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FESE-077

Software Engineering Assignment # 1

Q#1: Provide an example of a software project that would be amenable to the following models. Be specific.

Waterfall

Waterfall approaches start with very clearly defined business needs that decide the scope of the project and allow you to generate a full software lifecycle project plan. As Customer Relationship Management (CRM) systems highlight the necessary requirements, available resources, and time at the start of the project therefore we can apply Waterfall model on it.

Prototype

A prototype model allows developer and the end user to interact with each other in order to produce a high quality product. We can use a prototype model to create an online hospital management system as in such systems customer interaction and feedback is very important.

Extreme Programming

Extreme programming is an agile software development methodology. It favors collaboration not only among developers, but by actively including different stakeholders. So a company can use extreme programming to create an online shopping system. By using Extreme Programming not only the company will remain involved throughout its development process but the system will also be delivered within a short period of time.

Q#2: Why spiral model is known as risk driven process model. Justify this statement. And is it possible to combine process models? If so, provide an example.

Risk are uncertainties associated with a project. Like for example what if the project is not successful, what if the customer is not satisfied with the end product etc. So a spiral model emphasizes more on risk analysis as compared to other phases so it can identify such risks and help us to deal with them to make the development process easier. It also provides alternate solutions to overcome the risks.

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Yes it is possible as spiral model is a combination of 2 process models waterfall model and iterative model. An example of spiral models is the evolution of Microsoft Operating system from windows 3.1 to windows'95 with many other versions released.

Q#3: Describe a process framework in your own words. When we say that framework activities are applicable to all projects, does this mean that the same work tasks are applied for all projects, regardless of size and complexity? Explain.

A process framework establishes the foundation for complete Software Engineering projects by identifying small number of framework activities that are applicable to all software projects regardless of their size and complexity and same work task is applied for all projects. It includes a set of all umbrella activities and encompasses 5 generic activities:

1. *Communication:* The first activity is to communicate and to collaborate with the customer and the stake holders and gather all the requirements.
2. *Planning:* In this activity matters like the work schedule, the resources to be used and the risks that are likely to occur during the project are discussed.
3. *Modelling:* This activity encompasses the creation of 2D, 3D models or simply drawing a sketch that will help developers visualize how the end product will look like.
4. *Construction:* In this activity the program code is generated and the testing of the product is carried out so that if there are any errors or bugs in the program, they can be fixed.
5. *Deployment:* The product is delivered to the customer so that the customer can provide a feedback. On the basis of the feedback the developer works to improve the software and then eventually release an enhanced version of the same product.

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Q#4: Umbrella activities occur throughout the software process. Do you think they are applied evenly across the process, or are some concentrated in one or more framework activities?

Umbrella activities are applied evenly across all the 5 framework activities from the first activity that is communication to the last that is deployment. The umbrella activities that are applicable across the entire software process include Project Tracking And Control, Risk Management, Quality Assurance etc.

Q#5: To reduce costs and the environmental impact of commuting, your company decides to close a number of offices and to provide support for staff to work from home. However, the senior management who introduce the policy are unaware that software is developed using agile methods, which rely on close team working and pair programming. Discuss the difficulties that this new policy might cause and how you might get around these problems.

The company may have to face a number of problems if they decide to close down work places having expertise in Agile Software Development. Cross Functional Team Coordination is an important feature of Agile Development but due to this new arrangement they will be unable to have meetings on a daily basis. This will lead to a communication gap among the team members. As pair programming will no longer be possible, error detection and evaluation would become quite difficult. Some of the team members may face difficulty adjusting to this new setup of working from home. This along with communication issues may slow down the rate of productivity.

However there are some measures that can be taken to get around these obstacles. *Create merging offices* together so that pair programming can be established. *Set some communication protocols and guidelines* on how all team members should communicate with one another. Make sure everyone follows the same rules so that everyone is treated fairly. *Organize regular video meeting conference calls.* This will not only bridge the communication gap but will also allow everyone to stay on the same page. All staff members should use the same tools and programs to ensure that they function together; don't allow some team members to use Zoom while others use Skype. *Follow a clear workflow.* Use an online project management system, such as Trello or Asana, to monitor activity. You'll be able to see who is working on what, and stay up-to-date on the status of each project. This is especially useful when you have team members in different time zones, as it allows you to see what everyone has spent their work hours doing.