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CS 2450

Assignment 6

Section 4.8

1. Discuss one advantage and one disadvantage of the waterfall process.
   1. One advantage of the waterfall process is that it gives the ability to show where software is at in a development process, rather than just saying it’s “in development”.
   2. One disadvantage is that there is limited time spent on interaction with those who will use the software. It seems like it only happens at the start of the process.

5. What motivated software engineers to move from the waterfall model to the incremental or spiral model?

a. The main motivation was that the software project had to be completed and integrated before testing and progress could be made. The incremental model allowed developers to work on individual components. An example was to create the core functionality and release it to the users. Then add the other properties or functions that could come in later.

6. What the major concepts that drove the Rational Unified Process framework?

a. The three main concepts that drove the process are, first use-case and requirements driven development. This means that how the software was going to be used defined the functions, now how the software interacted with the systems. The second concept is that the process was architecture centric. These meant that designing the software from the uses cases helped to develop a stable architecture. The final concept is that it is iterative and incremental. This basically means that the larger components should be broken down into increments and then worked over in a divide and conquer manner.

7. What are the four phases of the RUP?

a. Inception: This is known as the planning phase which has some goals. One is to get clearly defined objectives. Another is to outline the frame work, schedule and processes for implementation, testing and integration.

b. Elaboration: This phase is mean to ensure that the major parts of the system are well defined and known. These major parts include the test phases, the methodologies used and how the future setup will be implemented.

c. Construction: This is where the code happens and the program is made to completion. The goal is to do that efficiently and effectively. The final part is to establish all the remaining items needed to complete the project.

d. Transition: This is where the project gets released to the user. The user accepts the product and is supported in the use of the software.

section 4.9:

* 1. Look at the simple process model figure 4.1.  What development activity (requirement gathering, design, QA testing, release) would you choose to add to the coding process first?  Why?  (Note that Unit Testing is considered to be part of coding, not part of QA testing.)
     1. One thing that I would add is a collaboration / interactive session with the user, or case driven phase. This could actually be two parts, one where the design and functionally was initially set, and the other where it was tested to make sure that it was a desired result.
  2. What is the difference between the multiple component incremental model and the multiple release ITERATIVE model?  (Note the difference between the question as posed here and how it is stated in the book.)
     1. The main difference is the focus on releasing iterations of software as opposed to developing all the components before the software can be released. This iterative model gives the ability to being managing risk, rather than waiting to find bugs or problems as the end of development.
  3. Discuss the four phases of the RUP and their relationship to the development activities such as requirements analysis, design, and testing.
     1. The 4 phases of RUP –inception, elaboration, construction and translation- are congruent with the development activities -requirements, design, code, and test-. Inceptions main purpose is to get clearly defined requirements, and as we’ve talked in class that is extremely important. Elaboration and design are similar in the aspect that the in elaboration the goals is to have all the parts well defined for a solid design. Construction is where the coding happens which is the third concept in each topic. The main difference I see comes from the fourth concept which is testing. In dealing with RUP, testing is mainly completed in the construction phase and the only testing left is that of the user. Whereas testing could refer to the user testing but I believe it refers to the designers in this case.

**Part 3**

Consider a regular, common, everyday, non-programming process that you routinely face.  In class we used the example of going to the grocery store; you pick a different process.  Using the four common elements of process models (listed below), create a matrix representing 2 (or more!) tasks associated with the process.  The grocery example is displayed to help you.

* + A set of tasks that need to be performed
  + The input to and output from each task
  + The preconditions and postconditions for each task
  + The sequence and flow of these tasks

The task that I have chosen is driving to work

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Task | Input | Output | PreCondition | PostCondition | Next Step |
| Get in the Car | Keys | Leaving the Driveway | Need to have an operational vehicle | Vehicle is on the road | Get to the highway |
| Getting to the highway | Driving( turning, steering, stoping) | Making it to the highway | Smooth driving through the neighborhood | Speedy Driving on the highway | Driving on the highway |
| Driving on the highway | Accelerating  Quicker Reflexes | Exiting the highway | Clear Path on the Highway, and brakes | Stopping at the offramp | Arriving at work |
| Arriving at work | Driving( turning, steering, stoping) | Arrival at work | Must have a destination | Going into the building | (end) |