

**Due Date: Friday the 18th April, 11.55 pm**

**Strict penalty for lateness: 10% per day.**

This assignment is to be completed in pairs. Please find another student to work with, and submit **one** assignment for both of you.

This assignment is worth **20% of your final grade**.

You will be assigned a systems development project, and given a brief description and some information about the resources you have available to help you in performing the analysis of the current system. **Your task is to write a plan for how you will go about the analysis, modelling and high-level design phases of the project. You are NOT required to address the systems development, rollout or testing phases of the project.**

Your plan should include at least the following:

- A description and explanation of any assumptions you have made in your project planning.
- A system request document.
- A technical feasibility analysis.
- A WBS, Gantt or PERT chart for the analysis, modelling and high level design part of the project.
- A recommendation about the **most appropriate systems development methodology** for the project (note that this will also affect your WBS, Gantt or PERT chart) and **reasons for the recommendation**.
- A **description of the team** you will need to perform the analysis, modelling and high level design, the roles each team member will play and the **reason they are needed**.
- A requirements gathering plan. How will you gather requirements and why, and which requirements **do you need** specifically?
- The suite of diagrams and documents that you will produce (you **do NOT need to produce the actual diagrams**, you are only deciding which ones **will be produced at a later stage**) and **why**, the role each will play and the approach you will use to ensure consistency and balance between them. You should also describe the different **levels of detail** in the diagrams (conceptual level, logical level).
- A stakeholder engagement plan. **Who are the stakeholders**, how will you involve them in the analysis, modelling and design process, and **why**?
- Anything else that you consider relevant or important for the analysis, modelling and design phase of the project.

You **can make any necessary assumptions if relevant information is not given in the project brief**, but please ensure that you **describe these assumptions** in your report (first item above).

We will not be covering this material in any detail in the lectures. You will need to do some background reading and investigation **in order to inform yourself about what kinds of detail should be provided in a plan of this kind**, and what is involved in each of the required items in the plan. You may find some further information in the readings and exemplar documents on Stream. Please ensure that you cite any work that you use in your report, and include references. Any appropriate citation style is acceptable, as long as **it is consistent**.

You **will also need to do some background reading and investigation in the specific domain area of your project brief**, so that you are familiar with the kinds of issues that are relevant in design of systems in that domain. You may consider looking at existing systems that perform a similar function, as well as general investigation of the topic in question.

Your report should be approximately **4000 to 5000 words long**, and should also include relevant diagrams, tables etc. The report is worth 20% of your final mark.

### **Marking Scheme**

Your report will be marked on the following general criteria:

- Good report presentation with logical layout e.g. table of contents, page numbering, section and sub-section headings, correct referencing if needed.

Each specific section of the report will be marked on the following criteria:

- Demonstration of understanding of the topic and overall goals, purposes, benefits and limitations of systems analysis, modelling and high level design **in relation to the assigned project and the assigned organisation's goals.**
- **Providing justification for decisions made** e.g. for something such as the Requirements Gathering Plan; why are the techniques for gathering requirements in your particular project are a good approach for that particular project?
- Evidence of reading beyond the textbook.
- Correctness and coherence of the content.

The spread of marks is as follows:

Overall General Criteria	2
System Request Document	1
Technical Feasibility	2
WBS, Gantt or PERT	2
Systems Development Methodology	1
Team	2
Requirements Gathering Plan	3
Diagrams and Documents	3
Stakeholder Engagement	2
Demonstration of understanding of the topic	4
Providing justifications for decisions made	3
<b>TOTAL</b>	<b>25</b>

#### Design Briefs

You are to address one of the projects listed below, according to the first letter of your family name.

No	Family names beginning with	Project Description	Organisational Details	Resources Available
1	A	You have been engaged by a local primary school to redevelop their system for student enrolments and records. They have a 15-year-old computerised system which handles student admissions, and several different spreadsheets and paper files for managing the records that relate to current students, including records of absence, class membership and student reports. They would like a single system that can handle all of these things.	The primary school is decile 8 and has 500 students and 10 teachers. There are no dedicated IT staff. There are three administrative staff, two of whom are proficient users of basic applications like word processors and spreadsheets. Some of the teachers are also experienced in computer use, but none of the staff have knowledge of system development.	You have access to the existing computer system, but there is no documentation of any kind. One of the administrative staff is familiar with the system and can show you how she uses it. You also have access to all the spreadsheets and paper documents.

