Com S 362
Fall 2004

Name: _____

Object-Oriented Analysis and Design

Exam 2 on Requirements Analysis

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

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.

For Grading:

Problem	Points
1	
2	
3	
4	
5	
6	
7	

1. (5 points) Briefly describe, in general terms, how one should write Java code to respond to user-interface events, such as button presses or selections. (Just describe the code, don't write it.)

2. (5 points) Imagine you are working on a new project for a cell phone manufacturer. The software involves an exciting new combination of features of voice messaging, calendar management, and voice-recognition. For such a project, would it be best to try to settle all of the requirements before proceeding with design and to settle the design before proceeding with development and testing? Briefly explain why or why not.

3. (12 points) Consider a software system embedded in a videocassette recorder (VCR), which operates the VCR in response to user commands (such as button pushes or signals from a remote control unit). Such a system allows the user to play and record videocassettes, and keeps track of information such as the current time and date, the channel being watched, and what times to start and stop recording from the TV input.

   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) Rewinding a videocassette tape and updating related displays.

   (b) Updating the display of the number of minutes left on the tape during recording.

   (c) Changing the current date and time stored in the VCR without changing any of the dates and times in the list of programs to be recorded.

   (d) Play a nonrecordable videocassette when it is inserted.

4. (10 points) Briefly describe one *non-functional* requirement for a videocassette recorder.

5. (10 points) Consider again software for a videocassette recorder (VCR). Using the brief format, write a use case titled "Set Day and Time," which would involve the User, who interacts directly with the VCR, setting the VCR's notion of the current day of the week and the current time. Assume the time is in the usual 12 hour format, such as 11:25 a.m. For a VCR, the day of the week (such as Monday) is also important. The VCR does not know (and does not need to know) the year, month, or day of the month.

   In the happy path of this use case, assume that there are no scheduled recording sessions that stored in the VCR.

   Be sure your use case is written in an essential, UI-free style. You only need to consider the "happy path." (Hint: keep it simple.)

6. (25 points) Consider again a software of a videocassette recorder (VCR). Using the casual format, write a use case titled "Start Recording Immediately" that starts to record what is currently coming from the television input on the selected channel, for a given amount of time. For example, the user might wish to record for the next two hours.

   Assume that the VCR has inputs that tell it: whether there is a videocassette in the VCR and whether this videocassette can be recorded on (each videocassette has the tab that can be broken off to prevent recording if desired). Assume that the VCR also knows the currently selected recording speed and the amount of time remaining on the videocassette at the current recording speed. Recording speeds can be either single play (SP, which provides two hours of recording time on a standard tape) or extended play (EP, which provides six hours).

   To save time, in addition to the main success scenario, just write two alternate scenarios: (a) if the videocassette in the VCR does not permit recording, and (b) if there is not enough time remaining on the videocassette to record for the length of time requested by the user.

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

7. (33 points) Consider again software for a videocassette recorder (VCR). Using the fully-dressed format, write a use case titled "Manage Timed Recording Session," in which the user tells the VCR about one or more recording sessions they would like to schedule. (We use the word " recording session" to mean a length of time during which the VCR should be recording from some specific channel on the videocassette.) Each recording session is specified by a day of the week, a starting time, and ending time, a channel, a recording mode, and whether the recording should be repeated. The recording mode is either single play or extended play. (See the previous problem for definitions of these two recording modes.) Recording times are specified by a day of the week and a time of the day, such as 2:33 p.m., but to save your time on this exam, don't make separate steps out of getting the different parts of a starting or ending time.

   In this use case,we will consider the main success scenario to be the User adding one or more new recording sessions.

   The VCR does not have to check anything about the videocassette during this use case; that is, it is OK if there is no videocassette in the VCR during this use case or if the videocassette is not recordable. Another use case (Hibernate) will make these checks.

   To save time, in addition to the main success scenario, just write two alternate scenarios. These should describe (a) what happens if the resources of the VCR do not permit it to remember another session (i.e., the VCR can only remember, say seven, sessions, and these have already been specified), and (b) what happens if the recording session overlaps (in time) with another recording session that the VCR is already remembering. 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 omit the "Open Issues" section.

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

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