**Software development lifecycle (SDCL) – Lee Jing (1702378I)**

Software development lifecycle (SDLC) is also known as the software development process. It consists of detailed description of tasks performed at phases of the software cycle and the order to execute the phrases.

The following are six phases of SDLC:

1. Requirement gathering and analysis

This phase is where business requirements are collected. The requirements will be analyzed before finalizing them. A requirement specification document will then be created which will be serving as a guideline for the next phase.

1. Design

This phrase is where the system and software design are produced after studying the requirement specifications. System design helps to define overall system architecture and specify software and hardware requirements.

1. Implementation / Coding

This phrase is where the work is spilt into modules/units and the developers starts to code according to the requirements provided by the client.

1. Testing

In this phrase, the code is tested against the requirements, ensuring that it is addressing the problems and requirements. Bugs and defects of the system is found in this phrase.

1. Deployment

The deployment of the product to the customer occurs in this phrase.

1. Maintenance

This is where the software is improved or changed after new problems arises and newly found bugs are fixed.

**Software development models**

There are several software development models, such as RAD model, Agile model, Iterative model, etc. Different companies use different models to suit their applications. Currently, Agile model is the most used model.

RAD model

Rapid Application Development model (RAD model) develops components or functions in parallel, treating them like mini projects. The developments are firstly time boxed and delivered, before assembled into a working prototype. This model allows client to see and use the application quickly, providing immediate feedback to work on. The RAD model should be used when there is a need to produce a system within a short time, about 2-3 months. RAD should also only be used when the client has a high budget to afford a large number of designers for modeling.

The advantages of using the RAD model is that it reduces development time, offers quick initial feedback and at the same time encourages reviews from customers. It also solves a lot of integration issues as integration starts from the beginning. However, the disadvantages are that it is very costly and it only uses system that can be modularized. It also requires highly skilled developers and is highly dependent on modeling skills.

As we only have 17 weeks, about 4 months to develop the hotel management system, it is wise to choose the RAD model as it can produce a system within a short amount of time. However, due to its high cost, it is not advisable to choose the RAD model if it exceeds Mr. and Mrs. Wang budget.

Agile model

Agile model develops software incrementally, in rapid cycles. This results in small incremental releases with each release building on previous functionality. In order to maintain software quality, each release is tested thoroughly. It is used for time critical applications. Agile model is often used when there is a need to implement new changes or when the user needs are always changing.

The advantages of the Agile model are that it can easily adapt to changes and satisfy client’s needs with the rapid and continuous delivery of useful software. It also allows close and constant interaction, like face-to-face conversation, between the client and the developers, giving continuous attention to technical excellence and good design. However, disadvantages are that it does not emphasis on necessary designing and documentation and the project can easily go off track if the client is unsure of the final outcome that they want. It is also difficult to predict the effort needed for large software deliverables at the beginning of the SDLC.

It is advisable to choose the Agile model for the hotel management system, as it can provide Mr. and Mrs. Wang constant interaction and update on the progress when developing the application. The Agile model also allows the hotel management system to be modified/changed easily to suit the needs of the customers.

Iterative model

Iterative model starts by specifying and implementing just part of the software, instead of beginning by creating the requirement specifications. After implementing just part of the software, it is then reviewed to identify further requirements. In each cycle or the model, a new version of the software is produced by repeating the process. Therefore, in iterative model, the whole product is developed step by step by firstly creating a rough application. The iterative model can only be used when the requirements of the complete system are clearly defined and when the project is big.

The advantages of using the iterative model is that it spends less time on documenting and more time in designing and the application is built and improved step by step, hence defects can be track at the early stage. It also allows client to give reliable feedback after being shown to the blueprints and stretches of the product. However, the disadvantages are that it cannot be change easily, not adaptable and phrases cannot overlap each other.

As the hotel management system should be ever changing to satisfy the customer needs, the iterative model is not suitable, due to its inability to be adaptable.

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