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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?
- Evolutionary model
 - Waterfall model
 - Spiral model
 - Component-based development model
- [1 point]
- 2** Which of the following is not a specific *design process activity*?
- Architectural design
 - Component design
 - Algorithm design
 - Test case design
- [1 point]
- 3** Three sections that most *project plans* for software development should include are:
- Risk analysis, architectural design, detailed design
 - Data validation, risk analysis, work breakdown
 - Work breakdown, project schedule, monitoring and reporting mechanisms
 - All of the above
- [1 point]
- 4** The *critical path* in an activity network indicates:
- The number of tasks that can be performed in parallel
 - The maximum time required to finish the project
 - The minimum time required to finish the project
 - None of the above
- [1 point]

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- 5** 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]
- 6** 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]
- 7** 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]
- 8** Describe the *evolutionary development* software process model. Also, indicate its advantages, disadvantages, and applicability.
- [6 points]
- 9** Explain what is meant by the software process activity denoted *software evolution*.
- [3 points]
- 10** 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]
- 11** Describe the *broadcast model* used for control modeling in architectural design. Also, indicate its advantages and disadvantages.
- [4 points]
- 12** 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]