CSI 518 Software Engineering
Fall 1997 Midterm Examination
October 23 Thursday 1:00 - 2:20

Q1. (15 points): What quality attributes would be placed on the highest quality priority in developing a system like (a) Microsoft Windows 95 (b) A space shuttle control system (c) Microsoft Office 97.

Q2. (10 points): What criteria are used to evaluate the quality of requirements specifications?

Q3. (10 points): What would be the potential advantages and possible draw backs of using the spiral model in the software development process.

Q4. (15 points): (a) Describe the structure and the uses of the SEI CMM. (b)Would you recommend the managers of your company to use or not to use CMM and how would you convince them?

Q5. (10 points): (a) Explain why functional independence is a key to good design and design is the key to software quality. (2) What criteria are used to measure functional independence of a design?

Q6. (10 points): (a)What is design pattern and what are the major elements of a design pattern? (b) Why design patterns are widely used in the major software development companies?

Q7. (20 points): Design a system for automatically executing the actions needed to build a software system from its components, similar to the UNIX Make facility. The system reads a file which describes what must be done in the form of dependency rules. Each rule has one or more targets, one or more sources, and an optional action. Targets and sources are names of files. If any of the sources of a rule are newer than any of its targets, the action of the rule is executed by the system to rebuild the targets from the sources. You can use one of the OOA/OOD models we discussed in the class to design the system. You design must include the name and the description of each class and the description of each attribute and each method defined in the class. The relationship among the classes also need to be described using the format proposed by the model you used.

Q8. (10 points): Calculate the metrics defined in the CK metrics suite for the system you design in Q7.
(a) Depth of the inheritance tree (DIT)
(b) Number of Children (NOC)
(c) Response for a Class (RFC).