2	B – C	A voluntary organisation of older people who are helping each other to learn about technology currently use a manual system to keep track of the workshops they run each month across Auckland, and the members who have enrolled in each course. They would like to automate this system in a very simple and straightforward way, as many of their members will need to be able to use it with very little training.	This large organisation operates across New Zealand and has over 20,000 members, about 5,000 of whom are based in Auckland. They have no staff of any kind, and the organisation is run by volunteers who are all over the age of 65 and have varying degrees of technical knowledge. They offer about 50 workshops and run the most popular 30 of these each month, depending on enrolments.	You can access the existing paper documents that are used, and volunteers are available to show you how they perform the workshop organisation task on paper.
3	D - E	A local council has engaged you to develop a mobile phone tool that will allow members of the public to report on criminal, maintenance or safety issues that occur in their community. They would like users to be able to upload pictures and descriptions of these issues so that they can respond to them, and also gather information about the incidence of such issues.	The medium-sized local council serves a combination of urban and rural areas over a wide geographical region and range of residents, with a total population of approximately 100,000. It has a small IT team containing 3 developers and a manager. These staff are occupied full time in maintaining and supporting the existing internal system to maintain the council's records, which was developed in house many years ago and relies on their knowledge. They have no experience of mobile application development.	You have access to user documentation about the existing system as well as the code, but there is no technical documentation. The plan to create the new application was the idea of one of the local councilors who had seen a similar application used overseas, but has not been documented or described.
4	F – I	Five different charities working in the area of cancer prevention and treatment have recently amalgamated into a single charity. Each charity currently has its own system for tracking details of potential and actual donors, donations and correspondence with potential donors to solicit donations. You have been engaged to manage the process of creating a single system for the new amalgamated charity.	<p>The five charities range from a very small, local charity that uses a simple spreadsheet system and has no IT staff, to two quite sophisticated systems, used by the largest two charities in the group. Both of these large charities use an external IT company for system maintenance and support when needed, and the systems cover the full range of activities required. The final two charities have smaller systems, one is a system for generating and tracking mailings to potential donors, but not donations.</p> <p>The other has a system for tracking donations and donor addresses, but that charity does not conduct mailouts to donors so does not have that functionality in their system.</p>	You have access to the systems of each of the five charities, including the spreadsheets and documents that they use and generate. Both of the systems of the two large organisations were developed relatively recently and are well documented. You have access to user and technical documentation for these. The remaining two systems have user documentation but not technical documentation, and staff are available to show you these systems if required.

5	J - K	A small web company would like to redevelop and extend the web site that they created some years before, providing details of tourist facilities around New Zealand. They recently carried out a survey of users and discovered that many users do not	The company has 10 employees, consisting of 1 director, 1 marketing and sales manager, 1 administrator and 7 technical staff, including 3 programmers, 1 database specialist, 1 web designer and 2 consultants. The staff are all familiar with the	The existing application has full technical documentation, business case and feasibility documentation. There is limited user documentation. You have access to all of this documentation and the site itself.
		find their application useful, and that they would like a much wider range of functionality than the current, fairly simple site contains. They are anxious to get the new site up and running as soon as possible, to beat the competition.	existing application.	
6	L	You have been engaged to create an application to connect environmental scientists with each other, and with the public. The application is intended to allow scientists and members of the public to discuss and debate topics of current importance to society, and to allow scientists to ensure that their research is more closely connected to the needs and priorities of members of the public.	The project is being funded by a global consortium of environmental scientists. They have no employees themselves, but have received funding from the World Bank to create the application.	There is no relevant technical or user documentation, as it is a new system. However, you do have access to the funding application document, which describes the main goal of the project.
7	M	A chain of garden centres has an old system that manages stock and sales. They have recently purchased a landscape design business which uses an off the shelf garden design application. They would like to build a new application that is up to date and that combines and integrates the functions of both of these other systems. The new system should allow the garden centre to track its sales, deliveries, stock levels and purchase orders, provide tools to help garden designers to do their designs and to order the stock necessary for the newly designed gardens to be constructed.	The chain consists of 10 garden centres across the North Island of New Zealand. All of these garden centres contain only sales and management staff, and there are no IT staff. The landscape design business employs 30 people and provides services across New Zealand. They have two technical staff who perform basic computer maintenance as well as managing other technical aspects of the landscaping equipment (e.g. electronic measuring devices).	The off the shelf garden design application has excellent user documentation, but the vendor will not provide access to any technical documentation. Several staff are expert users. The stock and sales system is poorly documented, and in some cases the staff have by-passed the inefficient system with spreadsheets and paper forms.

