsequent problems or situations. Research has revealed that it does not work this way, that what students do when they design in technology is a very convoluted and complex process, and is different every time they design something. Studies of designers working in technological fields also reject the notion that what they do can be represented by an algorithm. In the design situation where teachers insist on progressing through set stages, students in fact adopt their own strategies, but ritualistically use the teacher's approach to satisfy assessment demands. For example, in the common demand to sketch four design alternatives, a student may be interested in only one, and does the others just to satisfy the teacher. In this case the goal of generating creative ideas is not being achieved.

There is a range of activities which can make up the technology process. The activities depend on the learning style of the student, the context for learning and the intended learning outcomes, and are not done in a set order. These activities include generating ideas, research and investigation, evaluation, modelling, producing and documenting. It may be more appropriate to refer to these as *aspects* of the process rather than *stages*, which has a sequential connotation.

If the technology process is standardised and sequenced for all students for all projects, it may limit the opportunity for students to develop and demonstrate their cognitive skills and thus restrict their ability to demonstrate these skills through the documentation of their process.

How then can these aspects be taught if students are not all doing the same activity at the same time? Here are some ideas:

- Begin with large group activities where the sequence to be followed in a particular project is agreed to by discussion and consensus of the class. At the end of the project the teacher can then put a label on each of the activities that were undertaken, for example, 'when we looked at similar products on the market we were evaluating' or 'when you asked your friends and neighbours how much they would pay for the product, we were doing market research'.
- Do not expect too much too soon from students. In the early years students should not be expected to individually proceed through a self-directed technology process.

- Do not try and teach all the aspects of the technology process at once. Choose activities which emphasise particular aspects of the process so that students develop the necessary repertoire of skills over time. Not all student activities have to be full-blown design projects.
- As students are working on large projects which last for an extended period of time, introduce smaller support tasks in order to give practice in specific skills. For example, shorter tasks could include the development of a particular graphics skill, practice in identifying people's needs from a situation, or the identification of systems.
- Minimise the separation of theory and practice. The continual interaction between the thinking skills and the concrete realities is what enables the development of capability in technology and enterprise. This separation is often evident in timetabling, examinations, the use and design of work spaces and teaching methods.
- The technology process can begin at different places. It may begin with:
  - a brief already written by the teacher
  - an individual interest or need
  - exposure to a situation from which the students extract an opportunity
  - a description of the problem
  - an existing product, which is then evaluated for redesign.
- The point at which the technology process is initiated may dictate the beginning of the sequence of activities. For example, if a product is to be examined for redesign, then evaluation occurs first; if the activity results from personal need, then the generation of creative ideas may not be necessary – it may be appropriate to prototype ideas early in the process, then go back and revise the brief.
- The end result of the technology process may be a model or prototype or a graphic.
- The project should be authentic for the students in that it should be both personally meaningful and purposeful.
- Not all students will have the capacity to achieve all aspects of the technology process or use it in an interactive manner.

Assessment

The nature of the assessment must be consistent with the nature of the activity. Of fundamental importance in technological activity is the quality of the total experience, which is a lot more than simply the sum of all the separate activities the student does. How all the students pull all the threads together to come up with a solution that satisfies the design criteria they began with is most important. Because this process is a very holistic one and is not simply a number of stages which follow each other, assessment must also be holistic. The essence of the activity is not captured in the aggregation of separate marks for different stages of the process. Teachers must depend on their professional judgement in coming up with an assessment of whether the student has achieved the outcome. This assessment must be supported by self-evaluation, peer evaluation, and documented or anecdotal evidence from the teacher's observation or from student work in a folio.

A TEACHER'S PERSPECTIVE

Teaching Approach

Information Systems, being an outcomes-based subject, has no prescribed time allocation per unit (as do other TEE level subjects).

The Common Assessment Framework (CAF) approach requires that the teacher *facilitates* learning and that different components of the Outcomes may be covered at different times in the year by different students.

However, there must be some structure to this subject, and in my opinion, this is formulated from two things:

- a reasonable level of practical skill in applying application software ('productivity tools') and
- a good grasp of underlying concepts of what a 'system' is, and more specifically, what an 'information system' is.

Therefore, I believe some instruction will be necessary in the foundation period of the subject in order to ensure that all members of the class are familiar enough with concepts and practical skills in order to then work semi-independently at a more student-centred level (with the teacher as facilitator).

My approach will be as follows:

- Establishment of knowledge and skills in the use of network hardware and software, including the use of *Windows* and associated applications software (*Word 6.0, Excel 5.0, Access 2.0*). Some exposure will also be given to *Powerpoint* and the use of the digital camera, World Wide Web (using *Netscape*), graphics editing software (*Photofinish*), a multimedia authoring package with OOP/4GL capabilities (*Asymetirx Multimedia Toolbook*) and exposure to a 3GL (*MicroWorlds Logo*), although none of these last applications will require any examination or compulsory use. Incidental to the learning of this software will be the hardware infrastructure required to run it (to a level expected of a computer-literate consumer of this age group). Students will be encouraged to gain independent references through newspapers (eg. Tuesday's '*West Australian'*), magazines (eg. '*Your Computer'*) and radio and television shows (eg.. *Hot Chips, Big Byte*).

  Emphasis will be placed on *flexibility* of use of applications as the means of providing solutions to open-ended problems with the IS group.

- Developing of the concepts and affective understandings of 'a system' using a similar approach to the Year 11 TEE Computing subject's Systems component, but without formalising the traditional Life Cycle (SA&D) approach - the "rich picture" concept will be encouraged.

Students will be expected to maintain a *portfolio* of material, information and examples as the subject progresses, and some guidance will be given as to how they should approach this. (Separate, discrete and formal portfolios will be expected as part of some of the Tasks).

As academic maturity indicates itself, students will be less dependent upon didactic teaching, and more able to work independently. Independent working skills will be encouraged.

SAMPLE TEACHING PROGRAM: EXAMPLE 1

Term Program Content

Term	Content
1	Familiarisation with Novell network, operating environment etc. Use of *Word* (including columns, linking, inclusion of objects etc.) Instruction and use of Excel (including linking, macros, goal-seeking, charting) **TASK THREE** (Spreadsheet Skills; two parts) = 3 weeks total Concepts of a system (with progression to *information* systems) - text System *Analysis* – text Data-gathering techniques (questionnaires etc. – refer Yr 12 Capron; *Systems Analysis and Design*) Representation of a system (documentation, DFDs, Rich Pictures etc.) **TASK ONE** (Describe an Information System) = 4 weeks total
2	Von Neuman architecture of typical hardware components (I/O, memory, processors, peripherals) – text Chs 1 to 4 Instruction and use of *Access* Data representation (Outcome 5) - data representation, types and structures, file types **TASK FOUR** (Database Skills) = 3 weeks Comparative examination of contemporary hardware (Macs, PCs etc.) and peripherals including modems, new secondary-storage technology (eg.. ZIP) etc. Site visits? Languages and Operating Systems – text Chs 6,7 Semester Examination (2 hrs)
3	**TASK TWO** (Hardware and Software Requirements) = 3 weeks System Design (Output, Input, Processing, hardware requirements etc.) **TASK SIX** (Comprehension) = 2 weeks Ergonomics (health and safety practices) – Internet research Social and environmental impacts (Outcome 8)
4	Definition of Brief for Task Five's system (discussion of software tools which may be needed, and instruction in their use) **TASK FIVE** (Design a Simple System #1 – *individual* task) = 4 weeks Definition of Brief for Task Seven's system + *Toolbook* instruction **TASK SEVEN** (Design a Simple System #2 - *individual or group* task) = 4 weeks *Note: Tasks Five and Seven may be done concurrently should students decide.* Revision of non-practical aspects of subject. Examination (2.5 hrs) – theory only according to proposed TEE structure.

SAMPLE TEACHING PROGRAM: EXAMPLE 2

Task Overview

Term	Week	Task	Outcomes	Description	Activities
1	1 – 6	ONE	1,2,3,4,5,6	Describe an Information System	• Describe and analyse a simple info system. • Describe the environment in which the information exists. • Describe the information requirements of the system. • Describe technologies used by the information. • Describe the movement of information through the system. • Explain who uses the information and for what purpose. (Individual or Organisation) • Comment on the social/environmental impacts of the info system. The info system should be small, simple and familiar eg. school canteen, doctor's surgery, petrol station, video store
1	6 – 9	THREE	1,5,7	Spreadsheet Skills	• Set out data in a logical format. • Develop formula. • Use what-if-analysis. • Use functions. • Use other features such as graphing, look up tables and macros. • Make decisions, draw conclusions from information developed in the spreadsheet. • Example data sets could include marks book, weather data, fuel figures etc.
1	10			Test	

Task Overview (Cont'd)

Term	Week	Task	Outcomes	Description	Activities
2	1 – 4	FOUR	1,5,7	Database Skills This task requires students to use a database to process information	• Create appropriate fields for the database. • Create a data entry form. • Enter several records manually. • Import data into the database. • Create several queries. • Make decisions based on reports
2	5 – 8	FIVE	1,2,6,7,8	Design a simple system Students need to design, construct and implement a simple info. system using productivity tools.	• Students are given a design brief and client. • Students liaise with client to specify exact design criteria and a timeline for completing the task. • Students design the information system. • Students build the information system. • Students implement, appraise and modify the system. • Clients appraise the system. • Students modify the system according to the client's requirements.
2	10 – 11			Semester 1 Exam	

Task Overview (Cont'd)

Term	Week	Task	Outcomes	Description	Activities
3	1 – 5	TWO	1,3,4,5,6,7	Hardware & Software requirements	• Briefly describe the purpose and function of the system. • Briefly describe the information requirements of the system. • Select and justify appropriate technologies to meet the system's information processing requirements. • Demonstrate an awareness of any social or environmental issues involved in the selection of the technologies. • Once again the info system should be small, simple and familiar eg. school canteen, doctor's surgery, petrol station, video store.
3	6 – 9	SIX	1,3	Comprehension Students critically analyse an article describing an info system.	• Determine why the article was published. • Distinguish between factual detail and opinion. • Describe what the info system was designed to do. • Describe the effectiveness of the system. • Explain any technical terms used in the article.
3	10		Test		

Task Overview (Cont'd)

Term	Week	Task	Outcomes	Description	Activities
4	1 – 5	SEVEN	1,2,6,7,8	Design a simple system Students need to design, construct and implement a simple info. system using a fourth generation language or equivalent.	• Students are given a design brief and client. • Students liaise with client to specify exact design criteria and a timeline for completing the task. • Students design the information system. • Students build the information system. • Students implement, appraise and modify the system. • Clients appraise the system. • Students notify the system according to the clients requirements. • The technology process approach is to be used and the fundamental control structures of Sequence, Repetition and Selection should be used.
4	6 – 7			Semester 2 Exam	

TASK ONE: DESCRIBE AN INFORMATION SYSTEM: EXAMPLE 1

Outcomes 1,2, 3, 4, 5, 6

- Describe and analyse a simple information system
- Describe the environment in which the information exists
- Describe the information requirements of the system
- Describe technologies used by the information system
- Describe the movement of information through the system
- Explain who uses the information and for what purpose
- Comment on the social/environmental impacts of the information system.

Task

- With your two (2) selected classmates carry out an interview with an appropriate staff member for one of the following systems:
  - canteen system
  - basketball club
  - teacher's marks book system
- Take along a copy of your System Analysis Booklet and record:
  - a general description of the system ie. the key tasks that it carries out
  - the inputs, processes and outputs required for each task
  - the different technologies used, both manual and electronic
  - the social impact of the system including any special equipment required for the safe use of the system.
- As a group, arrange for each member to contribute to the word processed report (TASK1.DOC) of your findings.
- Using rich pictures and/or DFD's, describe the information flow associated with at least three (3) processes carried out by the system.
- Using a word processed table, plan and construct a progress report. At the end of each lesson, each group member must add a comment to their own report on their own contribution and that of each of their group member's.
- If time permits, plan and create a slideshow presentation describing your system. Feel free to make use of the Vera's Video's template.

Submit

- A group copy of the systems analysis booklet with group members' names and system on the front cover.
- Individual copies (name in the footer) of the progress report.
- A disk copy of the group's slideshow presentation with suitable acknowledgment to all contributors.

Brief

Select one or two of your classmates as assistant analysts. As a team you will be responsible for researching and analysing one of the following systems:

- a teacher's marks book system
- the school's canteen system
- a small sports club system

Decide amongst your team, how you will gather the information.

General Description

Provide a general description/summary of the day to day tasks that make up the system. Focus your attention on the activities that involve *input*, *processing* and *output* of data/information.

Information Flow

In the space below produce an appropriate representation of at least three (3) processes identified in section 2.

Societal / Environmental Impact
Make an appropriate comment about any or all of the following:

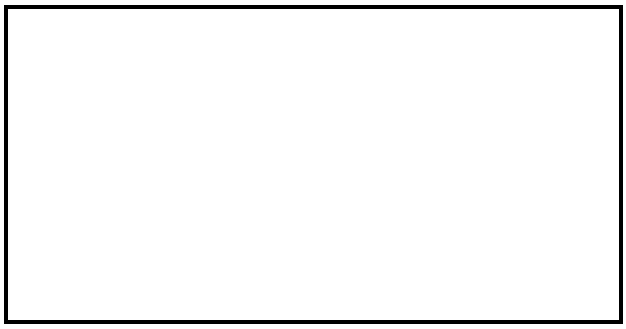
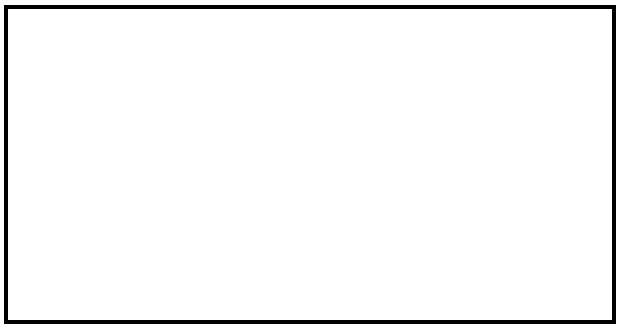
- sensitivity of stored information

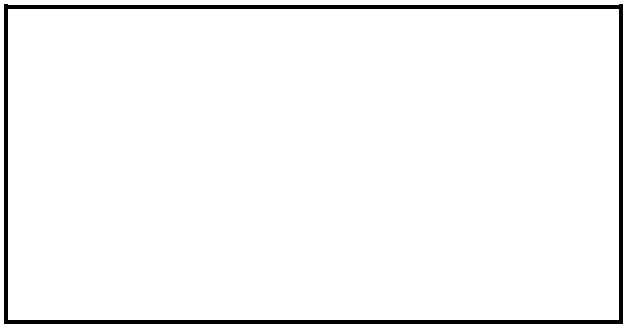
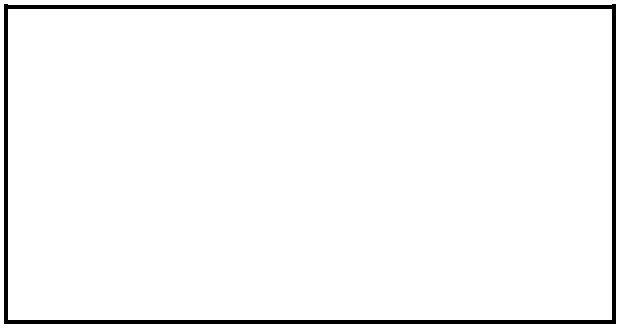
- methods of *securing* the system

- *privacy* concerns

- other issues

Slideshow Storyboard
If time permits you will be able to produce a slideshow presentation of your research. In preparation you will need to sketch out the contents of each slide in the storyboard below.

Marking Key

Outcome Interpretation		Opportunity to demonstrate by...	Outcome Rating (V,H,S,NS,ND)
1	Use investigation, communication and info processing skills to: • collect and analyse information. • document processes • make presentations	• Asking well thought out questions. • Taking interview notes in a clear, well organised manner • Using set guidelines to document system requirements. • Indicating a clear level of understanding of how the system operates ie. I/P/O • Use appropriate illustrations (DFD's & Rich Pict's) to represent an info sys. • Presenting a clear understanding of how the system functions.	
2	Work effectively both within a group and individually. Demonstrate a knowledge of self management skills.	• Demonstrating organisation skills such as - Bringing required equipment; keeping track of what needs to be done; following through work in a logical manner; using class time effectively. • Demonstrating initiative eg. in questions asked; in the way you go about your work. • Maintaining communication between staff and colleagues; having your own set of notes; maintaining a detailed progress report. • Demonstrating a high level of motivation; enthusiasm; independent ideas; committing extra time and materials to work presentation.	
3	Understand requirements and design principles of an Information System	• Following a checklist (eg. Planning Booklet) or guidelines to identify system requirements. • Identifying the purpose and needs of an info. system. • Describing what the system aims to do. • Identifying what Inputs the system needs; what processes are performed and what outputs result. • Describing a range of options that an alternative system could offer.	
4	Describe relevant technologies and how they are utilised by the system	• Identifying and describing components of the system and processes that are performed. • Describing and explaining how various technologies are used to perform each process. • Suggesting and justifying alternative technologies that could be used by the system.	

Outcome Interpretation		Opportunity to demonstrate by...	Outcome Rating (V,H,S,NS,ND)
5	Describe the nature and properties of a range of computer based information.	• Distinguishing between Inputs, Processes and Outputs. • Correctly representing Sources/Sinks, Data Flows, Processes and Files. • Showing an understanding of how DFD's can be applied in alternative situations within a sample information system. • Indicating alternative situations for the application of system description techniques.	
6	Describe the societal and environmental impact of an Information system.	• Describing ergonomic, health and/or ethical issues relating to an info. system. • Describing a range of factors associated with societal issues and how they might affect the systems design. • Applying a range of societal issues to the design of an info. system.	

