Metropolitan State University, Saint Paul, Minnesota
ICS 372 Object-Oriented Design and Implementation
Information About Exam 2

Date and Time 6:00 PM (or a few minutes later) on March 25, 2021
Duration: 3 hours (maximum)
Points 100
Topics and Structure All materials covered in lectures 5 through 9 are game for inclusion in the exam.

The exam will contain two questions requiring you to write Java code; then there is a set of multiple-choice/true-false/multi-select/short-answer questions. Please follow the directions carefully, so you don't lose credit.

The exam will be completely administered on D2L. Be prepared with topics such as (this is not an exhaustive list)

1) Use case analysis
2) Conceptual class diagrams
3) Sequence diagrams
4) Design
5) Library system design and implementation
6) Refactoring: move method, extract method, use of generics, use of inheritance, replacing conditionals with polymorphism
7) Inheritance
8) Façade and Visitor patterns
9) The FSM approach

There will be two questions asking you to code. These questions will look somewhat like the following. They should suggest that you have to understand the design and implementation of the library system quite well.

Question 1 (25 points at least)

The following new use case <a phrase indicating the new functionality>.

Actor	System

Design and implement the functionality. The changes must be made to the project DathanExam2Q1 (download from the folder Exams under Content). (You will have to rename the project.) The code is the same as in Class Project 1 Version 1.1, which we discussed in the videos. The design and implementation must conform to the way it is already done in the current version. For example, the way values are returned from Library to UserInterface should be consistent with the way it is done in similar methods already existing in the system. The code must obviously compile error free and should be properly tested. The code need NOT be documented. Follow these additional requirements.

1) Rename the project as <Your-last-name>Exam2Q1.
2) Put all the methods you add at the end of the classes to which they belong, so they are easy to locate. For example, if you put new methods named m1() and m2() in the Hold class, they must appear after all existing methods in Hold.

Question 2 (25 points)

The code given in the Java project DathanExam2Q2 in the folder Exams under Content is an attempt to solve the following problem.

<Problem description>

The approach is to <description of approach>.

The approach taken by the project does not follow some object-oriented design principles. Refactor the code appropriately.

Rename the project as <Your-last-name>Exam2Q2.

Ground Rules

1. This is an open book/open notes test. You may use any resources on the internet. The only restriction is that you are not allowed to communicate in any way with anyone: like phone call, online chat, email, posing questions on online forums, etc. So, this is an individual effort.
2. You must have your video on. Mute the audio. If you need to ask me a question, please send a message privately to Zoom chat. I may move you to a waiting room and we can talk briefly.
3. If you have to leave the exam for more than a couple of minutes, please get permission from your instructor. Use the approach in (2) above.
4. Two of the questions ask you to write Java code. These must be coded as **separate Eclipse Java** projects to the dropbox for Exam 2. Ensure that any Java code you write is syntactically correct and works as specified. Name the projects <Your-last-name>Exam2Q1 and <Your-last-name>Exam2Q2.
5. Please follow the directions carefully, so you don't lose credit.
6. The exam must be turned in on time. I will announce the deadlines at the start of exam. If you are late, this may mean a loss of time for you to take the exam.

The two programming questions will be posted as PDF files under the Exams folder.

The multiple-choice/true-false/multi-select/short-answer questions will be posted as a quiz under Assessments...Quizzes.