

Software Engineering Ph.D. Qualifier Exam

September 22, 2005

1. Defects (i.e., bugs) are bound to affect any software development.
 - Explain why it is important to find these defects as early as possible in the development cycle.
 - Take a software lifecycle model of your choice. Describe how this lifecycle model works, and explain how it tries to find defects early.
2. You are working on a software project that will sell tickets for the UW Symphony Orchestra. In particular, the application will have the following features:
 - (a) Administrators will be able to add an event, for example a performance of Beethoven's 9th Symphony on Friday, April 23, at 7pm.
 - (b) The administrator will be able to specify where the performance will be held, e.g., UW's Fine Arts Auditorium.
 - (c) Users will be able to view upcoming performances.
 - (d) Users will be able to view details of each performance, such as the pieces to be played and the performers playing them.
 - (e) Users will be able to check for available seats to a performance.
 - (f) Users will be able to purchase tickets to a performance.
 - (g) Users can buy more than one ticket at a time, in which case they will be given seats that are together. So if a users asks for two tickets, they will not be given one seat in the front and another in the back.

Provide an E-R diagram that describes how this data will be stored by your application.

3. Using the same application for the UW Symphony Orchestra as in the previous question, design a solution to the fifth use case, repeated below:

- (e) Users will be able to check for available seats to a performance.

Describe your design using an UML class diagram and a collaboration diagram.