General comment

_____

_____

_____

_____

_____

Group Breakdown

Name:	Outcome	1	2	3	4	5	6

TASK ONE: DESCRIBE AN INFORMATION SYSTEM: EXAMPLE 2

Make sure that you read the CATs booklet regarding this task, paying particular attention to the **Task Description**, **Task Parameters** and **Authentication** sections.

Task 1: Outcomes 1, 2, 3, 4, 5 and 6

Your Task

You are to examine the system used by the Resource Centre for handling the *loan* of a library book (of any description, but *not* being a reserved text) to a student.

You are required to produce an *Analysis* of the system.

The scope of the system you are to analyse is defined as follows:

> A student, who has normal Resource Centre privileges of use, requires to borrow a text which she has collected from one of the shelves. The student has no restrictions currently applying, and the text is not on any reserved list.
> The student forgets to return the text by the due date, and her name appears on the weekly form-list of overdue books.

You are to gather and record all data and events, using appropriate data-collection tools (as defined in the text and handouts), and are to note these in a summary or table format.
You have the choice of representing the system in *rich-picture* or *data-flow diagram* format, as you currently understand these forms of system representation.

Notes

- Please ensure that you have made *prior* arrangements with any Resource Centre staff you may wish to interview. Remember that their time is valuable, and that if you intend to conduct any interview(s), you should have carefully prepared your questions first.
- If you intend to conduct system research during normal (Information System) class time, you *must* have made prior arrangements with both the Resource Centre staff *and* me, otherwise you will be marked absent from class.
- Each student is to present an *individual* effort at this assignment. *No collusion is allowed*, and normal Assessment Policy rules will apply if this is found to have happened. If you have any queries or concerns during the preparation of the Task, see me. Also refer to the *Authentication* clause in your CATs booklet.
- Your Task is to be presented in word-processed form, with computer-drawn graphics if you are using a DFD, or *scanned* hand-drawn drawings of any rich-picture representation, unless you wish to draw this as well using one of the drawing applications. You are also to submit any rough notes, drafts, questionnaires, rough drawings etc. with your final presentation.

Suggestions

- Prepare your approach carefully: the more time you put into planning how you are going to analyse the system, and what data-gathering tools you are going to use, and designing any questionnaires, surveys etc. that you may use, the more successful (and less stressful!) will be the representing of the system.
- Prepare a plan of approach, and discuss this with me before you start.
- Allow 3 weeks total, including four periods of class time only, for the production of this Task.

Hints on Report Writing

A *report* is a document based upon factual occurrences or events, and typically are used in the commercial and scientific communities to describe, in summary form, the events and facts for a particular event (such as the *financial report* for a small business, *a shareholders' report* for the clients and shareholders, a *scientific report* by a team of scientists who have conducted a piece of research, or a *newspaper report* by a journalist covering some aspect of enquiry.

There are various conventions applying to the preparation and presentation of a report, and there is some variation according to the type of report and its target audience. However, most reports have elements in common:

- Be *factual* in preparing the report, by using *data* and *results.* When using your own opinions, base these on the facts/data that you have presented, whether supporting or refuting them.
- Put yourself in the position of a reader/evaluator of the report. How would you feel about reading and evaluating the report at 3.00 am after having read five (5) other reports? Does *your* report contain "padding" and irrelevant discussions, unnecessary graphics and "frills" such as over-emphasised headings? Have you used headings and subheadings to clearly indicate the sections of your report?
- Reports should in general contain four (4) components:

  Introduction Results/data

  REPORT

  Discussion Conclusion

  Help and advice should be sought from your English Department on the principles of the format and content of each of these areas if you are unsure. It would also pay you to examine samples of reports in such things as scientific papers, articles in journals and magazines etc.
- The ability to communicate in a report is vital – use ordinary English and avoid being over technical and emotive. Remember that many of the report's readers may not themselves be familiar with the levels of technical understanding or skills that you may have.
- In selecting or creating material to be used or included in the report, maintain a log or journal of facts and data you intend to, or could, use. Also maintain a diary of how you dealt with problems you encountered as you progressed through whatever task it was that you are reporting on. These notes will prove invaluable in the construction of the final report.
- When using or representing numerical data in a report:
  - if there are only three or four values, these can be indicated in a normal paragraph
  - between 3 and 15 values should be represented in a *table*, and
  - greater than 15 values should be represented in a *graph*.

TASK TWO: HARDWARE AND SOFTWARE REQUIREMENT: EXAMPLE 1

Task 2: Outcomes 1, 3, 4, 5, 6 and 7

This task requires you to describe the purpose and function of a simple information system as well as outlining the information requirements for the system. You will need to specify the appropriate technologies to meet the system's information processing needs and be able to justify your choices. In addition you must clearly and concisely demonstrate an awareness of the social and environmental issues relating to your selection.

The outcomes for this task are:

Outcome 1: Uses investigation, communication and information processing skills to collect and analyse information, document processes and make a presentation clearly and concisely.

Outcome 3: Understands the requirements for, and design principles of, information systems.

Outcome 4: Describes relevant technologies and how they are utilised by information systems.

Outcome 5: Describes the nature and properties of a range of computer based information.

Outcome 6: Describes the social and environmental impacts of information systems.

Outcome 7: Identifies, evaluates and uses appropriate tools relevant to the design and development of an information system.

The System

The system you will be looking at in this task is the Design & Technology Department's Computer Aided Drafting System. Following the guided tour you need to comment on each of the following.

Current System
Purpose/Function of the system:

- Hardware
  - stand alone/network
  - platform
  - system units – makes, models, processors, memory
  - input devices
  - output devices
  - storage devices
  - communications devices
  - peripherals
- Software
  - operating system
  - applications – name, platform, o/s, version off the shelf/custom written key features
  - data – size, quantity and type
- Societal/Ethical concerns
  - viruses, backup, power protection, theft – equip./data, system failure, code of conduct.

Proposed System
Your job in this section of the project is to make suitable recommendations as to what an alternative system might comprise ie. what hardware and software could be used. In doing so you will need to consider the following:

As an addition to this system *Mr Westover* is particularly keen to develop an Information System resource to help students learn various Drafting techniques.

This resource should:

- allow up to 15 students to view the resource concurrently
- allow students to load and view various sample drawings and, if need be, save them to their own storage media/area
- allow the students, during the drawing construction process, to view a display showing how a drawing is progressively developed
- allow the teacher to demonstrate techniques directly from the computer to the whole class.

Detailing The Proposed System
Use appropriate resources to research the following:

Hardware

- Network Vs Stand Alones
  - Identify adv's and dis of each.
  - Justify which you think would be best suited to your proposed system.

- Input Devices

Provide pictures of and distinguish between the following devices:
  - mouse, trackball, graphics tablet, touch sensitive screen
  - Justify which of these would be suitable for this system.

- Output Devices

Provide pictures of and distinguish between the following devices:
  - dot matrix, bubble jet and laser printers
  - pen plotters and projection panels.

Justify which of these would be suitable for this system.

- Secondary Storage

Distinguish the key features of the following storage types in terms of storage method, capacity, access speed and cost per megabyte: (a table will be quite adequate).
  - floppy disk, hard disk, removable cartridge, tape cartridge eg. (DAT), optical disks, solid state.

Justify which would be appropriate for your proposed system.

- System Unit
  - Platform

Identify two (2) possible Platforms by which the system could be supported.

- Processor
  In a simple table identify the characteristics of the following processors
  (ie. Date produced, Manufacturer, Clock speed, MIPS, Platform)
  Pentium, PowerPC, 80386DX & 68040.

- Memory
  Describe some of the characteristics of RAM and ROM.
  Justify how much memory would be needed for each terminal on your system.

- Ports and Connectors
  Indicate the types of ports and connectors needed for the units in your proposed system.

Software

- Operating system
  - Distinguish between Single User, Multi-tasking, Multiprocessing and Virtual Machine operating systems.
  - Identify the key tasks of the O/S.
  - Identify three (3) popular operating systems and justify which is best suited to your proposed system.

- Applications Software
  - What category of software do the programs used in this system fall into?

Societal / Ethical Concerns

- Security and Safeguards
  - List five (5) possible security risks associated with using this system and any suitable safeguards that can minimise their risk.
  - List five (5) suitable 'Codes of Conduct' that users of this system should follow.

Presentation

You may choose the type of presentation you wish to put together.

- Essay style – Minimum of 3 typed pages of Times 12pt plus pictures.
- PowerPoint presentation – Minimum of 20 slides including pictures.

NUMBER SYSTEMS & STORAGE CAPACITY

1. What is the name of the smallest unit of information?

2. How much storage space is required to store the character %?

3. Show how the character in 2 above would be represented in a RAM chip.

4. Complete the following conversions:

Binary	Decimal	Hex	Char
01010011			
01100011			
	80		
	32		
		3F	
		52	
			G
			4

5. Draw up a suitable table to show the storage capacity required for each of the following data sources:
   - your timetable (computer printed copy)
   - a dictionary (identify the name)
   - the white pages phone book
   - an encyclopaedia
   - a data source of your own choice.

6. Identify the different considerations that would affect a device chosen to store the white pages phone book as opposed to an encyclopaedia.

NUMBER SYSTEMS & STORAGE CAPACITY
ANSWER

1. What is the name of the smallest unit of information?

2. How much storage space is required to store the character %?

3. Show how the character in 2 above would be represented in a RAM chip.

4. Complete the following conversions:

Binary	Decimal	Hex	Char
01010011	83	53	S
01100011	51	35	3
01010000	80	50	P
00100000	32	20	space
00111111	63	3F	
01010010	82	52	R
01000111	71	47	G
01100100	100	64	4

5. Draw up a suitable table to show the storage capacity required for each of the following data sources -
   - your timetable (computer printed copy)
   - a dictionary (identify the name)
   - the white pages phone book
   - an encyclopaedia
   - a data source of your own choice.

Info System	Chars per line	Lines per page	Columns per page	Pages	Volumes	Total Chars/ Bytes	Total Kb	Total Megas

6. Identify the different considerations that would affect a device chosen to store the white pages phone book as opposed to an encyclopaedia.

   pictures, access speed

TASK TWO: HARDWARE AND SOFTWARE REQUIREMENT: EXAMPLE 2

Task 2: Outcomes 1, 3, 4, 5, 6 and 7

Make sure that you read the CATs booklet regarding this task, paying particular attention to the **Task Description**, **Task Parameters** and **Authentication** sections. **Please read ALL requirements carefully before you commence the Task, and refer to me if unsure about any aspect.**

Your Task

For this task you are required (as an individual) to describe the hardware and software requirements for the Library Booking System you studied for Task 1.

To facilitate this Task, a period will be arranged so that the class, as a group, can ask questions of the Resource Centre staff which relate to the hardware and software requirements.

Prior to this period you should be prepared in the following ways:

- Be thoroughly familiar with Chapters 1 (Overview of Hardware, Software and People), 2 (The Central Processing Unit), 3 (Input and Output Devices), 4 (Storage Devices), 6 (Programming and Languages), 7 (Operating Systems) and the Preliminary Investigation and Analysis Phases of the System Life Cycle of Chapter 8 of Capron, *Tools for an Information Age.*
- Examine the peripheral I/O devices used in the Resource Centre, and jot down notes regarding their uses.
- Prepare *your own* questions relating to the Task, so that during the interview session with one of the Resource Centre staff, all that you need to know will be covered. (It is possible that other students may ask similar questions). *You will be required to submit your rough questions, and answers recorded during the interview, as a part of this Task.*

Your mode of presentation can be either as a word-processed document of about 1000 words (≈ 3 pages), or as a *PowerPoint* presentation of a minimum of 12 frames (printed in outline form, of 6 frames per page).

Suggestions

Divide your research and presentation into separate blocks, referring in turn to:

- *input devices*
- the form of *processor(s)* used in the central computer and the terminals (with some differentiation as to how a *terminal* is different from a *computer* - refer to your text as well)
- *output devices*
- *storage* (in terms of both main memory, and disk storage, and how backups are done)
- the *Dynix* software, and what it does (*all* of its functions; not just the booking sub-system)
- the type of *operating system* used.

As a result of your interview with the resource centre staff, and with your current knowledge of the existing hardware and operating system, ergonomics and recent developments in information technology, you are also required to predict what (if any) changes may need to be made to any aspect of the hardware and software in order to meet new needs over the next twelve months or so.

Finally, add some comment as to the reasons why hardware is located where it is. Is this the most suitable placement?

Allow about two weeks to complete this Task. Some work will be possible in class time, but you need to be aware that about half the work will need to be done in your own time.

TASK THREE: SPREADSHEET SKILLS: EXAMPLE 1

Outcomes 1, 5, 7

- Set out data in a logical format
- Develop formula
- Use 'what-if' analysis
- Use functions
- Use other features such as graphing, look up tables and macros
- Make decisions, draw conclusions from information developed in the spreadsheet.

Preamble

Real Estate Agents' Commission Calculator

Buying a house is one of the largest expenses you may undertake. With house prices between $80,000 to $600,000 or more, some very careful planning is required. Consequently, most people employ a real estate agent to assist them.

The real estate agent or sales representative (rep.) earn their living by charging a fee to the people selling the property (the vendor). This fee is called a *commission* and is based on the sale price of the property, ie. the higher the price the house sells for, the higher the commission the rep. earns.

The maximum commission that a Sales Rep. can charge is set by the REBA (Real Estate and Business Agent) Act of 1978. The current figures set down by this Act for Western Australia in 1996 are as follows:

Price	Commission
$8,000	6.75% for 1st
$10,000	$10000
$15,000	$675 plus 4.25% on
$30,000	amount above
$50,000	$10000
$60,000	$2375 plus 3% of
$70,000	amount above
$100,000	$50000
	$3875 plus 2.5%
	of amount above
$150,000	$100,000
	$5125 plus 2.25% of
	amount above
$250,000	$150,000
	$7375 plus 2% of
	amount above
Greater than $250,000	$250,000

Task Brief

At the Property Plus Real Estate Agency there are five (5) real estate sales reps:

- Jillian Snapper
- Eric Macrall
- Reg Whale
- Rob Kipper
- June Salmon

Ima Salamander, the General Manager of Property Plus, pays each agent a percentage of the commission they bring in to the company each month. The percentage is negotiated with each employee in a workplace agreement. At present, Jillian and Reg are on 55% and the rest are on 50% ie. fifty percent of the commission they bring in, they get to keep. (That is before tax is taken out!!)

Ima keeps track of the company's sales figures using a Commission Calculator workbook (spreadsheet). The summary sheet of this workbook displays the following data:

- the sales rep's name
- the total property sales for each rep
- the total property sales for the company
- the total commission brought in by each rep.
- the percentage commission that each rep. earns
- the total commission paid out to each rep. and...
- the pretax pay that each rep. earns.

A bonus of $250 is also added to the pretax pay for any rep. who can bring in a commission over $8000 a month.

Each month Ima updates the Commission spreadsheet with the latest sales figures. Below are the sales figures for January 1996.

• Jillian Snapper	2/1-$185,000	5/1-$178,500	20/1-$167,000
• Rob Kipper	1/1-$ 27,000	7/1-$212,000	
• Eric Macrall	6/1-$150,000		
• June Salmon	4/1-$150,000	18/1-$155,000	
• Reg Whale	3/1-$ 75,500	7/1-$ 95,550	15/1-$110,000

Your task is to use the above information to design the Commission Calculator spreadsheet by completing the following:

Task

Analyse

- Obtain a copy of the *Spreadsheet Planning Booklet*
- Carefully read and analyse the System Description on page 3.

Plan/Design

- On the *Sheet Structure Diagram* indicate the Inputs and Calculations that will be performed in each sheet in the workbook.
- Indicate the data that will be transferred (linked) from one sheet to another.
- On the *Sheet Layout Plan* start by planning a sheet to record a single Rep's data.
- This sheet should use a look up table to determine the commission earning on each property sold. The sheet should then calculate the total value of property sold and the total commission raised for the company.

Note: Pay close attention to Design Guidelines including:

- Clearly labelled cells
- Keeping formulae small
- Avoid data duplication
- Formatting cell contents appropriately

Construction and Testing

- Construct this first Rep sheet using a suitable package.
- Before entering the sales figures for one Rep., make up some test data. Be sure to include some *Boundary figures*.
- Check your results against the pre-calculated figures on the *Able Settlements'* handout.
- Once you are convinced that the sheet is working properly, enter the first Rep's data.
- Next, plan out your summary sheet.
  Note: You may need to update your plan as you go
- Construct the Summary sheet and link the appropriate formulae to the Rep. sheet.
- Check carefully that formulae are working properly.
- Once you have one of the Rep. sheets working properly you should be able to copy it for the remaining Reps.
  Note: Any data which is duplicated between sheets should use a linking formula so that the data only has to be entered once from a *master* sheet.
- Enter the raw data into the remaining Rep. sheets.

Analyse – 'What-if', Charting, Sorting

- Now that your spreadsheet is complete, use it to answer the following questions. The answers should be incorporated in a word processed 'Sales Report' with appropriate supporting evidence which has been exported from your Commission Spreadsheet.

Q1. What is the minimum property price that will return a commission of $5000?

Q2. If Eric Macrall were able to sell one more property in January, what minimum price would it have to be in order to secure a bonus for the month?

Write a comment about how your spreadsheet would be used over the year, ie. to record sales figures for each Rep. over twelve (12) months. Identify what copying and naming techniques would be used.

Hand draw a diagram showing how all the spreadsheet files could be linked to an Annual Summary sheet.

