Com S 362   Name: _____

Fall 2003

Object-Oriented Analysis and Design
Exam 2 on Requirements Analysis

This test has 7 questions and pages numbered 1 through 6.

Reminders

This test is open book and notes. However, it is to be done individually and you are not to exchange or share materials with other students during the test.

If you need more space, use the back of a page. Note when you do that on the front.

This test is timed. We will not grade your test if you try to take more than the time allowed. Therefore, before you begin, please take a moment to look over the entire test so that you can budget your time.

For diagrams and programs, clarity is important; if your diagrams or programs are sloppy and hard to read, you will lose points. Correct syntax also makes some difference.

1. (5 points) In Java, how are objects that implement the interface `ActionListener` used in constructing user interfaces?

2. (5 points) Why is using time-boxed iterations important for object-oriented development?

3. (12 points) Consider a book circulation system for a library. An example is the circulation system at ISU's Parks library that workers at the library use to help you check out and return books. Such a system allows workers to check out books for a library patron (e.g., a student or professor), check books back in when they are returned, recall books that are checked out, in addition to keeping track of what books are in the library, and managing information about the books.

   For each of the following descriptions, you are to decide whether it satisfies the elementary business process (EBP) guidelines. Write "yes" or "no" (but not both) and give a brief description of why this does or does not follow the EBP guidelines.

   (a) Determining the due date for a book being checked out by a patron.

   (b) Recalling[1] that has been checked out by a library patron.

   (c) Deciding what books can be archived by tracking all the books that are not checked out over a period of 5 years.

   (d) Return a set of books checked out by a patron.

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[1] "To recall" a book means to ask that a book that is out of the library, but not yet do, be brought back to the library.

4. (10 points) Briefly describe one *non-functional* requirement for a library's circulation system.

5. (10 points) Consider again a library circulation system. Using the brief format, write a use case titled "Recall Book," which would involve a library patron, who interacts directly with the circulation system, recalling a book that another patron has checked out so that they can check it out themselves. (The system should notify the other patron to bring the book back as part of this use case.)

You may assume, if necessary, that the patron is already identified and authenticated by the library circulation system.

You should write your use case for a straightforward library circulation system, without lots of embellishments or fancy features. Keep it simple.

Be sure your use case is written in an essential, UI-free style. You only need to consider the "happy path."

6. (25 points)

   Consider again a library circulation system. Using the casual format, write a use case titled "Check in Book," in which a library worker uses the circulation system to record the return of a single book by a patron, so that, in the end, the book is no longer out for circulation.

   To save time, in addition to the main success scenario, just write two alternate scenarios: (a) what happens if a book being returned was never checked out, and (b) what happens if the book was overdue and returned after the library's grace period, but the patron returning the book is paying, in cash, the fine for its being late.

   (To avoid complications, you can ignore the case of a book being returned that was recalled by another patron.)

   Be sure your use case is written in an essential, UI-free style.

7. (33 points) Consider again a library circulation system. Using the fully-dressed format, write a use case titled "Check out Books," in which the library worker records a set of one or more books that a patron is going to take out of the library.

   To save time, in addition to the main success scenario, just write two alternate scenarios. These should describe (a) what happens if the book which the patron wishes to check out is non-circulating (e.g, a reference or reserve book), and (b) what happens if the patron is not allowed to check out books because they have violated some library policy (e.g., they have not paid fines for overdue recalled books). Within each of these alternative scenarios you need only consider the "happy path" (i.e., you don't have to consider alternatives to the alternatives).

   Also, you can leave the "Technology and Data Variations List" section empty. You can consider failures and recovery to be an open issue.

   Be sure your use case is written in an essential, UI-free style.

   There is more space for your answer on the next page.