8	N – Q	Two government departments are to merge. The first manages land subdivision and transfer, the second manages road construction and design. They each maintain entirely separate systems. You have been given the task of integrating the two systems to create a single database and application in which duplicated parts of the systems are eliminated and new, integrated processes created.	The government departments have 200 staff each, and each has a small IT department of 5 maintaining its own system, consisting of a mixture of developers and business analysts. There are also two contracting staff who work across both systems on database administration.	Both systems are about 15 years old and only partial documentation exists. There are paper data models describing the databases, and lists of application names, but the applications themselves are not documented and there is no user documentation, as the systems are for in-house use and training is passed on to new employees. You have access to the source code of both systems.
9	R	An environmental protection agency currently maintains a system of air, ground and water sensors around New Zealand to measure a number of different environmental characteristics including temperature,	The agency has approximately 150 staff, including a technical department that is responsible for managing the sensors containing 3 staff. They are part of a larger government department that has an	The maintenance of the sensors is documented with a small access database which contains name, coordinates, identifier and dates of last visit. The application that receives the readings and creates the text file is not
		humidity, rainfall, pollution, pollen levels, sea salinity and water sedimentation. They currently have a very basic system that receives readings from each of these sensors and stores them in a series of text files. They would like to develop a more sophisticated system that stores the readings in a database and provides analysis, mapping and tracking tools that can be accessed over the web by scientists, farmers, decision makers etc.	IT group containing 4 staff who work on an entirely separate system focussed on human resources and staffing across several agencies, including the environmental protection agency.	documented but you have access to the source code.
10	S - V	The farmers who own three neighbouring dairy farms have decided to create a consortium and run their three farms as a single business unit. Two of the three have been using different off the shelf farm management software for different individual aspects of the farm (for example, tracking of herd genetics; feed ordering; milk sales), but they would like to create a single application that can manage the entire process across all three farms.	None of the farms have any dedicated IT staff, but two of the three farmers are confident computer users and enjoy using technology. The three farms are all similar size, mainly run by a family with 3 or 4 staff to help in running the farm and milking etc.	The two off the shelf systems have full user documentation and they are available for you to use. However, the vendors do not provide access to technical documentation or code. You have access to all paper documentation being used by all of the farmers.

11	W - X	<p>A group of five entrepreneurs have decided to develop an automated process to support authors in self-publishing their books in New Zealand in an attempt to provide local books more cheaply. They have spoken to some writers' groups around Auckland and are ready to start work on development of an application that can support the selfpublishing activity.</p> <p>While there are some methods for publishing books already available (e.g. Amazon, lulu), they hope to create a process that is simple, streamlined and targeted to creating books by NZ authors for NZ readers.</p>	<p>The entrepreneurs have some technical knowledge, but are not developers or technical experts. They do not employ any staff but have funding available for development of the application.</p>	<p>The systems that are currently available for self-publishing are available on line with user documentation. Technical documentation is not available.</p>
12	Y - Z	<p>You have been engaged by a large software company to design a competitor to Google Maps that would particularly target the phone and tablet markets. The company believes that Google Maps does not provide as much mobile-specific functionality as it might, and thinks that they can serve demand for a product in this space.</p>	<p>The company employs thousands of developers and other IT professionals globally, including specialists in web and mobile technologies.</p>	<p>The Google Maps product is available on the internet, but there is no technical documentation that you can access, and very little user documentation. There are also other similar products available, with varying levels of documentation.</p>