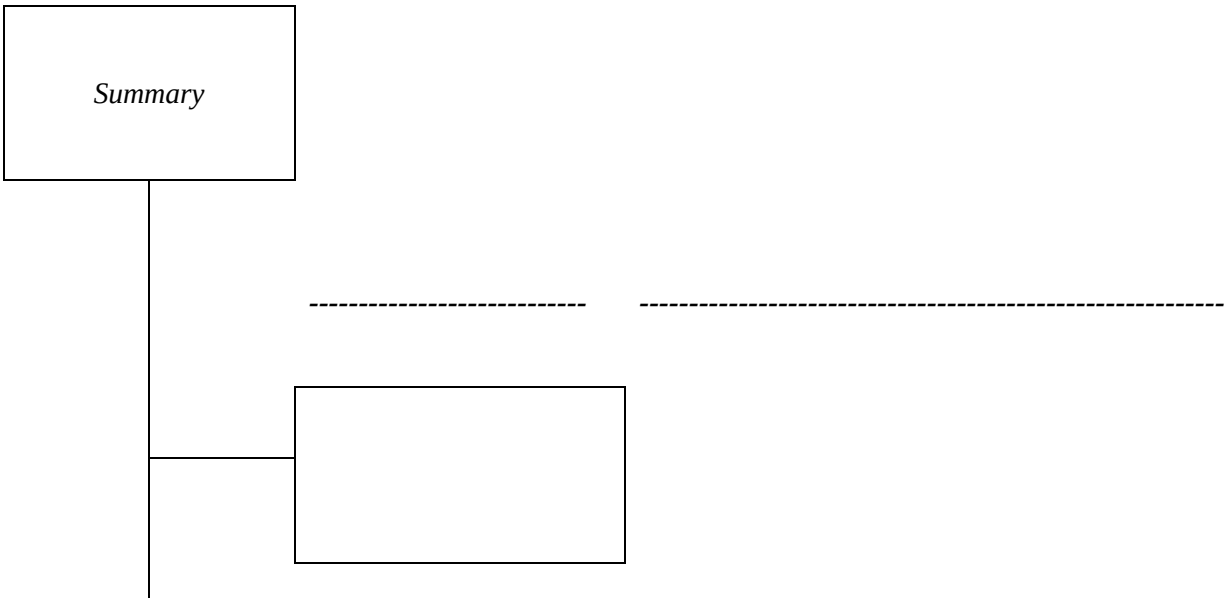
What data would be linked to this file?

Spreadsheeting Planning Booklet

Topic	**Student Name**

Sheet Structure Diagram

Sheet	**Inputs / Processes / Outputs** *(Calculations) (Results)*



Sheet Layout Plan

Sheet Name: *Summary*

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	

Formulae

Formula	Contents
1	
2	
3	
4	
5	
6	
7	

Chart Planner

Chart Name:

Chart Name:

Sheet Layout Plan

Sheet Name: *Summary*

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	

Formulae

Formula	Contents
1	
2	
3	
4	
5	
6	
7	

Outcome 7

Identify, *evaluate* and use tools relevant to the design of an Information System.

Type your name here

Evaluation

Having completed the design and construction of your commission spreadsheet answer the following questions. Type your answers in **bold**.

1. Accurately describe the hardware that you used to complete the task. Be sure to include makes, models and technical specifications of all components.

   Assessment will be based on the amount of detail you can provide.

   Type answer here

2. Identify all software used in this task. Once again, be sure to include as much detail as possible including full names and version numbers.

   Type answer here

3. Describe at least five (5) software features that you need in the construction of your solution. Be sure to identify what the feature enabled you to do.

   Assessment will be based on the sophistication of the features you describe.

   Type answer here

4. Make a list of the *advantages* that the various tools offered you in the construction of your solution. Be as specific as possible.

   Type answer here

5. List any *disadvantages* that using the various tools presented.

   Type answer here

6. If you had more time or knowledge, what additional tools/features would you have used to construct your solution.

   Type answer here

Marking Key

Outcome Interpretation		Opportunity to demonstrate by...	Outcome Rating (V,H,S,NS,ND)
1	Use investigation, communication and info processing skills to: • Collect and analyse information. • Document processes • Make presentations	• Asking appropriate questions to help understand the information system. • Communicating to your teacher your understandings of the systems needs and purpose. • Extracting and organising key information into a structure diagram. • Using appropriate techniques plan the layout of your proposed spreadsheet solution. • Indicating a clear level of understanding of how the system operates by accurately labelling the information in your spreadsheet plan. • Demonstrating a clear understanding of the system's requirements through the correct design of formulae and charts to solve given problems. • Analysing a particular scenario and providing evidence to support your conclusion.	
5	Describe the nature and properties of a range of computer based information.	• Identifying the Inputs, Calculations and Outputs for each module of the spreadsheet structure diagram. • Distinguishing between the various spreadsheet data types eg. Numbers, Text, Formulae. • Suitably formatting data for purposes of readability and convention. • Indicating alternative layout and design solutions to a given problem. • Reducing data duplication through the use of Linking formulae. • Indicating how the current spreadsheet design may be adapted to meet broader requirements. • Independently provide successful solutions to given problems.	
7	Identify, evaluate and use tools relevant to the design of an Info. System	• Identifying and using appropriate hardware and software tools to create an effective solution to a given problem. • Identifying advantages and disadvantages of various spreadsheet features in the construction of a successful solution. • Critically justifying the use of various hardware and/or software solutions.	

TASK THREE: SPREADSHEET SKILLS: EXAMPLE 2

Task 3: Outcomes 1, 5 and 7

Make sure that you read the CATs booklet regarding this task, paying particular attention to the **Task Description**, **Task Parameters** and **Authentication** sections.

This part of Task Three requires you, *as an individual*, to examine some prepared *Excel* spreadsheets, which show a series of examples of 'what-if' scenarios.

You are required to:

- complete each of the exercises on the sheet. They become progressively harder, as in each successive sheet you are required to analyse and provide more input in terms of formulae and testing.
- *hand in* a print-out of the sheet, with your name appended to the header box at the top.
- provide definitions for the following terms: *what-if, goal-seeking* and *scenario* in the context of spreadsheets. [*Hint:* Use your text!] These definitions should be supported by everyday examples of where spreadsheets are used for the above purposes (not including any on the WHAT IF sheet), and presented as a word-processed document (including a footer). You may also want to use the World Wide Web/Search Engines to find information, but if so, please acknowledge that in your document, including any URLs of sites visited.

Do not hesitate to ask for help from myself if you experience any difficulties.

This example of Task Three requires teachers to develop a set of up to four (4) spreadsheets which allow students to test 'What if' scenarios.

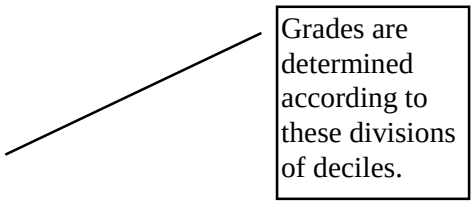
Part 2: Spreadsheet Model

Make sure that you read the CATs booklet regarding this task, paying particular attention to the **Task Description**, **Task Parameters** and **Authentication** sections.

This part of Task Three requires you, as an individual, to construct a series of linked *Excel* spreadsheets which will allow the performance of the following operations:

- A means of entering student marks for at least three separate classes is required, whereby the teachers can enter the students' names and form classes, and marks for up to 20 assessment items throughout the assessment period (which may be a term, a semester or a whole year). All assessments will be entered as real values (as percentages) by the teacher responsible for the class.
- In the *third* column of the class-marks spreadsheets will automatically appear the students' *grades* as they are at the time. The grades will be determined from a separate spreadsheet which collates all class marks for the particular subject, and determines the grades. Previous to the use of this spreadsheet solution, the Head of Department has used this *manual method* of mathematically determining grades:
  - to determine the grades from *A* to *F* for all students doing the subject, the *maximum* and *minimum* marks from each class are obtained from the teachers' individual marks books.
  - of the combined set of maxima and minima for the subject, the *lowest* and *highest* marks are then found. For example, if Teacher X had a range of marks from 32 to 96, Teacher B a range of 46 to 84 and Teacher Z a range from 40 to 92, then the *lowest minimum* would be 32, and the *highest maximum* would be 96.
  - One tenth of the difference between the lowest minimum and the highest maximum marks is then calculated – this value becomes the *decile*. In the above example the decile would be $\frac{96-32}{10}$, equalling 6.4
  - A table of *decile rankings* is then determined by starting with the lowest minimum, and repeatedly adding the *decile* to it until the highest maximum mark is reached; being ten rankings. In this example,

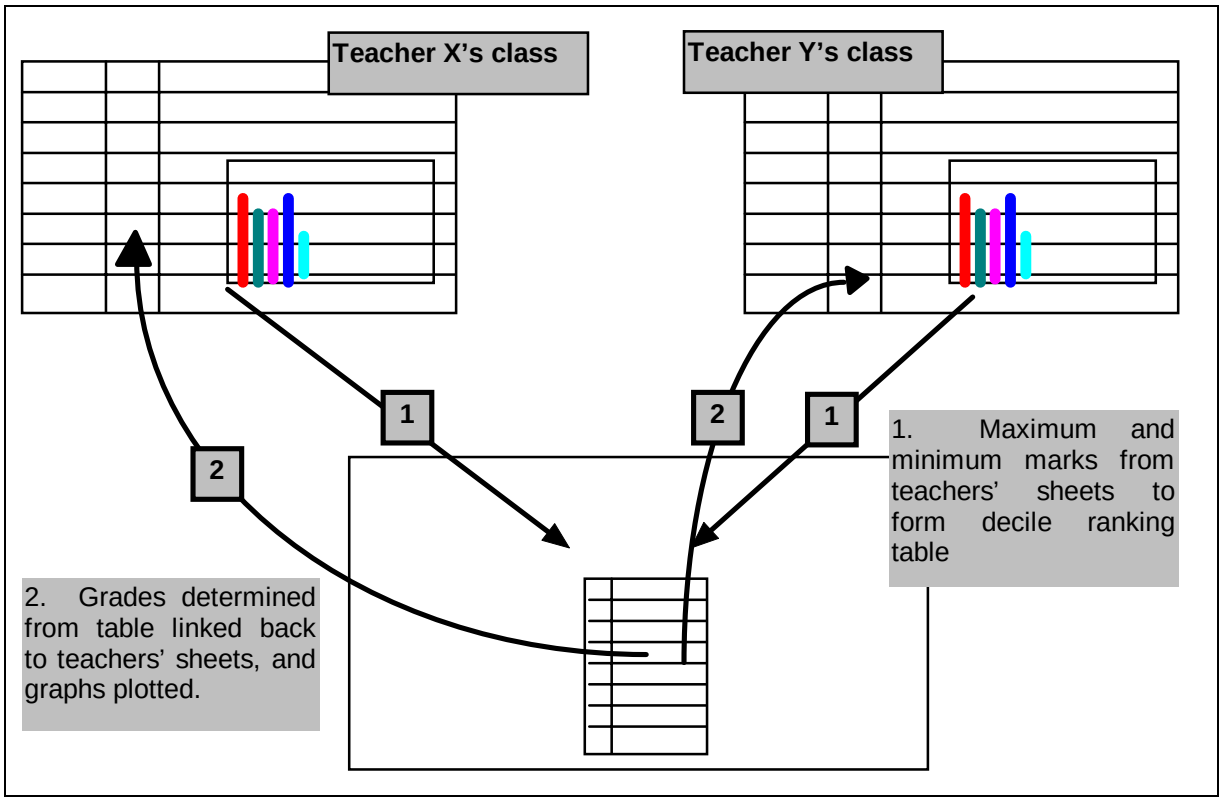
32 to 38.4	F
38.5 to 44.8 44.9 to 51.2	D
51.3 to 57.6 57.7 to 64.0 64.1 to 70.4	C
70.5 to 76.8 76.9 to 83.2	B
83.3 to 89.6 89.7 to 96	A



(In reality, only integer values are used to decide the decile rankings, but you do not need to worry about this in your sheets).

- Once the universal grades have been determined, each teacher's class marks spreadsheet will then be automatically updated with the grades as they are at the moment. Each teacher's sheet will also indicate the current state of the grades for that class by displaying a column graph indicating the number of *A*s, *B*s etc.

Overview of the whole system:



Assistance and lessons will be given in and with the technicalities associated with the creation of these spreadsheets, and linking and look up-table creation. You will be required to make up the marks and names of students for the three teachers' sheets, with a minimum of ten (10) students per class.

You will be required to submit hardcopy of all four sheets, and to demonstrate the operation of the system. Please carefully consult your Task Three details in the Curriculum Council *Common Assessment Tasks* booklet to ensure that you are familiar with all of the requirements and how this Task will be assessed.

TASK THREE: SPREADSHEET SKILLS: EXAMPLE 3

Task 3: Outcomes 1, 5 and 7

You are required to create solutions to the following spreadsheet problems.

Mortgage Maybes

In the current economic climate, a couple wish to check that they will be able to afford the repayments on their 'dream home.' Their net income per week is $850 of which they have committed for food, clothing and essentials such as phone, power etc. $200 per week leaving a residual of $650 per week. Use your spreadsheet skills to provide an analysis of the money that they can afford to borrow and repay if the current rate of 10.25% goes to the following rates 11%, 12%, 13%, 14%, 15%. The loan period is for twenty (20) years. The repayments per week should be no greater than $600. You should also generate monthly payment schedules for each level of interest as well as comparative graphs.

Promises, Promises, Promises

The political parties are fighting their respective election campaigns on tax reforms. The Rationalists want to keep the existing system of progressive tax, ie. as your income increases so does your rate of tax. The Conformists want to use a flat rate of tax levelled at 20% of your income. You are required to produce comparative data to back up an argument for and against the respective proposals by comparing salaries in the low, mid and high income ranges. You should write up both arguments on at least one A4 page with supporting evidence.

Due Week 2 Term 2

TASK FOUR: DATABASE SKILLS: EXAMPLE 1

Task 4: Outcomes 1, 5 and 7

Upperschool Ball Ticketing Database

Consider the following situation:

One of the main events in the high school's social calendar is the Upper School Ball. Managing this event involves selling the tickets, monitoring payments of the attendees and, after the event, taking orders for ball photos.

Think through the details of how these tasks would be managed, particularly the data they require and the output needed to be produced.

- *Design* (on paper)

A. a data collection form that could be used to gather both ticketing details and photo orders.

B. Demonstrate the use of :

suitable labels
check boxes
appropriate data formats
appropriate field sequence and alignment
formatted examples where appropriate

C. four (4) questions (queries) that the ball ticket database would be used to answer. A minimum of one question each for ticketing and photo orders.

D. four (4) reports that relate to each of the queries designed in the point listed above.

II. Construct (using a suitable DBMS) the database, with suitable data entry screen (form), that you have designed demonstrating:

A. good layout

B. suitable field names

C. suitable data types

D. at least 1 example of data validation / data mask

III. Create and test the four (4) queries designed earlier.

IV. Produce a report for each query using suitable formatting – heading indicating query, page orientation; field names, suitably positioned data and a footer.

V. Clearly describe how each report could be used by the Student Council.

Submit

- design notes – DEF, queries and reports
- a print off of your database screen
- a print off of your data entry form
- a print off of each report
- a word processed comment on how each report would be used by the student council.
- a detailed progress report – at least 3 points per lesson.

TASK FOUR: DATABASE SKILLS: EXAMPLE 2

Task 4: Outcomes 1, 5 and 7

Make sure that you read the CATs booklet regarding this task, paying particular attention to the **Task Description**, **Task Parameters** and **Authentication** sections.

Your Task

- Using the WWW, search for statistics on any state or national sporting team (such as the Wildcats, Eagles, WAIS Breakers etc.) and electronically *capture* various data which can then be imported into an *Access* database which you have created for the task of storing various data.
- You will have been given instruction as to how to create and manipulate a single-table ("flat-file") *Access* database, and will also be provided with assistance in formatting and preparing the captured data to be able to import it into your database.
- You should collect the data from the website by highlighting it, and pasting it into a text file (.TXT), or most appropriate applications file (such as a .BMP file for graphics, if you collect graphics), from where it can be edited/adapted for importing into the Access database.
- The database is to consist of at least 10 fields, and some of the fields must contain some *numeric* data capable of being statistically processed (via *calculated fields* in Access).
- At least twenty (20) separate records are to be created, and at least *two* separate reports are to be printed, and of these, at least one needs to incorporate a query containing at least one calculated field.
- You are advised to consult with me to ensure that your planning of the database (table) structure is adequate, and that the queries and reports will produce useful information.
- *You should plan the whole Task, including time needed for research, planning, collection and collation of data, and creation of the database and its elements to take no more than three weeks total.* Most class time during this Task will be used for this purpose. However, you must also realise that other lessons will take some time, and so you should only allow for about 10-12 periods for working on the Task in class time.

Hand In

- screen captures of your query screens in *Access*
- a dump of the table-format used, showing all field names and data-types
- at least *two* reports
- notes applying to how and why you formatted the fields as you did in your reports. These notes should be presented in word-processed form (including a footer, with your name)
- any rough notes, diagrams, planning etc. that you used in the development of your project.

TASK FIVE: DESIGN A SIMPLE SYSTEM 1: EXAMPLE 1

Specific Outcomes

Outcome 1: Uses investigation, communication and information processing skills to collect and analyse information, document processes and make presentations clearly and concisely.

Outcome 2: Works both within a group interacting with others, and individually, and demonstrates a knowledge of self-management skills.

Outcome 6: Describes the social and environmental impacts of information systems.

Outcome 7: Identifies evaluates and uses appropriate tools relevant to the design and development of an information system.

