

CS3733-B04 Midterm Exam

Name: _____

This exam consists of two parts. If you have read the textbook, attended the lectures, done the homework, and studied the notes you are prepared.

Remember that there is a code of academic honesty at WPI and you are expected to do your own work. Good luck.

Part 1 (50 points)

1. Which of the following are the main parts of a software development process?
 - a. People, tools, project
 - b. Requirements, analysis, design, testing
 - c. Roles, activities, artifacts**
 - d. Models, requirements, code
2. Which of the following is not a phase in the Rational Unified Process?
 - a. Elaboration
 - b. Continuation**
 - c. Inception
 - d. Transition
 - e. Construction
3. Using the appropriate FURPS letter, indicate which type of requirement the following are:
 - a. **U** The system must conform to the individual platform handicapped accessibility standards.
 - b. **P** The compiler must compile a minimum of 5,000 tokens per second when running on a 2.0 GHz Pentium 4 processor.
 - c. **F** The system shall allow payment by cash, debit card, or credit card.
 - d. **S** The source code will contain no warnings when processed by the PMD static analysis tool.
 - e. **R** The system must be accessible 24 hours a day, 7 days a week.
4. Jacobson identifies three types of analysis classes. What are they?
Boundary, Control, Entity

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5. Describe in a sentence or two how an iterative, incremental process model helps manage change.
First, by working iteratively, you are forced to look at all aspects of the project in each iteration. This is especially helpful to identify and manage changing requirements. Second, by having working software that can be evaluated at the end of each iteration, you won't get too far along if something changes and you need to modify your design or implementation.
6. What is a use case?
A use case is a complete sequence of events, initiated by an actor, that provides visible results (to the actor).
7. What is the difference between a use case, a flow of events, and a scenario?
A use case contains the complete functional requirement specification for an action that provides value. A flow of events is a part of a use case. Typically a use case has several flows of events. Some start at the beginning of the use case and go completely through to the end. Some are exceptions, or alternate paths that are not, in themselves, complete, but add to the use case description to make it complete. A scenario is one path through a use case. It may contain parts of several flows of events.
8. Which of the following would you use on your project to schedule tasks for programmers?
 - a. User cases
 - b. Requirements
 - c. **User stories**
 - d. All of the above (**this is an acceptable answer**)
9. What are two benefits realized by using Test-First Programming?
You only write code that you need. Your tests have complete code coverage. Your tests reflect the requirements, not the code.
10. HBP, a major computer technology supplier, has just released a new technology for identifying security intrusions in programs. The technology has not been widely deployed because it must be implemented using the XLS language that is provided only by HBP. Your client wants to add the technology to an existing software system. Identify two risks that you must address early in the project.
**New technology that no one understands. Can the team use it correctly?
New technology. May not work.
New language. The team must learn it quickly.**

Part 2 (50 points)

Do one of the following problems.

1. You are working on a system to allow students to order pizza via the internet from their dorm rooms. They are able to connect to Mah Jong Pizza's local web site, place their order, and have the pizza delivered to their dorm in 30 minutes or less. Write the use case for ordering a pizza. Include a good name, brief description, and actors. Describe the main flow of events and at least one alternate flow. Identify any preconditions and post-conditions.

After you have written your use case, draw the UML sequence diagram that illustrates the interaction of objects for ordering a single pizza successfully.

2. Perform a textual analysis on the following and then draw a UML sequence diagram that illustrates the main flow of events, using the object that you've identified in your textual analysis. Your textual analysis should include each major class you discover and the main operations the class supports, based upon the text.

Description

During the course of a student group the students provide elaborations to the tutor. The tutor evaluates the elaborations and enters grades into the assessment system deployed at the university. Then she transfers the assessment results to the personalization system run by a content provider. The grades are translated during the transfer into a description of the knowledge and skills acquired by the students. The personalization system integrates this information into the user model for the particular students. It adapts personalization according to the transferred data, thus improving the quality of personalization.

Exceptions

If a student has no account at the personalization system the data must be rejected without disturbing the transfer of information for the other students. If the tutor is not authorized to modify the user model of a particular student the data must be rejected without disturbing the transfer of information for the other students.

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