Fall 2019 Software Design & Engineering

**Assignment 1**

*This is an individual assignment. It is not acceptable (zero point) if your solution is identical or almost to your colleagues’*

1. Do research and reading on key word “change management software development”. Write a summary on what is change management and how it will help you in software product life cycle if you were in software industry. (30%)

The term change management denotes a system that encompasses the creation and upkeep of the history of changes surrounding a project or another system. In terms of software development, change management can involve tracking changes to critical systems like databases via support tickets or changes to codebases via source control systems like Git or SVN. Change management is crucial in software development because it provides a way to identify changes that introduced errors in an application and greatly simplifies the process of solving system/application errors and vulnerabilities.

1. What is the main goal in software product development? What are important? Please discuss and provide some examples to support your answer. (15%)

The main goal in software product development is to produce an application or system that provides business value to the entity that owns the project. Areas of importance when delivering software every cycle are that the software and systems are well documented and tested thoroughly, and that application functionality meets business requirements.

1. List who involve in the whole software engineering life cycle and discuss their roles & responsibility as well as some possible tools involved. (15%)

* End User / Customer / Project Owner – Defines the use-case and high-level requirements of the software and establishes business value
* System Engineer – Translates business requirements to technical requirements
* Solution Architect – Designs the architecture of an application or a system of cooperative applications
* Developers – Produce the source of the application as well as any auxiliary products such as tests.
* Testers – Define testing requirements and establish the testing plan
* Technical Writers – Provide documentation for application systems such as how they are used, how to interact with them, and how to interpret their responses/outputs
* Current Engineers – Manage deployments of and upgrades to applications and execute contingency plans in case of the need for rollbacks.
* Customer Support – Provide support for end users of the application which serves as a source for generating new requirements
* Project Manager – Establishes the high-level timeline of the execution of requirements as new ones come in and oversees project stability via iterative/stage breakdowns.
* Configuration manager – Defines the environment in which a hosted application operates or gathers information about the environments which a native application should support.

1. What is a software engineering process? There are some well know ones such as waterfall, RUP and agile. We may not have covered all these specific processes but search key words and do some reading. Discuss differences among them. (15%)

Software engineering processes are operational frameworks that software engineering teams implement to ensure the success of a software project.

Waterfall is a segmented framework in which the development cycle occurs over a single long iteration. Agile and RUP are both iterative frameworks wherein units of work are run through an entire lifecycle of development and testing within a short time frame. The primary differences between RUP are that RUP focuses primarily on having well-defined requirements via standardized UML versus agile’s primary focus on development flexibility and a developer-driven workflow, and RUP’s focus on development risk for a development iteration versus agile’s open-ended definition of effort driving the value of a development cycle (sprints).

1. Say if you were tasked to develop an email system product. Define your abstractions and design your class diagram (25%)