Outcome 8: Uses the technology process to solve teacher directed design problems involving information systems.

Task Procedure

- Obtain a copy of the *System Design Proposal* document from your teacher.

I. Read the document carefully and select a system that you would like to research. If you have another preference, discuss it with me.

II. Start planning your design proposal on paper. You can print off a sample of the proposal document for planning purposes as well as using it for your final presentation.

III. Arrange an *interview* (approx. 20mins) with your contact person to gather the necessary information for your design proposal. You may need to carry out subsequent discussions as required.

IV. Start your *Progress Report* and add to it throughout this assessment task as a clear indication of what you and your partner did.

V. Once you have a working knowledge of the system you are about to design and you have roughed out your proposal, start construction of a system *prototype*. This will be a simplified version of the system for demonstration purposes. It does not have to be created with the software that will ultimately be used for the final system and it will not be a complete working system.

Your prototype will be used to demonstrate:

A. what the major user *input* screen(s) might look like

B. some examples of the *processes* that the system will be able to carry out

C. some sample outputs that the system might produce eg. report, list, onscreen summary.

As part of your planning you should:

D. obtain any useful documents from your client

E. sketch a representation of key system components using DFD's, Rich Pictures, screen layouts and/or storyboards.

- Obtain a copy of the *Prototype Evaluation Form.*

Use this form to plan (in pencil) how you will present your prototype to your client (contact person). Your client will have a copy of this evaluation form and will assess you and your partner on your contributions during the presentation.

Make sure you ask all the questions necessary of me and your client in order to clearly understand the task requirements!

Submit

- System design proposal document.
- Prototype – sample printouts
  – electronic copy
- Prototype Evaluation Plan

i.e. notes you made as to how you intended to demonstrate your prototype to your client. Use PERSPLAN.DOC and rough notes.

- Any supporting documents – collected, created or roughs eg. Rich Pictures, DFD's, storyboards, draft screen layout plans etc.
- Progress report i.e. detailing each of your contributions on a day by day basis.
- Client evaluation form – completed and signed by your client.

SUPPORTING DOCUMENTATION FOR TASK FIVE: EXAMPLE 1

(Letter to Client)

Dear _____

Information System _____

Student(s) _____

Thank you for volunteering to participate in the year 11 Information Systems project. It is my hope that this activity will be a mutually beneficial one.

This letter is designed to give you an overview of the project's structure so that you can help guide the student(s) through the activity in a 'Business – Client' type relationship.

This project aims to allow students to:

Outcome 1: Uses investigation, communication and information processing skills to collect and analyse information, document processes and make presentations clearly and concisely.

Outcome 2: Works both within a group interacting with others, and individually, and demonstrates a knowledge of self-management skills.

Outcome 6: Describes the social and environmental impacts of information systems.

Outcome 7: Identifies evaluates and uses appropriate tools relevant to the design and development of an information system.

Outcome 8: Uses the technology process to solve teacher directed design problems involving information systems.

In practical terms the students will work through the following timeline:

- Students identify and approach a teacher in an area of their interest.
- A mutually agreed interview(s) time should then be arranged to gather information about the proposed system requirements including - What does the system have to do? What data needs to be input and stored? What processes need to be carried out on the data? What types of output are required? Are there any documents/reference materials available to help detail these system requirements? What hardware will the system have to run on? Are there particular software requirements? etc. ...
- Students then have to put together a System Design Proposal detailing these factors and the intended approach to design and construction. They are also expected to suggest additional features that they feel could be added if resources and time were ideal.
- The students will then put together a simple *prototype* (a small scale version) of the system for your evaluation. With the feedback from this phase in the project the students will then make the appropriate modifications and attempt a working model.
- By the end of this term I am hoping that proposals and possibly even prototypes might be ready for your evaluation but we'll see how the timing goes.
- Next term (5 weeks) will be spent putting the working system together and marketing it.

If possible I would like to liaise with you on an informal basis to monitor how your students' communication is going and whether they are keeping you suitably informed of their progress. Any comments or criticism that you have of this style of project would also be gratefully received.

Thanks once again for your participation.

Teacher

System Design Proposal

Client: Who is your client / contact person within the school?

System Name: eg. Technical Drawing Support System

Function of System:

Design Brief

- General Description -

What does the system have to be able to do?

- Inputs –

What sorts of data will be entered into the system?

- Processing –
  What types of processes will the system carry out?
  eg. sorting, calculation, merging, update
- Outputs –
  What reports / printouts/ screen displays will your system generate?

Design Ideas and Evaluation

- Capabilities

If your system was developed to its full potential what might it be able to do?

- Hardware

What hardware is currently available that the system will have to work with?
What additions do you suggest?

- Software
  What software is currently available that the system will have to work with?
  What additions do you suggest?
- Data Collection
  Collect data, details, documents from your client that will help you with your design.
- Diagrams
  DFD's – how will your system deal with the required data?
  Storyboard – show the sequence of ideas.
  Screen layout plans – how will you layout your screen in an attractive manner?

Timeline

- List the steps to be completed in sequential order
- Identify how long you think each will take
- Nominate who will carry them out.

System Design Proposal: Sample

Client:

Mr Ken Westover – Head of Design & Technology Department

System Name:

Technical Drawing Support System

Function of System:

This system is designed to support students who are creating technical drawings using Autosketch 2.0 for Windows.

Design Brief

General Description

This system will:

- provide the user with a step by step display of how to load and create a drawing
- allow the user to move between Autosketch 2 for Windows and the system without closing either
- allow the user to move through the drawing construction procedure step by step or to jump to a particular stage of the drawing production
- present the user with a suitable explanation of how the drawing is constructed and its component parts
- provide a set of questions for the user to answer as a test of their understanding.

Inputs

This system will store and use the following data types.

- Stored Data
  Sequenced drawing details showing progressive development
  General instructions on how to load and construct the particular drawing.
- User Input
  The only inputs from the user will be to click the mouse or press an arrow key to move through the support system or to enter a slide number to move to a particular part of the information system.

  At a later point the system may:
  – allow the user to select a particular drawing from a menu
  – allow the user to enter answers to questions regarding the information stored on the system
  – record the name of the users that have used the system along with their quiz score.

Processing

The system will process the mouse clicks to display the next step in the drawing construction of the user's choice of which part of the drawing they wish to see.

The final system will process the user's responses to a set of questions at the end of the drawing construction. The number of correct answers will then be calculated.

Outputs

- The main output will be in the form of an onscreen sequential presentation of the drawing's construction.
- This display may be projected onto a wall for classroom demonstration.
- A printout of the drawing in any phase of construction will also be possible.
- The system will display a standard drawing frame for the orthographic projection (top, side & front view) along with an explanation of its format.

Design Ideas and Evaluation

- Capabilities
  If your system was developed to its full potential what might it be able to do?
  See descriptions above.

- Hardware
  What hardware is currently available that the system will have to work with?
  This system will have to work on:

  IBM compatible 486SX running Windows 3.11
  4 M of RAM
  DOS 6.22

  What additions do you suggest?

  An overhead projection panel will be useful in displaying the information to a whole class.

- Software
  What software is currently available that the system will have to work with?

  This system needs to be compatible with Microsoft Windows 3.11 and Autosketch 2.0 for Windows.

  What additions do you suggest?

  In addition, this system will require Microsoft Powerpoint presentation software to run the prototype. The final system may be developed using a 4GL such as Authorware or Supercard so that various control structures can be embedded.

- Data Collection
  Data collected to design this system includes:
  A. sample drawing – 'Armchair' – see attached
  B. construction details – See attached
  C. sample questions on drawing construction

- Diagrams
  DFD's – see attached data flow diagrams
  Storyboard – see attached sample storyboard of screen layouts.

Timeline

⇒ List the steps to be completed in sequential order

⇒ Identify how long you think each will take

⇒ Nominate who will carry them out

Order	Task	Time
1	Initial Interview to gather current system information	15 mins
2	Follow up interview to clarify construction details	10 mins
3	System Design Proposal	4 hours
4	Present design proposal to client for discussion and feedback	20 mins
5	Modifications to DP in light of feedback	
6	Select suitable s/w for Prototype	
7	Clearly plan storyboard and screen layout for prototype	
8	Work on prototype	
9	Seek clarification of any questions that come to light as a result of prototype development	
10	Determine whether prototype s/w is suitable for developing full system	
11	Identify strengths and weaknesses	
12	Show client prototype, let them work through a sample to see if IPO is suitable	
13	Carefully detail feedback from client and have it confirmed	
14	Start construction of main system components	

Progress Report

Name:

Date	What did you do? Be as specific as specific as possible	What hardware did you use?	What software were you using	Comment on how effectively you used your time.	Time Spent
24.6.96					
26.9.96	• Completed Design Proposal as student sample. • Placed copy on the network for students to review.	IBM Compatible Toshiba Laptop; 8M RAM; 200M HDD;	Win for W/Grps 3.11; MSWord 6; MS Powerpoint	Had a few distractions – Staff and students asking questions; printer cartridge needed replacing	

System Prototype Evaluation

Dear _____

By the end of this week (term 4 week 2) your students should have finished developing a prototype of the system they intend developing for you. Part of this project requires them to present this prototype to you, the client, and obtain suitable feedback. This feedback will be used both by me, to help assess their progress, and by the students to make appropriate adjustments to their plan.

The students should be approaching you soon to organise a 20min interview early next week. During this interview it would be appreciated if you could use the attached evaluation form to appraise their presentation. Each student should be evaluated on their individual contribution. They have been given a copy of this form and therefore should be attempting to address each of the outcomes.

Could you please read the evaluation form before the interview and let me know if you perceive any difficulties.

I will collect the evaluation form directly from you and pass a copy onto the students.

Many thanks for your time and I hope that the students' efforts prove fruitful.

Teacher

Progress Report

Name:

Date	What did you do? Be as specific as possible	What hardware did you use?	What software were you using?	Comment on how effectively you used your time.

Partner:

Date	What did you do? Be as specific as possible	What hardware did you use?	What software were you using?	Comment on how effectively you used your time.

Sample System Ideas

Here are some possible system ideas and your prospective Clients:

	Department	Client	System name	Description
1	Info. Tech		IT Faults System	Used to identify current faults in any of the IT labs.
2	D&T		Tech drawing Support System	Assists students in understanding how a particular drawing is completed
3	D&T		Tools Inventory System	Used to monitor which tools are currently on loan and who has them
4	D&T		Tools Information System	Describes various tools, their structure and function. Help students learn the correct, safe use of equipment.
5	Art		Art history information system	An info system that identifies each of the genres of art over the years. It identifies artists that belong to different genres and the characteristics of their work.
6	Info Tech		Clip art directory	An electronic Directory of available clipart on our system, indexed in a variety of ways to help users quickly track down the picture they need.
7	Science		Geology Mineral Info. System	A system that allows students to enter key details of certain minerals and retrieve other associated information
8	IT		IT Conversion System	An information system that explains the concepts of Binary, Hex, ASCII, Chars and digital waves.
9	IT		IT Terminology System	A Terminology system that can be used by students to find the definitions of key words.
10	Library		School Inventory System	This system can be used to keep track of all equipment purchased by the school. It can call up details of any piece of equipment and produce lists of various equipment categories.
11	IT		Computer Specifications System	A system that details the key components in each computer around the school.
12	Misc.		Football Analysis Information System	A system that can be used to help analyse the performances of various footballers to determine their suitability for draft selections.
13	Social St.		Work Studies Info. System	A system to keep track of the students who have carried out work studies.
14	English		Spelling Info. System	A system to help students with spelling difficulties
15	Music			

System Name: _____

Student(s): _____

Client: _____

Outcomes Being Assessed:

- Investigation, communication and info. processing skills
- Individual, group and time management skills
- Ethical/environment implications of system
- Suitable tools used to demonstrate, develop system
- Use the technology process approach.

Please use the following scale to evaluate the quality of each student's contribution. 0 = Not demonstrated/no contribution; 1 = brief/vague/minor demonstration/contribution; 2 = satisfactory demonstration/contribution; 3 = clear/significant demonstration/contribution making good use of examples.
(*Note: student 1 and student 2)

Evaluation Form

	Outcome Interpretation	**Demonstrated by ...**	S* 1	S* 2
1	Quality of Communication	Explanations: • How the system is loaded		
		• Key parts of the interface (screen diagram)		
		• User input		
		• The processing the prototype does v what the final system will do		
		• The output that the prototype / system can / will produce		
		Information gathering – Asking for: • feedback / guidance on current state of system		
		• further information / explanation		
		Communication tools / techniques: • verbal		
		• electronic eg. prototype demonstration		
		• paper based eg. diagrams		
		• note taking		
2	Individual / Group management skills	• Level of participation in explanation		
		• Describe what you intend doing as part of the design team		
		• Describe timeline and level of completion by end of project		
6	Ethical / Environmental implications of system	• Identify sensitivity of information		
		• Ask / suggest possible security techniques / procedures		
		• Ask / suggest implications of improper use of this system		
		• Identify how this system can be used to offer the user advantages over non-users		
7	Suitable tools used to demonstrate, develop system	• Identify the software used to develop the prototype and why chosen		
		• Identify the software to be used to develop the final system and why		
		• Identify features that the chosen software offers the system		
		• Identify what software might be used under more ideal circumstances		
8	Use the technology process approach to create a successful Info. System	• Explain the system design diagram / details (on paper)		
		• Demonstrate the system prototype		
		• Ask / Suggest how marketable this system could be		

General Comments:

Suggested Modifications/Additions to system

Prototype Evaluation Plan

Outcome 1: Quality of Communication

I. Explanations:
   A. How the system is loaded
   B. Key parts of the interface (screen diagram)
   C. User *Input*

   D. Processing
   Prototype
   Final system

   E. Output
   Prototype
   Final system

II. Information gathering:
   A. Asking for
   feedback / guidance on current state of system
   further information / explanation

III. Communication tools/techniques:
   A. verbal
   B. electronic eg. prototype demonstration
   C. paper based eg. diagrams
   D. note taking

Outcome 2: Individual/Group Management Skills Level of Participation in Explanation

- Intend doing as part of the design team
- Describe timeline and level of completion by end of project

Outcome 6: Ethical/Environmental Implications of System

- Identify sensitivity of information
- Ask/suggest possible security techniques/procedures
- Ask/suggest implications of improper use of this system
- Identify how this system can be used to offer the user advantages over non-users

Outcome 7: Suitable Tools Used to Demonstrate, Develop System

- Identify the software used to develop the prototype and why chosen
- Identify the software to be used to develop the final system and why
- Identify features that the chosen software offers the system
- Identify what software might be used under more ideal circumstances

Outcome 8: Use the Technology Process Approach to Create a Successful Information System

- Explain the system design diagram/details (on paper)
- Demonstrate the system prototype
- Ask/suggest how marketable this system could be

Other Ideas

TASK FIVE: DESIGN A SIMPLE SYSTEM 1

Marking Key

(*Note: student 1 and student 2)

	Outcome Interpretation	Demonstrated by ...	* S1	* S2
1	Quality of Communication	Explanations: • How the system is loaded		
		• Key parts of the interface (screen diagram)		
		• User input		
		• The processing the prototype does v what the final system will do		
		• The output that the prototype / system can / will produce		
		Information gathering – Asking for: • feedback / guidance on current state of system		
		• further information / explanation		
		Communication tools / techniques: • verbal		
		• electronic eg. prototype demonstration		
		• paper based eg. diagrams		
		• note taking		
2	Individual / Group management skills	• Level of participation in explanation		
		• Describe what you intend doing as part of the design team		
		• Describe timeline and level of completion by end of project		
6	Ethical / Environmental implications of system	• Identify sensitivity of information		
		• Ask / suggest possible security techniques / procedures		
		• Ask / suggest implications of improper use of this system		
		• Identify how this system can be used to offer the user advantages over non-users		
7	Suitable tools used to demonstrate, develop system	• Identify the software used to develop the prototype and why chosen		
		• Identify the software to be used to develop the final system and why		
		• Identify features that the chosen software offers the system		
		• Identify what software might be used under more ideal circumstances		
8	Use the Design, Make, Appraise & Market approach to create a successful Info. System	• Explain the system design diagram / details (on paper)		
		• Demonstrate the system prototype		
		• Ask / suggest how marketable this system could be		

General comment

_____

_____

_____

Group Breakdown

Name:	Outcome	1	2	3	4	5	6

TASK FIVE: DESIGN A SIMPLE SYSTEM 1: EXAMPLE 2

Task 5: Outcomes 1, 2, 6, 7 and 8

Make sure that you read the CATs booklet regarding this task, paying particular attention to the **Task Description**, **Task Parameters** and **Authentication** sections.

Your Task

For this task you are required (*as an individual*) to design, construct and implement a simple information system using productivity tools. Such tools could include *Word, Excel, Access, MicroWorlds Logo, Multimedia Toolbook.*

It should be realised that you are not expected to produce a 'system' of a *commercial* standard. You should keep this in mind when determining the *nature*, *scope* and *objectives* of your system, and (as happens in the 'real' world), you should regularly consult with your client (me) about the system's requirements.

Please also note that some allowance should be made at the 'end' of your system's implementation for the client to request you to make alterations (refer to CATs Booklet *Task Description*). In the 'real world', *no* system 'lasts forever'; there will *always* be modifications required and made to a system so that it can cope with changing needs and new technology and procedures.

