# CSE 270 Software Testing

W01 Prove: Testing within Methodologies

Thoughtfully answer the following questions. Upload this completed document to canvas when finished.

1) In your own words, identify and briefly explain the 6 parts of the software development lifecycle.

Requirements Gathering & Analysis – Discussions between the software dev team and the customer (stakeholders or otherwise) provide summaries of expectations for the project and outline requirements and needs that the project will fulfill. Testers are an important role in helping the customer understand the testability of the system based on their requirements.  
System Design – This is the blueprint phase where prior requirements gathering is translated into an overall design that guides the project.  
Implementation – This is another word for the coding work done to meet the requirements of the project. As this work proceeds then testing is able to meet their responsibilities of ensuring the project is tested.  
Testing – Various forms of testing are used to help the team create a robust end product that meets the needs of the customer. These are likely to include unit testing, integration testing, system testing, User Acceptance Testing, and more.  
Deployment – As the software undergoes rigorous testing and passes it is then deployed to end users. Further testing can be performed at this point with user experience guiding fine tuning of the product.  
Maintenance – As users utilize the product this phase gives hot fixes, updates, security patches, and more to help provide ongoing and smooth usability for the product the customers ordered.

2) Briefly explain the "Waterfall" software development methodology and explain the primary strength and primary drawback of this methodology.

This method follows strict sequential flow of work where one phase is completed entirely before moving onto the next phase. This works well when projects have a clear roadmap where requirements are not expected to change. In projects where requirements change rapidly this method is inflexible and poorly adapts to such volatility.

3) Briefly explain the "Scrum" software development methodology.

Scrum is characterized by development cycles called ‘Sprints’ where work flow is organized during Sprint Planning for stretches of typically two to four week phases. Roles are given to manage various aspects of the project such as project manager, scrum master, and the development team.

4) Briefly explain the term "shifting left" and identify 4 key impacts of incorporating a shift-left mentality in testing software.

“Shift-left” represents a growing trend of early integration of testing and quality assurance. This shift in focus provides greater test coverage as its incorporation gives developers opportunity to create more comprehensive testing systems which in turn makes test automation more accessible and promotes greater collaboration between teams in the development process. Each of these ultimately means shorter time to market as well as a number of other benefits.

5) Explain the key difference between verification and validation and describe the role each plays in the proper development of software.

Both verification and validation are essential to quality software products. While verification ensures that the software works as expected, validation ensures that the software meets the expectations of the customer. Bugs and defects are discovered and rectified during verification processes while end user experiences and reviews provide direction during validation to fine tune software to the needs and expectations of the users.