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

CS 425 Software Engineering

Midterm Test #2

November 19, 2007

Test type: Closed-book examination
Number of questions: 12
Total points: 28
Test weight: 10%
Time: 70 minutes
Notes:

- For questions **1 to 8** indicate the correct answer (only one) on the answer sheets provided by the instructor. Each of the questions **1 to 8** has a one point value for a group total of **8** points.
- Questions **9 to 12** require that you elaborate your answers. You must also write these answers on the sheets provided by the instructor. The total group value of questions **9 to 12** is **20** points.

Questions:

1 *Control systems* are a type of real-time systems concerned with:
a. Collecting sensor data for off-line processing and analysis
b. Continuously reading sensors and issuing commands to actuators
c. Continuously displaying the internal state of the system
d. All of the above [1 point]

2 Which of the following is not a *generic architectural model for RTS* (real-time systems)?
a. Control system
b. Monitoring system
c. Version control systems
d. Data acquisition system [1 point]

3 Which of the following is not a *primary style of user interaction*?
a. Natural language
b. Direct manipulation
c. Command language
d. Data visualization [1 point]

4 Which of the following approaches can be used for *user-interface prototyping*?
a. Script-driven prototyping
b. Internet-based prototyping
c. Visual programming languages
d. All of the above [1 point]

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5 Which of the following is a core activity in the user-interface design process?

a. Requirements engineering
b. User analysis
c. UML modeling
d. System design [1 point]

6 Three principles or practices of *extreme programming* are:

a. Refactoring, risk analysis, small program releases
b. Requirements formalization, simple design, small program releases
c. Collective ownership, pair programming, sustainable pace
d. All of the above (that is, each of the above lines contains three valid XP principles or practices) [1 point]

7 *Legacy systems* are:

a. Software systems not yet implemented
b. Old computer-based systems still in use by organizations
c. Reverse engineered computer-based systems
d. None of the above [1 point]

8 Which of the following is a *strategic option* for dealing with *legacy systems*?

a. Re-engineer the system
b. Scrap the system completely
c. Replace all or part of the system with a new system
d. All of the above [1 point]

9 Briefly describe what *data acquisition* systems are and indicate in what kinds of applications they are typically used. Also, briefly explain what problems may arise in real-time systems that involve data acquisition and processing. [4 points]

10 Describe and compare the following two styles of user interaction: *menu selection* and *from fill-in*. Also, for each interaction style, give a concrete example of software application that you are familiar with – briefly explain how it supports the specific interaction style and provide your personal opinion on the style. [5 points]

11 Briefly describe (2-4 lines each) five practices or principles that are used in *extreme programming* (XP). Among these practices or principles you must include *pair programming* and *test-first development*. [5 points]

12 Consider your group project in CS425/625. Briefly describe the project concept (5 to 7 lines) and give examples of three functional requirements and two non-functional requirements. In addition, either (a) draw a sketch of your software product's main user interface or (b) draw (part of) the use case diagram of your software product (with at least 5 use cases). [6 points]