Ideas for You to Consider as Your 'System':

- a system to allow entry and recording of form absentees so that a report can *quickly* be made for the Vice Principal by the end of Period 1 each day.
- a system to allow the Counsellor's Secretary to record appointments from students and staff, and to print out actual personal bookings which the student can take to her teacher.
- a system to record and automatically update track (or field, or swimming) records set during an interhouse carnival, so that a report of new records broken can be printed out at the end of the carnival.
- a system to automatically tally house points per event for display on a large monitor set up in a prominent position. Input would be that for 'normal' events, first place would score 5 points, second 3 and third 2. For championship events, first would score 8 points, second five and third 3. [Note that this is *not* the actual system used for our carnivals].
- a system which would emulate one of the sub-systems used in the Resource Centre, such as that for determining if a student has overdue books (based on the date she borrowed it, and today's date), and if 'overdue' would automatically flag that student in some way, so that when a form-list is printed out, all those who have been 'flagged' would have their name indicated.
- And any other ideas – remember to see me if you'd like clarification, and treat me as the 'client'.
- Finally, consult with *me* if in doubt as to how 'deep' to go.

Hand In

- sample printouts/screen-dumps or hardcopy reports of your system
- *all* planning notes, diagrams etc. (no matter how 'rough')
- the *timeline*, presented as a *Gantt Chart*. Refer to your text, other systems texts, and the WWW for definitions and examples of Gantt Charts (hint: also look up 'scheduling tools').
- the *design brief/plan* of your system (to be presented in *rich picture* or *DFD* form)
- screen captures showing the development of your system with whatever tool you used
- your reasons for using the particular software tool(s)
- appraisal and modifications needing to be made to the system which have *not* already been done by the end of the project. (Consult your 'client', and make sure that s/he has used the system).

Allow about three weeks to complete this Task. Much of the work will be done in class time, but you need to be aware that some work will need to be done in your own time. You will also need to have carefully organised what you hope to achieve on a day-by-day basis; *scheduling* will be a very important facet of this Task. You also need to consider whether you plan to do Tasks 5 and 7 concurrently, and how to allow for different approaches needed.

TASK SIX: COMPREHENSION: EXAMPLE 1

Outcomes

Outcome 1: Uses investigation, communication and information processing skills to collect and analyse information, document processes and make presentations clearly and concisely.

Outcome 3: Understands the requirements for, and design principles of, information systems.

Task

You will be provided with a copy of a recent article by your teacher.

Read the document to get a general overview of what it is about and then read it again to gain information on the following:

- Determine why the article was published
- Identify the key facts that the article puts forward
- Compare these with any opinions that come through in the article
- Clearly describe what the information system was designed to do. You may call other researched information in to help answer this question.
- Describe the information system's apparent effectiveness. This might be done by comparing various processes with their manual equivalents or by identifying specialised features that this system offers.
- List and explain any technical terms used.

Report

It is most important that you call on your previous knowledge/notes on system description techniques when discussing this article i.e. IPO, Data types/flows, information requirements, qualities of information, advantages of computerised systems.

Marking Key

Outcome Interpretation		Opportunity to demonstrate by...	Outcome Rating (V,H,S,NS,ND)
1	Use investigation, communication and info processing skills to: • Collect and analyse information. • Document processes • Make presentations clearly and concisely	• Using point form notation to answer questions • The source of the document used • Using diagrams to help with any explanation • The level of understanding indicated in explanations • Quality of formatting and sequencing of information • Nature and Significance of the 2nd article chosen • Use of previous notes to support understanding of article eg. IPO, DFD's, Information requirements, Advantages of computerised systems.	
3	Understand the requirements for and the design principles of an information system.	• Indicating why the article was written • Listing the key facts that the article put forward • Describing what the information system was designed to do • Referring to additional material/information to support comments • Listing and explaining any technical terms • Describing the information system's apparent effectiveness compared with alternative manual of electronic techniques	

General Comments

TASK SIX: COMPREHENSION: EXAMPLE 2

Task 6: Outcomes 1 and 3

Make sure that you read the CATs booklet regarding this task, paying particular attention to the **Task Description**, **Task Parameters** and **Authentication** sections.

Your Task

You will be presented with a photocopy of a recent article from a non-technical source such as a newspaper, or alternatively, a video, of a recent Information Technology issue relating to an information system.

You are to answer questions posed by me regarding the article given to you, in the light of the *Task Description* clause in the CATs Booklet.

Your report is to be written according to the principles described in 'Hints on Report Writing' notes which follow. You are expected to produce a document of about 800 words (2 pages) of word-processed text. Diagrams and illustrations may be used to clarify issues if appropriate.

It is suggested that you consult with me during the preparation of your critical analysis whenever you are unsure as to depth of treatment etc.

Hand In

- your word-processed report (with footer)
- the original photocopied document (unless you used a video)
- any rough notes used in the preparation of your report

Allow about one to two weeks to complete this Task. Some work will be possible in class time, but you need to be aware that about half the work will need to be done in your own time.

Hints On Report Writing

A *report* is a document based upon factual occurrences or events, and typically are used in the commercial and scientific communities to describe, in summary form, the events and facts for a particular event (such as the *financial report* for a small business, *a shareholders' report* for the clients and shareholders, a *scientific report* by a team of scientists who have conducted a piece of research, or a *newspaper report* by a journalist covering some aspect of enquiry.

There are various conventions applying to the preparation and presentation of a report, and there is some variation according to the type of report and its target audience. However, most reports have elements in common:

- Be *factual* in preparing the report, by using *data* and *results*. When using your own opinions, base these on the facts/data that you have presented, whether supporting or refuting them.
- Put yourself in the position of a reader/evaluator of the report. How would you feel about reading and evaluating the report at 3.00 am after having read five (5) other reports? Does *your* report contain 'padding' and irrelevant discussions, unnecessary graphics and 'frills' such as over-emphasised headings? Have you used headings and subheadings to clearly indicate the sections of your report?
- Reports should in general contain four (4) components:

  Introduction Results/data

  REPORT

  Discussion Conclusion

  Help and advice should be sought from your English Department on the principles of the format and content of each of these areas if your are unsure. It would also pay you to examine samples of reports in such things as scientific papers, articles in journals and magazines etc.

I. The ability to communicate in a report is vital – use ordinary English and avoid being over technical and emotive. Remember that many of the report's readers may not themselves be familiar with the levels of technical understanding or skills that you may have.

II. In selecting or creating material to be used or included in the report, maintain a log or journal of facts and data you intend to, or could, use. Also maintain a diary of how you dealt with problems you encountered as you progressed through whatever task it was that you are reporting on. These notes will prove invaluable in the construction of the final report.

III. When using or representing numerical data in a report:
   A. if there are only three or four values, these can be indicated in a normal paragraph
   B. between 3 and 15 values should be represented in a *table*, and
   C. greater than 15 values should be represented in a *graph*.

TASK SEVEN: DESIGN A SIMPLE SYSTEM 2: EXAMPLE 1

Outcomes

Outcome 1: Use investigation, communication and information processing skills to collect and analyse information, document processes and make presentations clearly and concisely.

Outcome 2: Works both within a group interacting with others, and individually, and demonstrates a knowledge of self-management skills.

Outcome 6: Describes the social and environmental impacts of information systems.

Outcome 7: Identifies, evaluates and uses appropriate tools relevant to the design and development of an information system.

Outcome 8: Uses the technology process to solve teacher directed design problems involving information systems.

Task Procedure

(This task is linked to Task Five, Example 1)

Having completed your Prototype Evaluation it's time to develop your final system. This system must demonstrate an understanding of programming using a 4th generation language, eg. Authorware.

Design

- Refer back to your Client's prototype evaluation. Make a list of any modifications/additions that need to/could be made for your final system.
- Refer to your Design Proposal and the timeline you had established.
- Copy your timeline and modify it to meet the requirements that follow.

A key component of this task is to demonstrate your understanding of Program Development and the fundamental control structures involved. At least part of your final system needs to demonstrate the use or at least the planning for these structures.

- To gain the required background knowledge read some relevant tests on program development tools. Make brief notes on these and save to refer to during this project.
- Using one of the program development planning tools you have now learnt about, draw up a Program Development plan for at least one part of your information system. See my Technical Drawing System sample as an example (Task Five, Example 1).

Make

- Complete the system modification outlined in your timeplan. Your system should demonstrate a significant increase in the degree of completion when compared with your Prototype. This may involve adding records, slides, S/S summary sheets, d/b forms and reports, supporting documentation to explain how the system should be used.
- Suitable printouts should be provided to give at least three (3) examples of what the system can do in terms of processing data, eg. in the case of a data base, at least three (3) queries and their resulting report should be detailed.
- Put together your final portfolio for presentation to your client. Once again, read the Evaluation form to determine whether you have covered all requirements. Be sure to draw the refinements/ modifications to their attention.

  NB: See ***marketing*** section for other items that need to be made.

- If time permits, develop a component of your system using the 4GL – eg. Authorware. The key aim here is to demonstrate at least 1 example of each Control Structure – Sequence, Selection and Repetition.

  Refer to the 'Authorware Manual' by Jim Fuller for details of how to use Authorware.

Appraise

- Arrange to, once again, present the final system to your client. They will be looking to see what enhancements/refinements you have made.
- Complete your progress report as an indicator of how your time was spent.

Market

- Take a look at the sample marketing materials provided by your teacher. Select some samples that would be suitable to market your product to other schools.
- Produce suitable marketing materials to package and/or advertise your product in the best possible manner. Demonstrate the use of a desktop publishing package eg. MSPublisher in the production of these materials.

Submit

Design

- list of modifications/additions
- modified timeline
- printout of program development notes
- program development plan (pencil on paper) for a suitable part of your information system.

Make

- electronic copy of *modified* system along with supporting hard copies of screens, forms, reports, spreadsheets, charts, slides etc. *Assessment will be based on the modifications only.*
- *If time permits*, construct a component of your system using the 4GL – Authorware demonstrating at least 1 example of each Control Structure – Sequence, Selection and Repetition.

Appraise

- the second system appraisal form from your client.
- progress report to indicate what you and your partner did throughout this task.

Market

- at least one sample marketing material for your product eg. advertising flyer, box packaging, information booklet.

Completing The Final System

(Letter to Client)

Dear _____

Once again, thank you for your participation in this project. As a finale, your students must demonstrate to you their completed system and if possible leave you with a functional copy. Please make a final assessment of their achievements according to the key below:

Comments or constructive criticisms are also welcome.

Assessment Key for Tasks Five and Seven

Evaluation Scale

0 = Unsatisfactory Achievement	Not demonstrated / No contribution / Poor level of completion
1 = Nearly Satisfactory Achievement	Brief / Vague / Minor demonstration / Contribution / Level of completion
2 = Satisfactory Achievement	Acceptable demonstration / Contribution / Level of completion
3 = High achievement	Clear demonstration / Contribution / Level of completing – making good use of examples

Outcome	Opportunity to demonstrate by...	Outcome Rating (V,H,S,NS,ND)
1. Quality of communication	• Explanation of the modifications that have been added since the prototype demonstration.	
	• Explanation of how the modified system now operates	
	• Use of diagrams / documentation to assist explanations	
	• Provision of any supporting documentation eg. user worksheets, user manual, specification sheet.	
2. Individual / Group management skills	• Level of participation in explanation	
	• Degree of completion – Has the system been developed to a point where it could be used by the client	
	• Appreciation of time required for interview and general liaison	
6. Ethical / Environmental implications of system	• Identification of who will be in control of the system (updates / modifications)	
	• Identification of how the system will be protected: - from misuse / alteration - methods – physical / electronic / available / suitable	
	• Identification of who will be using the system and how it will be accessed	
	• Identification of the advantages the system will offer the user vs a non-user	

Outcome	Opportunity to demonstrate by...	Outcome Rating (V,H,S,NS,ND)
7. Suitable tools used to demonstrate, develop system	• Indication / explanation of whether the final system has met the client's needs?	
	• Clarification of the features of the software that were used in the system's development.	
	• Identify the features provided by the system for users.	
8. Use the Technology process approach to create a successful Info. System	Identify / Discuss the marketing potential of the system • Audience – who would be interested in purchasing such a system • Cost • Where to advertise • Demonstrate a sample advertising document (flyer, box, advert) showing – hardware & platform requirements.	
	• Identify how and where the system could best be advertised.	

General comment to students

_____

_____

_____

_____

_____

General comment / constructive criticism about usefulness / success / presentation of this project

_____

_____

_____

_____

_____

Individual Breakdown of Achievement

Name:	Outcome	1	2	6	7	8

TASK SEVEN: DESIGN A SIMPLE SYSTEM 2: EXAMPLE 2

Task 7: Outcomes 1, 2, 6, 7 and 8

Your Task

For this task you are required (as an individual, or as a member of a group of *no more than three (3)* people) to design, construct and implement a simple information system using productivity tools. The tool to be used for this system is *Multimedia Toolbook*. Assistance with scripting can be sought from me, but please also note that *Toolbook* has *auto-scripting* features which you should explore before asking for help.

If you are part of a team, please ensure that you have read and understood the section of the *Task Parameters* in the CATs Booklet regarding the importance of team meetings and recording of such. These details will need to be presented with your team's system (in rough form – no need to word-process).

Please also note that some allowance should be made at the 'end' of your system's implementation for the client to request you to make alterations (refer to CATs Booklet *Task Description*). In the 'real world', *no* system 'lasts forever'; there will *always* be modifications required and made to a system so that it can cope with changing needs and new technology and procedures.

The Task

You are to create an interactive topic test for a subject of your choice, which the 'student' is to sit interactively. The system is to automatically score the result, and present this on-screen at the end of the test.

To facilitate this Task, I suggest that you use an existing topic test (to which you know the answers!), preferably of multiple-choice or true/false type questions.

There is an example of such interaction in *MM Toolbook's* sample projects in the *Asymetrix Multimedia Toolbook* group in Windows on the network.

It *is* possible (and permissible) to copy script from one *Toolbook* book to another, and then adapt it to the needs of this system.

It will be important that *all* group members are involved in the actual *Toolbook* production - perhaps by doing certain sections each. All members will need to be equally conversant with the design, creation, scripting and testing phases of the production.

A *group* project will be marked on a different basis than that produced by an *individual*. Groups will be expected to produce records of meetings and discussion, and clearly identified tasks and responsibilities for each member.

Similar conditions exist to *Task 5* in terms of the *Task Description* requirements. Please refer to that document.

Hand In

- sample printouts/screen-dumps or hardcopy reports of your system
- *all* planning notes, diagrams etc. (no matter how 'rough')
- the *timeline,* presented as a *Gantt Chart*. Refer to your text, other systems texts, and the WWW for definitions and examples of Gantt Charts (hint: also look up 'scheduling tools').
- the *design brief/plan* of your system (to be presented in *rich picture* or *DFD* form)
- screen captures showing the development of your system with whatever tool you used
- appraisal and modifications needing to be made to the system which have *not* already been done by the end of the project. (Consult your 'client', and make sure that s/he has used the system)
- three paragraphs describing and including examples used in your system of the *sequence*, *selection* ('if..then' / 'if..then..else' / 'case') and *iteration* ('while ..do' / 'repeat..until' / 'for..do') control structures
- *if you are a member of a group,* the group must present a list of all of the duties performed by each member, and a log of team meetings including decisions taken, problems encountered and actions taken.

Allow about four weeks to complete this Task. Much of the work will be done in class time, but you need to be aware that some work will need to be done in your own time. You will also need to have carefully organised what you hope to achieve on a day-by-day basis; *scheduling* will be a very important facet of this Task. You also need to consider whether you plan to do Tasks 7 and 5 concurrently, and how to allow for different approaches needed.

SAMPLE INFORMATION SYSTEMS EXAM
SEMESTER 1: (EXAMPLE 1)

		75

Write your name in the box above

INSTRUCTIONS

Reading Time ..... 10 Minutes
Working Time..... 2 Hours

MATERIALS ALLOWED

Calculator, pen, pencils, math aid, ruler.

This paper contains **THREE** sections:

SECTION A	10 Multichoice questions	10 Marks
SECTION B	12 Short Answer questions	30 Marks
SECTION C	7 Extended Answer questions	35 marks

TOTAL 75 MARKS

ATTEMPT ALL QUESTIONS

SECTION A - MULTICHOICE

Attempt ALL questions by placing A, B, C, or D in the table below. Choose the answer that **BEST** completes the question.

Question	Answer
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

1. Which of the following is NOT a characteristic of information?
   (a) Processed data
   (b) Accuracy
   (c) Cost
   (d) None of the above

2. Spreadsheet formulae are used for a variety of purposes. Which of the following is NOT one of them?
   (a) Copying data
   (b) Referencing data
   (c) Making decisions
   (d) None of the above

3. In the following spreadsheet formula, which type of *cell referencing* has been used?

   =SUM(A3,A15,b12)

   (a) Absolute
   (b) Relative
   (c) both (a) and (b) above
   (d) None of the above

4. Which of the following is NOT a database view?
   (a) Table
   (b) Field
   (c) Report
   (d) Query

5. Which of the following would be classified as *batch processing*?

   (a) A library catalogue search

   (b) An internet search

   (c) School report printing

   (d) Word processing a document

6. Which of the following is *least* likely to affect the position of text on a page?

   (a) Spell checking

   (b) Justifying

   (c) Line spacing

   (d) Word wrapping

7. In the following query, what is the name of the labelled part?

   TicketNo 327*

   (a) SDL

   (b) Relationship

   (c) Joiner

   (d) Field

8. What type of formula is the following?

   Sheet 2!B6

   (a) Decision

   (b) Linking

   (c) Calculation

   (d) Reference

9. An automotive information system that can diagnose faults in cars would be classified as a(n)

   (a) MIS

   (b) ES

   (c) TPS

   (d) DSS

10. Which of the following would be considered a spreadsheet function?

    (a) SUM

    (b) AVERAGE

    (c) MAXIMUM

    (d) All of the above

(Total = 10 Marks)

END OF SECTION A

SECTION B - SHORT ANSWER

Write ***Short Answers*** to the questions below in the space provided. Be sure to use full sentences and examples where appropriate.

