

CS487 Midterm Exam Summer 2005

Student Name:

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Section: Rice - Main

1. (4 Points) How does software differ from the artifacts produced by other engineering disciplines?

2. (10 Points) The waterfall model is appropriate for projects with what Characteristics?

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3. (13 Points) List the four design models required for a complete specification of a software design and the role of each.

4. (7 Points) Link each Diagram to its appropriate description

| | |
|--------------------------------|---|
| Use-case diagram | is created to establish the boundary between the system and the environment. |
| Class diagram | is created to define the major subsystems and to show the lines of information (data and control) flow |
| A system context diagram - SCD | Describes how the external entities (people, devices) can interact with the system |
| A system flow diagram – SFD | provides an indication of how data are transformed as they move through the system and the functions that transform the data flow |
| ERD | Used to describe the behavior of objects and could also be used to describe the entire system behavior |
| State diagram | depicts data object relationships |
| Data flow diagram (DFD) - | Used to describe the static structure of the system |

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Part 2 – Circle the correct answer in questions 1 through 22 below (66 Points)

1. Which of these are the 5 generic software engineering framework activities?

- A) communication, planning, modeling, construction, deployment
- B) communication, risk management, measurement, production, reviewing
- C) analysis, designing, programming, debugging, maintenance
- D) analysis, planning, designing, programming, testing

2. The prototyping model of software development is

- A) A reasonable approach when requirements are well defined.
- B) A useful approach when a customer cannot define requirements clearly.
- C) The best approach to use for projects with large development teams.
- D) A risky model that rarely produces a meaningful product.

3. Which of these is not one of the phase names defined by the Unified Process model for software development?

- A) Inception phase
- B) Elaboration phase
- C) Construction phase
- D) Validation phase

4. In the Unified Process model requirements are determined iteratively and may span more than one phase of the process.

- A) True
- B) False

5. The spiral model of software development

- A) Ends with the delivery of the software product
- B) Is more chaotic than the incremental model
- C) Includes project risks evaluation during each iteration
- D) All of the above

6. The incremental model of software development is

- A) A reasonable approach when requirements are well defined.
- B) A good approach when a working core product is required quickly.
- C) The best approach to use for projects with large development teams.
- D) A revolutionary model that is not used for commercial products

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7. **What are the four framework activities found in the Extreme Programming (XP) process model?**
 - A) analysis, design, coding, testing
 - B) planning, analysis, design, coding
 - C) planning, analysis, coding, testing
 - D) planning, design, coding, testing

8. **What role(s) do user stories play in agile planning?**
 - A) Define useful software features and functions delivered to end-users
 - B) Determine a schedule used to deliver each software increment
 - C) Provide a substitute to performing detailed scheduling of activities
 - D) Used to estimate the effort required build the current increment
 - E) both a and d

9. **Analysis models depict software in which three representations?**
 - A) architecture, interface, component
 - B) cost, risk, schedule
 - C) information, function, behavior
 - D) None of the above

10. **Which of the following can be elements of computer-based systems?**
 - A) documentation
 - B) software
 - C) people
 - D) hardware
 - E) all of the above

11. **Which UML diagrams are useful for analysis modeling?**
 - A) Use-case diagram
 - B) Activity diagram
 - C) Class diagram
 - D) State diagram
 - E) All of the above

12. **During project inception the intent of the of the tasks are to determine**
 - A) basic problem understanding
 - B) nature of the solution needed
 - C) people who want a solution
 - D) none of the above
 - E) a, b and c

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- 13. Which of following is not a UML diagram used creating a system analysis model?**
- A) activity diagram
 - B) class diagram
 - C) dataflow diagram
 - D) state diagram
- 14. Which of the following items does not appear on a CRC card?**
- A) class collaborators
 - B) class name
 - C) class reliability
 - D) class responsibilities
- 15. The state diagram**
- A) depicts relationships between data objects
 - B) depicts functions that transform the data flow
 - C) indicates how data are transformed by the system
 - D) indicates system reactions to external events
- 16. Which of the following are areas of concern in the design model?**
- A) architecture
 - B) data
 - C) interfaces
 - D) project scope
 - E) a, b and c
- 17. Which of these are characteristics of a good design?**
- A) exhibits strong coupling between its modules
 - B) implements all requirements in the analysis model
 - C) includes test cases for all components
 - D) provides a complete picture of the software
 - E) both b and d
- 18. Inheritance provides a mechanism by which changes to lower level classes can be propagated to all super classes quickly.**
- A) True
 - B) False
- 19. Polymorphism reduces the effort required to extend an object system by**
- A) coupling objects together more tightly.
 - B) enabling a number of different operations to share the same name.
 - C) making objects more dependent on one another.
 - D) removing the barriers imposed by encapsulation.

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- 20. Which of the following is not one of the five design class types**
- A) Business domain classes
 - B) Entity classes
 - C) Process classes
 - D) User interface classes
- 21. Which design model is analogous to the detailed drawings of the access points and external utilities for a house?**
- A) Architectural design
 - B) Component-level design
 - C) Data design
 - D) Interface design
- 22. Which design model is analogous to a set of detailed drawings for each room in a house?**
- A) Architectural design
 - B) Component-level design
 - C) Data design
 - D) Interface design