Department of Computer Science  
College of Engineering, University of Nevada, Reno  

CS 425/625 Software Engineering  

Midterm Test #1  
October 19, 2005  

Test type: Closed-book examination  
Number of questions: 12  
Total points: 29  
Test weight: 11%  
Time: 70 minutes  

Notes:  
• For questions 1 to 7 indicate the correct answer (only one) on the answer sheets provided by the instructor. Each of the questions 1 to 7 has a one point value for a group total of 7 points.  
• Questions 8 to 12 require that you elaborate your answers. You must also write these answers on the sheets provided by the instructor. The total value of questions 8 to 12 is 22 points.  

Questions:  

1 Which of the following process models is best suited for the development of systems where the requirements are well known?  
   a. Evolutionary model  
   b. Waterfall model  
   c. Spiral model  
   d. Component-based development model [1 point]  

2 Which of the following is not a specific design process activity?  
   a. Architectural design  
   b. Component design  
   c. Algorithm design  
   d. Test case design [1 point]  

3 Three sections that most project plans for software development should include are:  
   a. Risk analysis, architectural design, detailed design  
   b. Data validation, risk analysis, work breakdown  
   c. Work breakdown, project schedule, monitoring and reporting mechanisms  
   d. All of the above [1 point]  

4 The critical path in an activity network indicates:  
   a. The number of tasks that can be performed in parallel  
   b. The maximum time required to finish the project  
   c. The minimum time required to finish the project  
   d. None of the above [1 point]
Which one of the following type of items is not shown in a data flow diagram (DFD)?

a. Data structures  
b. Data stores  
c. Data movements  
d. Data processes  
[1 point]

Which of the following can be used as metrics for specifying and verifying non-functional requirements?

a. Mean time to failure  
b. Number of target systems  
c. Processed transactions per second  
d. All of the above  
[1 point]

In architectural design, which of the following is a type of centralized control model?

a. Broadcast model  
b. Call-return model  
c. Interrupt-driven model  
d. None of the above  
[1 point]

Describe the evolutionary development software process model. Also, indicate its advantages, disadvantages, and applicability.  
[6 points]

Explain what is meant by the software process activity denoted software evolution.  
[3 points]

Give three examples of risks that may be identified by software project managers (give concrete examples, do not simply enumerate risk categories such as technology, organizational, etc.) and suggest risk management strategies for each of the three risks.  
[3 points]

Describe the broadcast model used for control modeling in architectural design. Also, indicate its advantages and disadvantages.  
[4 points]

Write the specification of an Employee class. Include at least five attributes and two non-trivial methods in this class (a non-trivial method involves computations based on one or more attributes). Also, write the specification of a subclass which inherits from the Employee class (e.g., Manager, PartTimeEmployee, etc). Include at least two additional attributes and two additional non-trivial methods in this subclass. Explain the meaning of attributes and methods.  
[6 points]