Q11. Identify four (4) methods of gathering information in order to analyse an information system.

.....

.....

.....

.....

(2 Marks)

Q12. Identify an information system that could be used in each of the following areas. Be as specific as possible in naming the system.

(a) Petrol Station .....

(b) School .....

(c) Sports Club.....

(d) Cinema Complex eg. Greater Union - Innaloo .....

(4 Marks)

Q13. What does DFD stand for and what is it used for?

.....

.....

(2 Marks)

Q14. Draw and label the four (4) symbols used in a DFD

(4 Marks)

Q15. What is the main reason for using absolute cell references in a spreadsheet formula?

.....

.....

.....

(2 Marks)

Q16. List four (4) societal concerns often associated with the use of computer information systems.

.....

.....

.....

.....

(2 Marks)

Q17. Select one of the issues above an indicate how its affects can be minimised?

.....

.....

.....

(2 Marks)

Use the following spreadsheet to answer questions 18 and 19

	A	B	C	D	E	F	G	H
1		Client	Item	QTY	Unit Price	Cost	Discount	Price
2	1	Target	#2764	26	30.25			
3	2	Coles	#415	5	20.15			
4	3	Myers	#327	5	5.5			
5	4							
6								
7						Discounts		
8						Item	Qty	Discount %
9						#2764	10	5
10						#415	5	7
11						#327	100	8

Q18. What is the general name given to cells: F8:H11?

.....

(1 Mark)

Q19. Write the correct formula for cells:

(a) F2 .....

(1 Mark)

(b) G3.....

(3 Marks)

(c) H4.....

(1 Mark)

Q20. Identify each of the following information systems:

(a) MIS.....

(b) DSS .....

(c) TPS.....

(d) ES.....

(2 Marks)

Q21. If MSWord is a word processing programme used to manipulate text and MSExcel is a spreadsheet used for what-if decision making, how would you describe MS Powerpoint?

.....

.....

.....

(2 Marks)

Q22. From your reading and knowledge, name a technology which is considered very new / topical at the moment and describe its purpose.

.....

.....

.....

.....

(2 Marks)

(Total = 30 Marks)

END OF SECTION B

SECTION C - EXTENDED ANSWERS

Read each of the scenarios described below and answer the questions that follow. Be sure to use pencil for all design layouts. Use full sentences and examples where appropriate.

Scenario 1

Having just bought your first car, you decide to monitor its fuel consumption. Each time you fill up with petrol you record the data, the odometer (distance meter) reading in kilometres, the number of litres used and the current cost of fuel in cents per litre (eg 76 c/l).

Assuming you fill once per week, complete the following:

Q23. In the space below design a data collection sheet that can be carried in the car and used to gather the above data on a monthly basis over three (3) months.

Allow space to calculate - the distance travelled since you last filled up, the cost of filling up each time, the total cost per month, the number of kilometres per litre the car achieved and the equivalent in litres per 100 kms.

(5 Marks)

Q24. Adapt the above design onto the following spreadsheet layout plan:

Marks will be given for appropriate layout, format, abbreviations, formulas, copying and referencing.

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	

Formulas

1	
2	
3	
4	
5	
6	
7	

(7 Marks)

Q25. Now plan a summary sheet layout that could be used to display the fuel consumption figures (km/l) and Total costs for each month and the year.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

Formulas

1	
2	
3	
4	
5	

(4 Marks)

Q26. Finally, sketch a graph that could be used to display the summary figures.

(4 Marks)

Scenario 2

The 'Music Man' record store specialises in the sale of records, tapes and CDs. As part of the day to day running of the store, the following activities are carried out.

- customers request a specific item
- the stock book is checked to see if the item is in stock and the customer is advised of the price
- if the item is in stock it is retrieved and the sale is completed by decreasing the number of items in the stock book by 1, entering the purchase details in the cash book and writing out a receipt.
- If the item is out of stock the customer can place an order which is written into the orders book
- the order book is checked each day and on request to see if ordered stock is available
- monies from purchases are always entered into the cashbook from which the receipt is obtained.

Q27. From the description above, fill in the DFD table below:

(4 Marks)

Q28. Draw a simple DFD to show the information flow during the sale of a requested product

(5 Marks)

Q29. In the space below design a *data entry form* showing how appropriate data would be collected for an electronic database of the Music Man's stock eg. Format – CD, Tape, Record; Music Style; Distributor etc.

The form should allow collection of enough data to answer most customer enquiries.

Be sure to demonstrate all suitable design techniques for electronic databases.

(6 Marks)

(Total = 35 Marks)

END OF EXAM

SAMPLE INFORMATION SYSTEMS EXAM
SEMESTER 1: (EXAMPLE 2)

Time Allowed For This Paper

Reading time before commencing	10 minutes
Working time for the paper	Two (2) hours

Instruction to Candidates

This examination consists of TWO (2) parts:

Part A: This consists of twenty (20) short answer questions totalling 40% of the paper. Answer **ALL** questions in the space provided on this paper.

Part B: This consists of FIVE (5) questions totalling 60% of the paper. Candidates are required to **answer a total of THREE** (3) questions from this part. Each question is of equal value. Question B1 is **COMPULSORY**. Candidates must then answer TWO (2) questions, one from each of the following two sections. These questions are to be answered in the standard answer book provided.

Note

It is the candidate's responsibility to ensure that no unauthorised notes or other items of a non-personal nature are to be taken not the examination room. If, however, a candidate has taken any unauthorised notes, or other items into the examination room, he must hand them to the supervisor BEFORE READING ANY FURTHER.

At the end of the examination, place the answer book used inside this question paper for collection by your supervisor.

Name: ..... Form: .....

PART A Answer these questions briefly in the spaces provided. Each question is of equal value.

A1. With the aid of a simple diagram outline how the four (4) hardware components of a computer system interrelate to each other and give an example of each.

A2. Distinguish between the terms editing and formatting when using a word processor.

A3. Indicate the correct usage of the IF(...) statement when used in a spreadsheet.

A4 Outline the three (3) components of the CPU and then briefly state their function.

A5. Name and state the main feature of two (2) solid state primary storage devices.

A6. List some strengths of a computer based information system.

A7. Describe some errors that a spell checker will not locate in a word processed document.

A8. Discuss the meaning of the term Operating System and give an example.

A9. Explain how a spreadsheet can be used in a ‘What - if’ scenario.

A10. What are the three (3) areas that must be addressed during the feasibility study stage of implementing an information system?

A11. Outline some personal attributes you consider a system analyst should process.

A12. During the System Analysis phase, what major tasks are carried out?

A13. Explain the difference between system and application software and give an example of each.

A14. List the first four (4) steps in the development of an information system.

A15. Outline the four (4) components of a procedure.

A16. What are the four (4) symbols used in the production of a logical data flow diagram (LDFD)?

A17. What three levels of people interact with an information system?

A18. Describe some advantages of using OCR input devices

A19. Outline an advantage and a disadvantage of magnetic tape as storage medium

A20. Distinguish between Impact and Non-Impact printers

END OF SECTION A

PART B: Written Answer Section. Candidates must attempt a total **THREE** (3) questions from this part. Question B1 is **COMPULSORY** and **at least ONE** (1) from each of the following two (2) sections. Answer these questions in the standard answer book provided.

COMPULSORY QUESTION

B1. Every day, members come into C-More Videos to return videos they previously booked out, and perhaps browse and select some more videos from the shelves.

(a) prepare a table with the following headings:

Input **Process** **Output** **Store**

and place all the elements, described in the above system, into the table. (10 marks)

(b) Prepare a simple logical data flow diagram for the above system. (10 marks)

Answer at least ONE question from this section.

B2. Data storage devices fall into three (3) broad categories, optical, magnetic and solid state. Discuss the main principle behind each storage method and illustrate your answer with examples of devices in use from each category.

OR

B3. Compare and contrast the following devices

(a) MICR and OCR readers (5 marks)
(b) BubbleJet and Laser printers (5 marks)
(c) CRT and LCD screens (5 marks)
(d) Mainframe and Mini computers (5 marks)

Answer at least ONE question from this section

B4. The keyboard has been the major input device used by all computer systems. It is gradually being supplemented by a number of other input devised capable of increasing the speed and ease with which data is entered. With the aid of diagrams, describe in detail the function of two of these input devices.

OR

B5. With regard to spreadsheets, answer the following questions

(a) Where and how would you use a LOOKUP function? Give a coded example of both types to illustrate your answer.

(6 marks)

(b) Distinguish between relative and absolute cell reference using examples.

(4 marks)

(c) Discuss in some detail the method and the overall advantage of linking a number of spreadsheets.

(6 marks)

(d) Describe how a spreadsheet can be a valuable tool for business decision making.

(4 marks)

END OF PAPER

SAMPLE INFORMATION SYSTEMS EXAM
(EXAMPLE 3)

Reading Time 10 minutes
Duration 2 hours

Materials allowed
Calculator, pens, pencils, erasers, Math-Aid, rulers

Total Marks Allocation 64

Section A
28 Marks
Answer All Questions in booklet

Section B
36 Marks
Extended Answers
Answer on supplied lined paper and spreadsheet pages attached at back.

ALL STUDENTS MUST - Answer Question 1
Answer Question 2 **OR** Question 3
Answer Question 4 **OR** Question 5

Start any new answers on a new sheet of paper
Place your name and the question number clearly on all sheets of Paper

STUDENT NAME: _____

Section A - 28 marks
Attempt all questions

1. Name two (2) things that DFD's are used for (2 marks)

_____

_____

_____

_____

_____

2. Correct the following incorrect spreadsheet formula (1 mark)

IF(B30>23,34,23,45)

_____

_____

3. The top level diagram in a DFD is often referred to as a (1 mark)

_____

_____

4. Name three (3) methods that a person can use to gather information about an information system. (4 marks)

_____

_____

_____

_____

_____

_____

_____

With reference to the following diagram answer Q 5 - 7

	A	B	C	D	E
1	**Sales Figures**				
2					
3	**Week**	**John**	**Mary**	**Jim**	**Jane**
4	1	21500	20000	18000	25000
5	2	25000	19250	18500	22500
6	3	22250	17500	19250	27000
7	4	20000	18500	17500	25000
8	5	25000	17250	18500	22250
9	6	24250	19250	19250	29000
10	7	22500	19000	19000	24500
11	8	19000	17500	17500	23750
12	9	17500	19250	19250	29000
13	10	19250	20000	20000	31000
14	**Total**	216250	187500	184750	250000
15	**Average**	21625	18750	18475	25000
16					

5. What would be the correct formula for cell B14?

(1 mark)

_____

_____

6. A formula for C15 could be C14/10 but what would be the better formula?

(1.5 marks)

_____

_____

7. What are the two (2) formulae you could use to add up the total of all sales for the whole sheet that is currently displayed?

(2 marks)

_____

_____

_____

_____

_____

8. Label each of the data flow diagram symbols below:

(4 marks)

DIAGRAM TO BE INSERTED HERE

9. Name three (3) stages in the data processing cycle

(3 marks)

_____

_____

_____

10. Complete the following: (1 mark)

A feasibility study includes a problem definition which states what is wrong with the current system. This is often referred to as defining the _____ and s_____ of the problem.

11. Define the role of a systems analyst

(1 mark)

_____

_____

_____

_____

_____

_____

_____

_____

12. Describe what the following spreadsheet formula does (2 marks)

(SUM(B1:B4)/B9)*B6

13. Describe one of the DFD components properties as per question 8. (3 marks)

14. What does an absolute reference in a spreadsheet formula mean? Explain with example (1.5 marks)

END OF SECTION A

Section B (36 Marks)
Answer on the lined paper

Answer question	1	**12 marks**
Answer question	2 **or** 3	**12 marks**
Answer question	4 **or** 5	**12 marks**

Question 1

I. Outline the stages of the Data Processing Cycle. You should give a description of what occurs at each stage of the cycle. (8 marks)

II Why does using the Data Processing Cycle aid in systems development? (2 marks)

III. This process is seen as never ending. Give some valid reasons for this? (2 marks)

Question 2

The following tables of data are a company's sales data:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Joe	391	345	204	113	318	66	93	112	214	253	123	231
Mary	428	405	274	109	231	60	96	123	220	247	119	249
Peta	380	325	242	155	311	73	84	126	114	240	117	232

Using the provided **spreadsheet paper** create a spreadsheet solution to the problem.
You should indicate where all formulae should go and also include the correct formula.

Marks will be awarded for:

I. Layout and indicated formatting (4 marks)

II. Create totals for each employee (1.5 marks)

III. Create averages for each employee (1.5 marks)

IV. What methods would you use to display this information in an easy to read manner? (2 marks)

V. Create a formula that will indicate whether the amount for that month is above or below average and place it in its own column called Performance HINT If you can do it ... (3 marks)

NB: When indicating formatting use tags mentioning the range of cells
ie. Format Cells A10:B12 - Shaded Grey, Bold Text, Centred

OR

Question 3

With regard to spreadsheets, answer the following questions:

I. Where would you use a **LOOKUP** function and give a coded example of each one? (6 marks)

II. Where would you use an **IF** statement and give a coded example of one? (3 marks)

III. What is a compound **IF**? Outline some of the problems/errors you may produce if your compound formula is incorrect and how to troubleshoot them with an example. (3 marks)

Question 4

With reference to the library system at school, create

A top level DFD of the existing system using standard symbols (2 marks)

A DFD for cataloguing a new book into the library (6 marks)

Why do you use DFDs to model systems? (4 marks)

OR

Question 5

With reference to DFDs answer the following:

I. Describe the main parts/components of a DFD such as vectors, sinks and what they represent, what they are used for etc. Give examples of these in action/in use on a DFD.
(8 marks)

II. What other techniques can you use to model or gather information on an information system. Give a detailed explanation of at least two (2) techniques.
(4 marks)

END OF SECTION B

SAMPLE INFORMATION SYSTEMS EXAM
SEMESTER 2 (EXAMPLE 4)

		80

Write your name in the box above

INSTRUCTIONS

Reading Time ..... 10 Minutes
Working Time..... 2 Hours 30 mins.

MATERIALS ALLOWED

Calculator, pen, pencils, math aid, ruler.

This paper contains **THREE** sections:

SECTION A	10 Multichoice questions	10 Marks
SECTION B	11 Short Answer questions	40 Marks
SECTION C	9 Extended Answer questions	30 Marks

TOTAL 80 MARKS

ATTEMPT ALL QUESTIONS

SECTION A – MULTICHOICE

Attempt ALL questions by placing A, B, C, or D in the table below. Choose the answer that **BEST** completes the question.

Question	Answer
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

1. Which of the following is an example of a DECISION formula?

   (a) =MAX(H12,K16,N54)
   (b) =H16*B12+4
   (c) =IF(H6>5,2,1)
   (d) +SUM(A5:A12)

2. The System Unit of a computer is made up of a number of components including:

   (a) ALU, VDU & RAM
   (b) CPU & RAM
   (c) ALU, Control Unit, RAM and VDU
   (d) VDU and CPU

3. Which of the following would be considered EDITING rather than formatting?

   (a) Tabulation
   (b) Spell checking
   (c) Word wrap
   (d) Boldfacing

4. Which of the following is the correct sequence of events in the System Development Life Cycle?

   (a) Analyse, Acquire, Customise, Implement, Maintain
   (b) Review, Design, Code, Test, Document
   (c) Analysis, Design, Development, Implementation, Maintenance
   (d) (a) or (c)

5. Structured program design encourages the use of:

   (a) Modules
   (b) Control Structures
   (c) Single Entry/Exit
   (d) Al of the above

6. Which of the following is NOT a tool used in program design?

   (a) FlowCharts
   (b) Decision Tables
   (c) Structure diagrams
   (d) None of the above

7. In the case of system failure a(n) _____ can be used to restore lost or corrupted data files.

   (a) Formatter
   (b) Back up
   (c) Installer
   (d) Virus scanner

8. Which of the following would come under the umbrella of Computer ETHICS?

   (a) Software Piracy
   (b) Unauthorised use of computer hardware
   (c) Unauthorised access to information
   (d) All of the above

9. Which category of software would be most appropriate to develop an Airline Ticketing system?

   (a) System software
   (b) Data processing software
   (c) Applications software
   (d) Spreadsheeting software

10. Which of the following best describes the sequence of events in the Data Processing Cycle?

    (a) Analyse problem, Determine Queries, Collect data, Construct table, Enter data, Enter Query, Process data, Output Information, Update data
    (b) Construct table, Enter Query, Process data, Generate report
    (c) Gather data, Construct table, Enter Query, Generate report, Output information
    (d) Analyse problem, Collect data, Construct table, Enter data, Enter Query, Process data, produce report

End of Section A

[TOTAL – 10 Marks]

SECTION B – SHORT ANSWER

Write **Short Answers** to the questions below in the space provided. Be sure to use full sentences and examples and/or diagrams where appropriate.

Q11. Computer hardware can be divided into four (4) main categories. Draw a simple diagram showing how these categories exchange data. Give one example of each category.

[4 Marks]

Q12. Describe an error that a Spelling Checker would NOT identify in a word processed document. Be sure to give a specific example.

_____

_____

_____

_____

[2 Marks]

Q13. Describe some of the key features that distinguish Spreadsheeting software from Data processing software. Be sure to emphasise the strengths of software category.

_____

_____

_____

_____

[4 Marks]

Q14. Distinguish between the terms Data and Information by identifying the characteristics of each. Use an example to support your explanation.

_____

_____

_____

_____

[4 Marks]

Q15. Describe some of the key technologies (ie. types/categories/examples of devices) used to make a successful games machine at Timezone®. Mention why each is necessary.

