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

CS 425 / CS 625 Software Engineering

Midterm Test #1

October 13, 2004

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 write these answers on the sheets provided by the instructor. The total value of questions **8 to 12** is **22** points.

Questions:

- 1** Which one of the following is not shown in state machine models?
a. States
b. Scenarios
c. Transitions
d. Actions [1 point]
- 2** Which of the following is a managerial activity?
a. Requirements specification
b. Proposal writing
c. User interface design
d. All of the above [1 point]
- 3** Which of the following can be used for requirements specification?
a. Mathematical notations
b. Structured natural language
c. Graphical notations
d. All of the above [1 point]
- 4** Which of the following process models is best suited for the development of systems where the requirements are not well known?
a. Spiral development
b. Waterfall model
c. Evolutionary development
d. Component-based development [1 point]

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- 5** Which of the following is not part of the requirements validation?
a. Consistency checks
b. Completeness checks
c. Deployment checks
d. Realism checks [1 point]
- 6** Three sections that most *project plans* for software development should include are:
a. Project schedule, risk analysis, work breakdown
b. Requirements specification, architectural design, detailed design
c. Project organization, reporting mechanisms, data validation
d. Project cost, integration approach, delivery methods [1 point]
- 7** Which of the following is not a specific design process activity?
a. Artifact design
b. Interface design
c. Algorithm design
d. Architectural design [1 point]
- 8** Describe the *incremental* software process model. Also, indicate its advantages, disadvantages, and applicability. [5 points]
- 9** Briefly explain what is meant in project planning by *milestones* and by *deliverables*. [3 points]
- 10** Consider a software project of your choice and give three brief examples of *non-functional requirements* for this project (give concrete examples, do not simply enumerate categories such as efficiency requirements, portability requirements, etc.). For each of the above three non-functional requirements suggest a *metric* for quantitative specification and verification. Also, give two short examples of *functional requirements* (user requirements) for this project. Briefly indicate what is the purpose of the project. [5 points]
- 11** 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]
- 12** Write the specification of an *Autovehicle* class. Include at least four attributes and specify two non-trivial methods (a non-trivial method involves computations based on one or more attributes). Also, write the specification of a sub-class that inherits from the *Autovehicle* class (e.g., *Sedan*, *Truck*, *Bus*, 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]