Test 1

**CS425 - Software Engineering**

**May 4, 2015**

**Write all answers on the blank paper provided.**

**There are 35 points total.**

1. (3pts) Most faults are introduced in what phases of software engineering? Give a short description of two ways RUP attempts to reduce faults during this phase.

*Most (approximately 2/3 of the system) faults are introduced during analysis and design.*

1. *Using use cases to create the SRS improves the quality of our system analysis and makes them easier to review with customers.*
2. *Iterative development finds problems sooner if there is a mismatch between our requirements and customer’s expectations.*
3. (2pts) What percentage of life-cycle costs for a software system do we expect to see during the maintenance phase? Why is this cost this high?

*Maintenance costs are usually around 2/3s of the life-cycle costs.*

*It is high because it is very expensive to fix bugs once the system is complete and deployed.*

1. (3pts) Describe three outputs of architecture analysis. Give one example of each output from our MUMScrum project.

*1)system level structure – for example layers/mvc approach for MUMScrum*

*2)Architectural mechanisms – for example using ORM for persistence for MUMScrum*

*3)Key Abstractions – for example ProductBacklog, Release, Sprint, etc., analysis classes*

1. (6pts) Explain the difference and the relationship between RUP **needs,**  **features** and **use cases**. Give an example from MUMScrum. You can just give the name of the use case for your example (you do not need to provide the whole use case description.)

*Needs are more general and come from user problem statements. Features are more specific refinements of the needs into something we can develop into use cases. Use cases are refined into specific actor input and system response. Use cases are part of the SRS and are testable. Needs and features are part of the Vision Document and are not testable.*

*An example from MUMScrum*

|  |  |
| --- | --- |
| **Need** | **Features** |
| A product backlog consists of user stories for our  product. Each user story has a priority associated  with it. | Product Owners must be able to add or  delete user stories to a product backlog  and set the priority. |
|  |  |

*We then created two use cases: 1) Product owner create a product backlog.*

1. *Product owner add, read, update, or delete user stories to/from the product backlog.*
2. (12 pts) Create a Use Case Description for the following use case for MUMScrum.

For this problem and problem 6 below, just show the basic success flow.

We want a product owner to be able to generate and save a product report for his or her products which shows:

Each release for a product, each sprint for each release, and all the user stories for each sprint. For each user story show the original development and test effort estimates and the developers and testers assigned to them. This report shows all releases and sprints defined for a product and indicates if they are in-progress, planned, or completed.

1. (9 pts) For this use case create a sequence diagram.