_____

_____

_____

[4 Marks]

Q16. List four (4) methods used to establish computer security.

_____

_____

_____

_____

[4 Marks]

Refer to the following spreadsheet to answer question 17.

	A	B	C	D	E	F	G	H
1	Marksbook							
2			Assessment Items					
3	Student	1	2	3	4	5		Weighted Total
4	Jill	5	18	20	6	28		
5	Tom	10	4	21	5	27		
6	Jack	7	17	13	8	19		
7	Sam	8	15	22	7	30		
8								
9	Out of	10	20	25	10	35		
10	Average							
11	Weightng	5	5	20	20	50		
12	Highest Score							
13	Lowest Score							
14								

Q17. Show the formula that would be used at each of the following references:

i) B10_____ [1 mark]

ii) E12 _____ [1 mark]

iii) H5 _____ [3 marks]

[5 Marks]

Q18. List three (3) design tools (pencil on paper) that may be used to help describe an information system. Draw a simple diagram of each.

[3 Marks]

Q19. Using a suitable example, describe what an Expert System is and how it is used.

_____

_____

_____

_____

_____

[3 Marks]

Q20. Use the data shown below to answer the following:

0 1 0 0 0 0 1 0 **0 1 0 0 0 1 0 1** **0 1 0 0 0 1 0 0**

(a) Data is stored within computer components as _____ code. [1 mark]

(b) Two alternative codes used to represent this data include:

_____ or _____ [1 mark]

(c) Convert the code above into a text message. Be sure to show all working.
(HINT: A = 65) [3 marks]

[5 Marks]

Q21. Arrange the following computer systems from least to most in terms of their computing power.

PC, Super Computer, Personal Digital Assistant (PDA), Mainframe, Server, Laptop

[2 Marks]

End of Section B

[TOTAL – 40 Marks]

SECTION C – EXTENDED ANSWERS

Read each of the scenarios described below and answer the questions that follow. Be sure to use pencil for all design layouts. Use full sentences and examples where appropriate.

Scenario 1

Safe & Comfy Rentals would like you to design a small Information System module to help them calculate customer rental charges. The system must store the user's choice of car from the following – Small (Holden Barina), Medium (Mitsubishi Magna) or Large (Holden Commodore). Next, the number of days the car is to be rented should be entered according to the following schedule.

Rental Costs ($) per day

Period	Dates	Small	Medium	Large
1	1.5.96 - 13.9.96	61	70	74
2	14.9.96 - 20.12.96	68	80	86
3	21.12.96 - 17.1.97	93	102	109

Notes:

1. Your system should allow for people renting across several rental periods.
2. A discount of 5% should be deducted if a customer rents a car for more than seven (7) days.

Q22. What software tool would you choose to develop a prototype of this system? Justify your choice.

_____

_____

_____

_____

_____

_____

_____

_____

_____

[2 marks]

Q23. In the space below, plan out a clearly labelled, user friendly design for this system. Be sure to show all of the details of how the system will work.

[8 marks]

[10 Marks]

Scenario 2

Use the diagram below to answer questions 24 to 27.

INSERT DIAGRAM HERE

Q24. What name is given to this system description tool and who would be likely to use it?

_____

Q25. Label the four (4) key symbols used in the diagram above, ie. what do they represent? [2 marks]

Q26. Give an example system that this diagram could be describing. [2 marks]

_____

_____

Q27. Write a "walk through" description of this diagram using your example from Q26. ie. explain in a step by step format the activities being described by the diagram.

_____

_____

_____

_____

_____

_____

_____

_____

_____

[6 marks]
[10 Marks]

Scenario 3

The "Hire All" Computer company hires out IBM and Macintosh computers. They also hire various peripherals including printers and scanners.

Q28. In the space below, sketch a data entry screen (minimum - 15 fields) that the company could use to monitor their rental equipment. Be sure to show one (1) record to indicate the data format.

[5 marks]

Q29. Describe three (3) queries that the company would use to analyse their data. Be sure to use the database structured request format.

1. _____

2. _____

3. _____

[3 marks]

Q30. Select one (1) of your queries and sketch a suitable report format to display the answer. Be sure to show at least one (1) record in your report.

Query: _____

Report

[10 Marks]

END OF EXAM

SAMPLE INFORMATION SYSTEMS EXAMINATION
SEMESTER TWO (EXAMPLE 5)

Name: _____

Time Allowed 10 Minutes Reading
2.5 hours Working

Materials Supplied: Question paper, pad-paper for extended-answer section.

Instructions: No writing may be done during Reading Time.

This paper covers work studied during the whole academic year. This Examination is worth 20% of the total year's assessment, and covers Outcomes 1, 3-8. The Paper is divided into three sections, being

Multiple Choice:	25%
Short Answer:	35%
Extended Answer:	40%

All questions are compulsory.

For the **Multiple Choice** and **Short Answer** sections, you are required to complete all of the answers in the spaces provided on this paper.

In the **Extended-Answer** section, you are to write your answers on pad-paper (supplied). Ensure that the question number and sub-parts of each question are clearly indicated in the margin. **Start each question on a new page, and use both sides of your paper.**

If you need paper for working-out purposes, use pad paper (supplied), but do not submit this when handing in your paper at the end of the examination.

The Supervisors will *not* answer any questions about the questions in this Examination Paper, with the exception of unreadable parts due to printing errors etc. If you need a Supervisor at any time, raise your hand.

Marks may be deducted for untidy/unreadable work. Please read through all of your answers before submitting your paper, to ensure that they make sense, and that you have answered the question *asked*.

Calculators *may* be used in this Examination, but may *not* be shared.

If you finish early, go back through your paper.

Do not turn over until instructed to do so by the Supervisor

Section A: MULTIPLE CHOICE 25 marks

Select ONE answer for each question by circling the correct answer. Each question is worth one mark. If you are unsure of an answer, it is best to select one rather than leaving it blank.

1. The complex set of electrical circuitry that executes program instructions is called the
   a) register
   b) accumulator
   c) central processing unit
   d) bus line

2. Data is represented on a computer by means of a two-state on/off system called
   a) a word
   b) a byte
   c) the binary system
   d) RAM

3. An approach to increase speed of processing is
   a) CISC
   b) parallel processing
   c) serial processing
   d) CMOS

4. A computer that accepts handwritten input on a screen is a
   a) minicomputer
   b) mainframe
   c) desktop computer
   d) personal digital assistant

5. Another name for memory is
   a) secondary storage
   b) primary storage
   c) disk storage
   d) storage

6. Voice input devices convert speech into
   a) digital code
   b) bar code
   c) OCR-A
   d) optical marks

7. The name given to the measure of clarity of a monitor:
   a) resolution
   b) discrete
   c) SVGA
   c) pixel

8. DASD refers to
   a) disk storage
   b) tape storage
   c) field
   d) sorting

9. The speed with which a HDD can find data being sought is called the
   a) direct time
   b) data transfer time
   c) access time
   d) cylinder time

10. Which is *not* a benefit of secondary storage?
   a) convenience
   b) economy
   c) DAT
   d) space

11. In preparing a program, desk-checking and translating are examples of
   a) scripting
   b) testing
   c) planning
   d) documenting

12. Specifying the kind of input, processing and output required for a program occurs when
   a) planning the algorithm
   b) scripting (or coding) the program
   c) representing the algorithm in pseudocode, Nassi-Schneiderman flowcharts or some other form
   d) defining the problem

13. The highest level programming languages are called

a) 4GLs

b) assembly

c) high level

d) natural

14. The process of allocating main memory to programs and data, and keeping the programs and data in

memory separate from each other is called

a) memory protection

b) virtual memory

c) memory management

d) secondary memory

15. Loading the operating system into the computer is called

a) booting

b) interrupting

c) prompting

d) paging

16. Which of the following is a graphical shell?

a) UNIX

b) utility program

c) page

d) GUI

17. The preliminary investigation of a system project is also called a (n)

a) analysis survey

b) feasibility study

c) systems design

d) evaluation

18. The people who will have contact with the system, such as employees and customers, are

a) programmers

b) users

c) systems analysts

d) clients

19. Phase One of the Systems Analysis and Design Life Cycle approach to systems development involves

a) a system survey of the current (existing) system

b) a system analysis of the current system

c) data gathering

d) questionnaires to users of the current system

20. In a Data Flow Diagram, the final destination for data altered, created or changed within the system is called a

a) vector

b) file

c) process

d) sink

21. The scope and nature of the problem of a system is determined during

a) the system analysis phase

b) the system development phase

c) the preliminary investigation phase

d) the system implementation phase

22. A tool within a word-processing or desktop publishing application which provides synonyms is called a(n)

a) thesaurus tool

b) editing tool

c) form letter manager

d) indexing tool

23. The result of a formula in a spreadsheet cell is a

a) label

b) value

c) range

d) displayed value

24. The correct sequence of operations for the creation and use of a database management system is

a) design table(s), create screen form(s), input data, create query(ies), create report(s)

b) design table(s), input data, create screen form(s), create query(ies), create report(s)

c) create screen form(s), design table(s), input data, design query(ies), create report(s)

d) design table(s), design screen form(s), design query(ies), input data, design report(s)

25. A modem is
    a) an input device
    b) an output device
    c) a secondary processor
    d) a storage device

End of Section A

Section B: SHORT ANSWER 35 marks

Complete the answer for each question on this paper. Confine your answers to the spaces provided.

1. [4 marks]

When considering productivity software typically found on a recent desktop or notebook personal computer suggest the most appropriate type(s) for each of the following tasks:

(a) Preparation of an annual club report for the local netball club, showing a comparison of the budgets for last year and this year, and then the inclusion in the report of an attractive monthly newsletter to be sent to all members.

(b) Preparing a comparison report of sales of six different products in three different sales regions of a statewide retailer of car and truck tyres, and then the showing of the results to a group of 50 people at a sales meeting.

(c) Gathering employee attendance data from managers in a fast-food franchise which has 17 locations in the metropolitan area, and then writing a memo to the state manager of the business summarising the results.

(d) Storing data as it becomes available about motel room use (including customer name, date of arrival, expected date of departure and so forth), and later retrieving the room number for a certain customer by name or retrieving the numbers of all rooms currently available.

2. (a) [4 marks]

In the space below, represent in diagram form the hardware architecture of a modern computer system, naming each of the four categories of devices. Clearly indicate the direction of all data/information flow within the diagram.

(b) [2 marks]

For each of two categories of *peripheral* device, name the form of device and provide *two* actual examples:

Category of Device	**Examples**
1.	**(a)** **(b)**
2.	**(a)** **(b)**

3. [3 marks]
Define each of the following terms relating to computer hardware within the CPU:
ALU

bit

byte

word

MHz

Mb

4. [4 marks]
After a period of use, a disk (whether diskette or hard disk) becomes *fragmented*. Utility software is provided with an operating system (such as in *Windows 95*) which will defragment the disk. Draw a diagram to represent a fragmented disk, and briefly describe how a user might notice that the disk s/he is using is becoming more fragmented.

5. [6 marks]
Define the following spreadsheet terms, supporting each definition with an appropriate example:

(a) "what-if" analysis

(b) active cell

(c) function

(d) formula

(e) link

(f) range

6. (a) [2 marks]

Name *four* third-generation languages

(i)

(ii)

(iii)

(iv)

(b) [1 mark]

With regard to OOP, what is an object?

(c) [4 marks]

Translators are required to convert the code of any language higher than machine code into its binary form capable of being executed by the processor.

(i) Name the two forms of translator used to convert high-level languages into executable code:

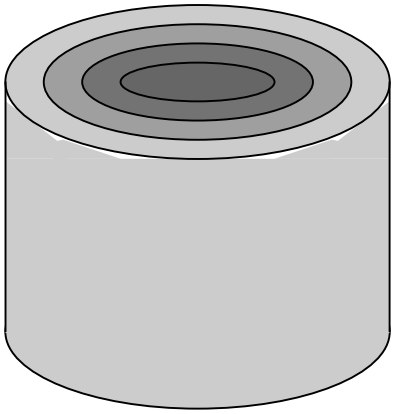
_____

_____

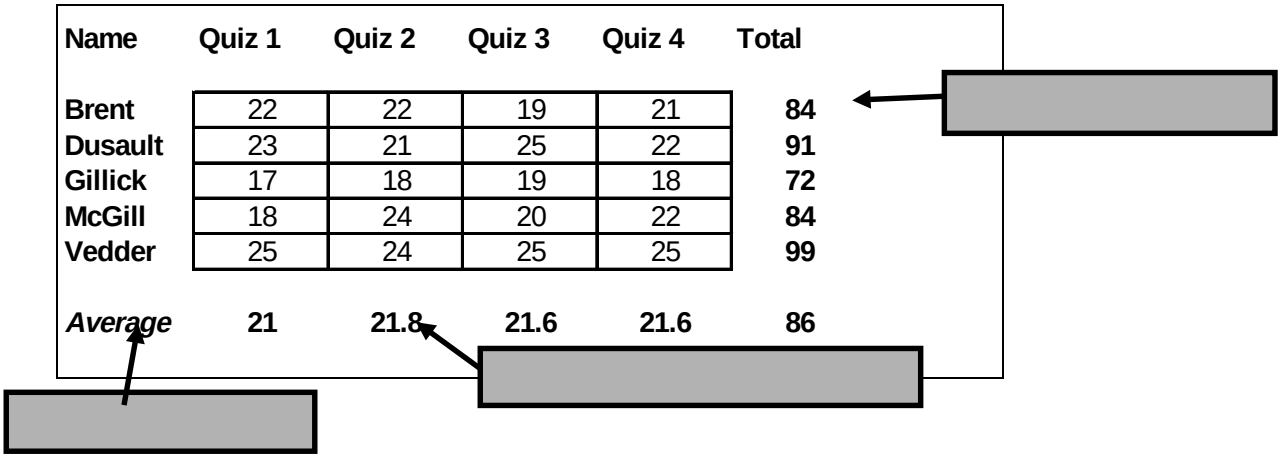
(ii) Complete the following statement by inserting the correct words or terms into the spaces:

The translator takes the S_____ C_____ written in English-like statements by the programmer, and converts it into an intermediate code called O_____ C_____. The linker then adds code derived from the language's L_____ and the final resulting code is executable by the processor.

7. [2 marks]
Label the following diagram representing the relationships between the hardware and user when using an operating system like *Windows* or *MacOS*:



8. [3 marks]
The following selection of a spreadsheet represents a set of various data. Certain cells have been indicated. In the space attached to each cell, record the *cell contents* of that cell, and then below each label, record the *data-type* of those cells:



Name	Quiz 1	Quiz 2	Quiz 3	Quiz 4	Total
Brent	22	22	19	21	**84**
Dusault	23	21	25	22	**91**
Gillick	17	18	19	18	**72**
McGill	18	24	20	22	**84**
Vedder	25	24	25	25	**99**
Average	**21**	**21.8**	**21.6**	**21.6**	**86**

End of Section B

Section C: EXTENDED ANSWER 40 marks

Record your answers to these questions on the pad paper (supplied). Start each question on a new page, and use both sides of the paper. Clearly indicate any rough working so that it will not be marked. Ensure that all question numbers (and sub-parts) are clearly indicated in the margins.

1. [8 marks]
The following article was published in the **Edith Cowan University Digest (**Vol. 8 No. 5, October 1996):

WORLD'S FIRST VIDEOPHONE AT ECU

A compact mobile phone with video communication, interactive banking, global positioning systems for personal navigation, and even time that appears to stop or slow down during international travel seems futuristic. However, thanks to an agreement recently signed between ECU and Motorola Inc in the USA a prototype could be as close as the end of next year. ECU has signed a Non-Disclosure Agreement with Motorola Inc. Phoenix, Arizona to develop the World's first interactive mobile multimedia communicator. The agreement was signed in June by Vice Chancellor, Professor Roy Lourens. Under the agreement, Motorola Inc. will provide access to a new technology - Complementary Gallium Arsenide (CGaAs) in the form of design rules and related device modules. The new technology makes it possible for the design of a very high speed, low power, mobile personal multi-media communicator. The ECU researchers will use this new technology to design a "Captain Kirk" type communicator as a follow-up to a major research grant of $500,000 obtained in 1995. The research team, led by Professor Kamran Eshraghian, Foundation Professor of Computer, Communication and Electronic Engineering, includes researchers from The University of Cambridge,The University of Reading, UK, and the University of Las Palmas, Spain. Professor Eshraghian has been responsible for a number of innovations in the Gallium Arsenide VLSI (Very Large Scale Integrator). "The new concept, known as 'Ring Notation', allows complex circuits to be combined in a simple way," said Professor Eshraghian. "This new methodology has been responsible for Gallium Arsenide being adopted in a number of research laboratories in Europe as well as Australia. "The heart of the communicator is a spatial high modulator (SLM) which contains "smart pixels" just 400 micron by 400 micron in size, allowing over 75,000 to be packed on a 1 centimeter chip.

"A smart pixel generally consists of an optical detector, an optical modulator and a coupling circuit

Professor Kamran Eshraghlan

capable of processing information. In this way, the smart pixel allows input and output to be in parallel, and is capable of local processing which is also in parallel.

"These tiny individual units are very simple and yet are able to perform high level operations when interconnected to form a network such as the personal mobile multimedia communicator. "Therefore new opportunities become available in advanced computing, machine intelligence and tele-communication such as videophones," he said. New technology facilitates the development of this new generation of low power very high speed mobile multimedia communicator for vision applications such as PC based visionphones and vehicle videophones. The first prototype of the device, which will be fitted with its own screen and tiny camera, is expected to be ready by the end of next year, according to Professor Eshraghian.

