# Homework 1: Systems analysis methods

1. The software development life cycle is often shown in graphical form as shown below:

Maintenance

Analysis

Evaluation

Implementation

Design

(a) Why is it shown as a never-ending cycle? [1]

Because overtime a software may need to be changed up and made better o have more features added to so will have to undergo development again. Also the first time a software is made might not be the final product, possibly just a prototype or first version.

(b) Fill in the table to show at which stage each of the following steps occurs.   
The first one has been done for you. [5]

|  |  |  |
| --- | --- | --- |
|  |  | **Stage** |
| 1 | The systems analyst interviews people who will use  the software | Analysis |
| 2 | A description of how the data will be processed is drawn up | Design |
| 3 | User and technical documentation is written | Design |
| 4 | The user tests the system to make sure it does what it is supposed to do | Evaluation |
| 5 | Users fill in questionnaires about what they think the problems are with the current way of doing things | Analysis |
| 6 | A test plan is drawn up | Design |
| 7 | The software is modified to allow a new method of  inputting data | Implementation |
| 8 | The systems analyst observes how the current system works | Analysis |
| 9 | A new menu item is added to the software because of a change in user requirements over time | Maintenance |
| 10 | A programming language or software package to be used for implementing the system is chosen | Analysis |
| 11 | The software is coded and tested | Implementation |

2 Mark each of the following statements as TRUE or FALSE. [4]

|  |  |  |
| --- | --- | --- |
|  | **Statement** | **True or false?** |
| 1 | The Waterfall software development life cycle uses prototyping | False |
| 2 | A prototype can either be a throw-away or can be refined through several cycles | True |
| 3 | The Spiral model is suitable for small projects | False |
| 4 | A lifecycle model which uses prototypes is more likely to result in what the customer actually wants | True |
| 5 | Pseudocode and flowcharts are used in the Analysis stage of the software development life cycle | False |
| 6 | A model using prototypes is time-consuming because of the process of getting feedback, and is therefore more costly than other types of model | True |
| 7 | The Agile model is developed in rapid incremental cycles, with each version building on the previous one | True |
| 8 | In the Agile model, customers, developers and testers frequently interact with each other | True |

3. A software company, TOPS, has been asked to build a large complex website for a rapidly expanding company, Acme Electronics Ltd. Acme feels they have outgrown their current website and they want to have a completely new website built, with a new design and much more functionality. TOPS has been recommended to them because it has a team of very experienced designers and programmers.

Describe the **waterfall** and **spiral** software development models. Discuss the advantages and disadvantages of each.

State which you would recommend for this project, giving reasons for your answer.

In this question you will be marked on your ability to use good English, to organise information clearly and to use specialist vocabulary where appropriate.

The waterfall model is where each stage of development is completed and documented before the next is begun. After the initial analysis phase, the customer is excluded and not going to be in contact with the developer until end product is produced and presented. Spiral model however produces a prototype and the customer and developer are in constant contact to communicate any changes in deas etc. Once a prototype is made, it is reviewed and then a new prototype is made and so on until a final satisfied product is produced.

The advantages of waterfall model is that it is the simpler to use and straightforward. It is also generally good for small projects because the product can be produced fast enough before the customer changes their mind on the idea.

The disadvantages of waterfall model is that if the project for Acme Electronics is big, the chance of the customer changing their mind on what should be in the software is higher. This is because it will take longer for the project to be made and since the customer and developer are not in contact during development, once the software is complete, the customer may not be satisfied and the developer has to start over. Therefore the main disadvantage is that the idea of the software must be very clear before it is worked on because the wrong product might be made.

The advantages of spiral model are that since a prototype is made, which doesn’t take a lot of time so that if there are any issues that the customer wants to address, it can be done so early on and fixed before endproduct is made. This means the end product is more likely to be what the customer wants because the customer is taking part in identifying what needs to be implemented. The steps in each stage is well defined so it is easy to manage.

Disadvantages may include the fact that this is very time consuming since multiple prototypes need to be made. Since it takes longer time it might also be much more expensive, therefore this model is not suitable for small projects.

For this project, I would recommend the spiral model because they need more functionality so they need to communicate with the developers frequently to add any new functionality that they want due to being a rapidly expanding company. If it was waterfall model, they would have to list all the functionality to be added before during the analysis phase, but since they are rapidly expanding, they will probably need many more features that they haven’t yet thought of, therefore it would be better to pick the model that allows more frequent communication.

[10]

Total 20 marks