With reference to the article:

(a) Explain in simple terms *what* the new device will actually allow its user to use it for. Provide examples of its possible uses to a professional worker of some kind.

(b) What implications do you believe this form of device will have upon the personal computer within the next few years?

2. [8 marks]

With the introduction to multimedia, the need to store and process very large digital graphic, sound and video files, and that new operating systems and application software now require considerably more storage than ever before, considerable research and development have taken place in the past few years, resulting in new storage technologies including CD-R, WORM, DAT, ZIP drives, removable hard drives, and MO drives.
Provide details of any *one* of the new storage technologies mentioned in the previous paragraph in terms of its cost relative to current technologies and likely uses in personal computers in the near future as replacements for current secondary storage devices.

3. [8 marks]

EITHER

Explain, with the use of an appropriate example *not being the one you did for your Task 3 (Spreadsheet) earlier this year*, the concept of **linking** and how it works with two or more spreadsheets. [HINT: Diagrams may assist your answer].

OR

Explain, with the use of appropriate examples, the concept of the application of **macros** to a spreadsheet. Ensure that you explain what a macro *is* and *does*. [HINT: Diagrams may assist your answer].

4. [8 marks]

Assume that it has been decided by the School administration that the current Seminar Rooms in the Resource Centre are to be refurbished for use by Year 11 and 12 students as computer workrooms, and that eight fully equipped multimedia PCs are to be installed, along with a monochrome laser printer, a 600 dpi colour inkjet printer, a colour and OCR scanner, and links to the World Wide Web.
Each PC will be a Pentium 133 Mhz machine with a 15" monitor, with 2.7Gb of Hard disk storage, and a CD-ROM drive. All PCs and peripherals will be networked, and connected to the other networks in the School.
What should be done in terms of setting out the rooms in order to ensure high application of correct ergonomics? You may decide to include a diagram to represent layout etc.

5. [8 marks]

Discuss the following statement:

> Some software is simply just too expensive for the average personal computer owner to buy. Besides, I only copy a friend's disk for personal use on my computer, or otherwise I use shareware programs I've downloaded from the Internet for my personal use."

End of Paper

INFORMATION SYSTEMS: SEMESTER 1 EXAM REVISION INFORMATION

Use this document as a revision template for your Semester 1 Exam.

Background

I. Reference article – copy available on request for study purposes. Must be returned

II. Qualities of information
   A. timely
   B. accurate
   C. useful
   D. cost effective

III. Components of an information system

IV. Examples of information vs data

V. Factors increasing the need for information systems

VI. Use by different levels of management

VII. Computer based information systems
   A. TPS
   B. MIS
   C. DSS
   D. Expert
   E. Integrated

Analysing an Information System

I. Methods of describing an information system
   A. general description of IPO
   B. rich pictures
   C. DFDs – information flow

II. Information gathering techniques
   A. interviews
   B. documents
   C. observations
   D. work shadow

III. DFDs
   A. definition
   B. symbols – flows; files; processes; sources and sinks
   C. rules for drawing DFDs
   D. drawing a DFD from a system description

I. Technologies
   A. examples of different technologies used by information systems to gather, store, process and output data / information
   B. data entry forms, scanners, hard drives, CDROM, databases, spreadsheets, ergonomic furniture, security devices ...
   C. manual vs electronic technologies

II. Personnel
   A. responsibilities of different people in using an information system
   eg. managers (see ref. doc.; library staff, sports club administrator ...)

III. Social / Environmental impact of electronic information systems
   A. privacy
   B. security
   C. backup
   D. health issues
   E. unemployment
   F. health issues

IV. Progress Reports – Evaluation

V. Self Appraisal
   A. resources
   B. quality of work
   C. areas of improvement
   D. ability to work, communicate and coordinate with others
   E. future goals

Spreadsheet Skills

I. Components
   A. rows, columns, cells, sheet, workbook

II. Data types
   A. labels, numbers, formulae

III. Data formats
   A. currency, decimals, percent ...

IV. Cell Referencing
   A. single cell, row, column
   B. group
   C. absolute vs relative

V. Developing a formula
   A. construction – manual (syntax) vs button
   B. type – linking, calculation, decision
   C. function – sum, average etc.
   D. lookup tables

VI. Spreadsheet design and layout
   A. planning sheet – symbols
   B. construction and testing (validation)

VII. Charting / Graphing
   A. components
   B. types

VIII. Sorting

IX. Examples – Marksbook & Real Estate Commissions

Database Skills

I. Data processing – definition

II. Examples – manual and electronic

III. Query construction

IV. Components
- A. file
- B. record
- C. field
- D. data item

V. Views
- A. tables
- B. forms
- C. query
- D. report
- E. purpose of each of the above

VI. Flat file Vs Relational
- A. why relational dbs are necessary

VII. Systems analysis
- A. determine questions to be answered
- B. data to be collected
- C. format of data
- D. format of report
  1. page orientation
  2. header / footer contents
  3. suitable field selections

VIII. Data entry form design
- A. field names
- B. check boxes
- C. data types
- D. field widths / abbreviations
- E. formatted examples
- F. layout alignment

IX. Developing a formula
- A. construction – manual (syntax) vs button
- B. type – linking, calculation, decision
- C. functions – sum, average etc.
- D. lookup tables

X. Spreadsheet design and layout
- A. planning sheet – symbols
- B. construction and testing (validation)

XI. Charting / Graphing
- A. components
- B. types

XII. Sorting

XIII. Examples – Marksbook & Real Estate Commissions

Analysing an Information System Description

- Broader knowledge of different information systems
- Identify topical issues associated with current information systems
- Identify effectiveness of system
- List and explain technical terms

Theory Exam Format

- Time: 2 hours – 10 minutes (reading)

I. Three (3) Sections
   - A. Multiple Choice
   - B. Short Answer Questions
   - C. Design & Analyse task

- Content as per above topic list

INFORMATION SYSTEMS: SEMESTER 2 EXAM REVISION INFORMATION

Use this document as a revision template for your Semester 2 Exam

Outcomes

Outcome 1: Use investigation, communication and information processing skills to collect and analyse information, document processes and make presentations clearly and concisely.

Outcome 2: Work both within a group interacting effectively with others, and individually, and demonstrates a knowledge of self management skills.

Outcome 3: Understand the requirements for, and design principles of, information systems.

Outcome 4: Describe relevant technologies and how they are utilised by information systems.

Outcome 5: Describe the nature and properties of a range of computer based information.

Outcome 6: Describe the social and environmental impacts of information systems.

Outcome 7: Identify, evaluate and use appropriate tools relevant to the design and development of an information system.

Outcome 8: Use the design, make, appraise and market process to solve teacher directed design problems involving information systems.

Task One – Describe an Information System

Content covered

I. Reference article – copy available on request for study purposes. Must be returned

II. Qualities of information
   - A. timely
   - B. useful
   - C. accurate
   - D. cost effective

III. Components of an information system

IV. Examples of information vs data

V. Factors increasing the need for information systems

VI. Use by different levels of management

VII. Computer based information systems
   - A. TPS
   - B. MIS
   - C. DSS
   - D. Expert
   - E. Integrated

VIII. Methods of describing an information system
   - A. general description of IPO
   - B. Rich Pictures
   - C. DFD's – information flow
   - D. structure diagram
   - E. storyboard
   - F. pseudocode

I. Information gathering techniques
   A. interviews
   B. documents
   C. observations
   D. work shadow

II. DFDs
   A. definition
   B. symbols – flows; files; processes; sources and sinks
   C. rules for drawing DFDs
   D. drawing a DFD from a system description

III. Technologies
   A. examples of different technologies used by info systems to gather, store, process and output data / information
   B. data entry forms, scanners, hard drives, CDROM, databases, spreadsheets, ergonomic
   C. furniture, security devices ...
   D. manual vs electronic technologies

IV. Personnel
   A. responsibilities of different people in using an information system
   eg. managers (see ref. doc.; library staff, sports club administrator ...)

V. Social / Environmental impact of electronic information systems
   A. privacy
   B. security
   C. backup
   D. health issues
   E. unemployment
   F. health issues

VI. Progress Reports – Evaluation

VII. Self Appraisal
   A. resources
   B. quality of work
   C. areas of improvement
   D. ability to work, communicate and coordinate with others
   E. future goals

Task Two: Hardware and Software Requirements

Content covered

I. Computer System Components Notes – Overview (File: SYSCOMPS.DOC)

II. Ref article – Overview of Computer Components

III. Computer System Component Summary – 'Total Recall Activity–
   A. H/W, S/W & L/W
   B. H/W – input, system unit, processor, output
   C. Examples of each category

IV. Information processing components – input, processing, output and storage

V. Data – raw material; Format – numbers, words, images, sounds

VI. Computer system key advantages – storage capacity, access speed, consistency

VII. Categorising Computer Systems – pc, server, mainframe, supercomputer, hand held, palmtop, pen, pda, desktop, tower, workstation

VIII. Software – systems vs applications

IX. System – OS – functions

X. Graphical user interfaces (GUI) – purpose and examples

XI. Applications S/W

XII. Information processing tasks

XIII. Case Studies – H/W & S/W components, eg. Library, D&T System
   A. server
   B. terminals
   C. stand alones
   D. input devices
   E. output devices
   F. aux storage devices
   G. communications
   H. peripherals
   I. system software
   J. applications software

XIV. Number Systems and Storage Capacity Notes (File: STORAGE.DOC)
   A. Smallest unit of information
   B. How computers store data – binary / ASCII
   C. Number Systems – Binary, Hexadecimal, Decimal
   D. Conversion
   E. Storage devices and capacities
   F. Determining storage requirements for various information systems eg. A4 page,
   G. White Pages of Telephone directory

Task Three: Spreadsheet Skills

Content covered

I. Components
   A. rows, columns, cells, sheet, workbook

II. Data types
   A. labels, numbers, formulae

III. Data formats
   A. currency, decimals, percent ...

IV. Cell Referencing
   A. single cell, row, column
   B. group
   C. absolute vs relative

V. Developing a formula
   A. construction – manual (syntax) vs button
   B. type – linking, calculation, decision
   C. function – sum, average etc.
   D. lookup tables

VI. Spreadsheet design and layout
   A. planning sheet – symbols
   B. construction and testing (validation)

VII. Charting / Graphing
   A. components
   B. types

VIII. Sorting

IX. Examples – Marksbook & Real Estate Commissions

Task Four: Database Skills

Content covered

I. Data processing – definition

II. Examples – manual and electronic

III. Query construction – field, relationship, SDI, joiner

IV. Components
- A. file
- B. record
- C. field
- D. data item

V. Views
- A. tables
- B. forms
- C. query
- D. report
- E. purpose of each of the above

VI. Flat file Vs Relational
- A. Why relational dbs are necessary

VII. Systems Analysis
- A. determine questions to be answered
- B. data to be collected
- C. format of data
- D. format of report
  1. page orientation
  2. header / footer contents
  3. suitable field selections

VIII. Data Entry Form design
- A. Field names
- B. Check boxes
- C. Data Types
- D. Field widths / abbreviations
- E. Formatted examples
- F. Layout alignment

IX. Examples – Basketball Club membership and Ball ticketing and photo orders

Task Six: Comprehension

Content covered

- Broader knowledge of different information systems
- Identify topical issues associated with current information systems
- Identify effectiveness of system
- List and explain technical terms

INFORMATION SYSTEMS
SEMESTER 2 EXAM REVISION QUESTIONS #1

1. Give an example of two (2) non-computer based systems. What do they have in common?

2. List three (3) methods /tools used when describing an information system. Identify the advantages of any one method / tool over another.

3. What are the key characteristics of information. How does it differ from data?

4. Explain what is happening in the following diagram by quoting a specific example.

INSERT DIAGRAM HERE

5. Describe the manual vs electronic technologies that were/are being used to manage the book borrowing process.

6. What societal/environmental issue are smart cards intended to affect. Explain with an example.

INFORMATION SYSTEMS
SEMESTER 2 EXAM REVISION QUESTIONS #2

1. Name three (3) types of data that can be stored in a spreadsheet

_____

2. Identify five (5) formats that can be applied to data in a spreadsheet.

_____

3. Draw a simple "times tables" spreadsheet plan. Explain what an absolute reference is, where and why it would be used?

1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Formulas

1				
2				
3				
4				

4. Identify three (3) different types of spreadsheet formulae along with an example of each.

_____

5. Draw a spreadsheet plan that allows the user to enter their weekly pocket money and the percentage saved per week.

   The spreadsheet should then be able to calculate the amount of money saved in x years. (Draw your plan on the back)

   Name two (2) prediction type questions that this spreadsheet could be used to answer.

INFORMATION SYSTEMS
SEMESTER 2 EXAM REVISION QUESTIONS #3

1. A company called HIRE - ALL computers specialises in hiring out computers such as PCs and Macintoshes. They also hire out peripherals such as disk drives, OHP panels, printers and scanners. They have asked you to draw up a plan for a relational database to record the following data:

   (a) The items that they have for hire
   (b) The suppliers of their equipment
   (c) A customer file
   (d) A current on-hire file
   (e) An overdue file

   Assuming that all equipment is hired out on a daily basis, show:

   I. The different tables that would be used to store this data
   II. The fields contained in each table including approximate field size
   III. The key (linked) fields from each table

2. Show a typical Query in d/b structured request format that could be asked of the above database along with a suitable report format.

3. Identify three (3) societal/environmental issues associated with the use of information systems. In each case describe some measures that can be taken to minimise any negative effects.

4. Identify three (3) types of Secondary Storage devices and discuss how they differ. Give advantages and disadvantages of each.

5. Explain in detail the phases of the System Development Life Cycle. Be sure to indicate the tools and outcomes of each phase.

   Clearly indicate what Prototyping is and where it fits into the SDLC.

RECORDING AND REPORTING

Journal

As part of your learning experience it is important to reflect on what you have done and achieved. This section of your workbook is designed to record your feelings about your learning experience.

At least once per week you should make an entry in your Journal. This could be something you've learnt, something you did without help or a great idea you've had. These thoughts will become very useful when you are completing a *Self Appraisal Form.*

Your teacher may look at this as evidence of your self evaluation. Give your comments some serious thought and don't be afraid to be honest.

Wk	Date	Journal Entry

Student Self Appraisal Form

A fundamental part of any task in our society is *appraisal* ie. assessing the work that has been done to see if it meets the required standard. If this part of a task were not performed it could lead, in the worst instance, to a life threatening situation. For example, consider the bridges that have been built across the electrified railway. If the work has not been appraised and appropriate safety standards maintained, a collapse might occur killing innocent drivers or pedestrians.

In the school environment, the job of appraising student work is often left to the teachers and, in doing so, the students are deprived the opportunity of learning how to appraise their own work. In an attempt to give you this opportunity you will be asked to complete a *Self Appraisal* form (a sample of which can be seen on the next page) for each of your assessable tasks.

Your completed Self Appraisal form will contribute to your assessment for each Common Assessment Task.

Finding Errors

If, during your self appraisal, you spot any errors and mark in the corrections you won't be penalised for them. *No need to do a reprint!* This will help us save paper and help you save time.

Remember, its another *string to your bow* having well developed *appraisal* skills!

Take a look at the sample on the following page and note the type of answers that are considered suitable. Your teacher will model some examples during the subject.

STUDENT SELF APPRAISAL FORM

S A M P L E O N L Y

Now that the end of this learning activity draws near, take some time to reflect on your experiences by answering the following questions. Your 'Journal' should be a useful reference.

Resources

List the resources you used during this learning activity. eg. Time, People, Books, Audio Visuals, Hardware, Software, Other ...;

Mrs Smith helped me find some resources on my topic. I used the book title 'Space Travel' by T. Snoden. I used the workbook notes from section 7; I took about 3 hours typing up the assignment using the IBM 386 sx computer with VGA colour screen and the Microsoft Works 2 program for DOS

Design

Make a comment about your effort at *designing* the final product. Did your product match your initial design? Why/Why not?

I followed the design guidelines set out by Mr Stephens but changed the headings and fonts to suit my topic. Initially I planned to take up about 3 pages but when I formatted all my typing to make it look good it ended up taking 4 and a half pages.

Production

Identify some of the procedures you experienced in the production of your work.

Putting in a footer was a bit tricky. I had to go to choose the header and footer command from the print menu and then use header and footer paragraphs. Then I added the standard footer details in the footer line at the top of the document according to Mr Stephen's guidelines.

What difficulties did you have with any of the procedures?

One problem was in remembering to save my work to the A drive. On the schools' network you can't save onto the F drive and so I kept coming up with an error until Mr Stephens told me to change to the A drive. Simple when you know how.

Were there any difficulties working with others? (If so what were they?)

Even though we had to work on our own for this assignment I got a lot of help from my friends which was good. However some of the boys seem to like showing off if they know the answer by yelling out across the room. How un-cool!

Goal Setting

If you were to start this learning activity again, what would you do to overcome any of the difficulties?

Most of the difficulties would be overcome with experience but I could have saved a bit of time by looking through my workbook for some answers rather than waiting for Mr Stephens to get to me.

STUDENT SELF APPRAISAL FORM

Now that the end of this learning activity draws near, take some time to reflect on your experiences by answering the following questions. Your 'Journal' should be a useful reference.

Resources

List the resources you used during this learning activity. eg. Time, People, Books, Audio Visuals, Hardware, Software, Other ...;

Design

Make a comment about your effort at *designing* the final product. Did your product match your initial design? Why / Why not?

Production

Identify some of the procedures you experienced in the production of your work.

What difficulties did you have with any of the procedures?

Were there any difficulties working with others? (If so what were they?)

Goal Setting

If you were to start this learning activity again, what would you do to overcome any of the difficulties?

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