CS6361 Requirements Engineering page 1/8

The University of Texas at Dallas
Department of Computer Science

Test 1 March 2, 2000

Conditions: Closed book Duration: 70 minutes

State assumptions, if there is any

Please write legibly; unreadable answers are NOT answers!

Name: _____

{Please underline last name}

Student Number: _____

1. _____ /20

2. _____ /30

3. _____ /20

4. _____ /20

5. _____ /10

Total _____ /100

1. [20 marks] **page 2/8**

For each of the following ten statements, indicate whether it is true (mark T) or false (mark F). (No penalty for a wrong answer)

__T__ This is Test 1 for CS6361.

___ 1. According to CMM, a process definition is more important than a product definition.

___ 2. A variable, say "John", in C++ refers to a real person "John".

___ 3. According to various surveys, as discussed in class, the most important kind of errors are discovered during unit testing.

___ 4. Use of a formal notation always implies the consistency of a requirements specification but not the completeness of the specification.

___ 5. Backward traceability if and only if forward traceability.

___ 6. Use of a semi-formal modeling language is futile without the use of a formal modeling language.

___ 7. One type of forward traceability is tracing from requirements to domain experts.

___ 8. Ethnomethodology tends to work well during requirements specification, when the subject matter mostly involves tacit knowledge.

___ 9. Data flow diagrams (DFDs) have been proven to be highly effective in developing an enterprise requirements model.

___ 10. The building blocks (i.e., ontology) of a programming language consists of such notions as agents and goals.

2. [30 marks] **page 3/8**

Circle the best answer to each of the following questions.

1. Due to an electrical malfunction, a helicopter pilot can not determine the current position. The pilot holds a handwritten sign "WHERE AM I?" in the window. People in a tall building drew a large sign "YOU ARE IN A HELICOPTER". Which is the most related to the problem with this large sign?

1. system functional requirements
2. system non-functional requirements
3. system information modelling
4. enterprise requirements

2. Enterprise requirements modeling involves:

1. descriptive modeling
2. business process reengineering
3. prescriptive modeling
4. contextual analysis
5. all of the above

3. A software system model for an electronic procurement system should be about:

1. relationships between users of the system
2. objectives of the enterprise
3. roles of the employees of the organization
4. tasks of the employees of the organization
5. none of the above

4. The major causes of the Ariane 5 (the French rocket project) include:

1. poor formal verification
2. poor communication
3. use of suboptimal routing algorithms
4. attempt to solve computationally intractable problems
5. none of the above

5. The main roles of UML include:

1. modeling of non-functional requirements
2. a methodology
3. modeling of enterprise requirements
4. object-oriented modeling of functional system requirements
5. all of the above

Circle the best answer to each of the following questions.

6. Which pertains to a "good" knowledge representation notation?

1. program efficiency
2. data persistence
3. maximum run-time concurrency
4. none of the above

7. Which is relevant to the subject world?

1. usage pattern
2. process requirements
3. domain experts
4. procedure call
5. none of the above

8. According to the experience with the pacemaker system, as discussed in class, the main reason for the lack of system reliability has to do with:

1. suboptical solutions
2. poor system design
3. misuse of standards
4. requirements incompleteness
5. none of the above

9. Requirements volatility is caused by:

1. changes in algorithm analysis
2. semi-decidability of requirements
3. changing semantics of object-oriented programming languages
4. changing sources of requirements
5. none of the above

10. A software requirements specification (i.e., software system model) for a cellular telephony system should describe:

1. the structure of the customer database
2. software modular decomposition
3. an efficient algorithm for sorting the customer information
4. a data structure for a sub-linear time search algorithm
5. none of the above

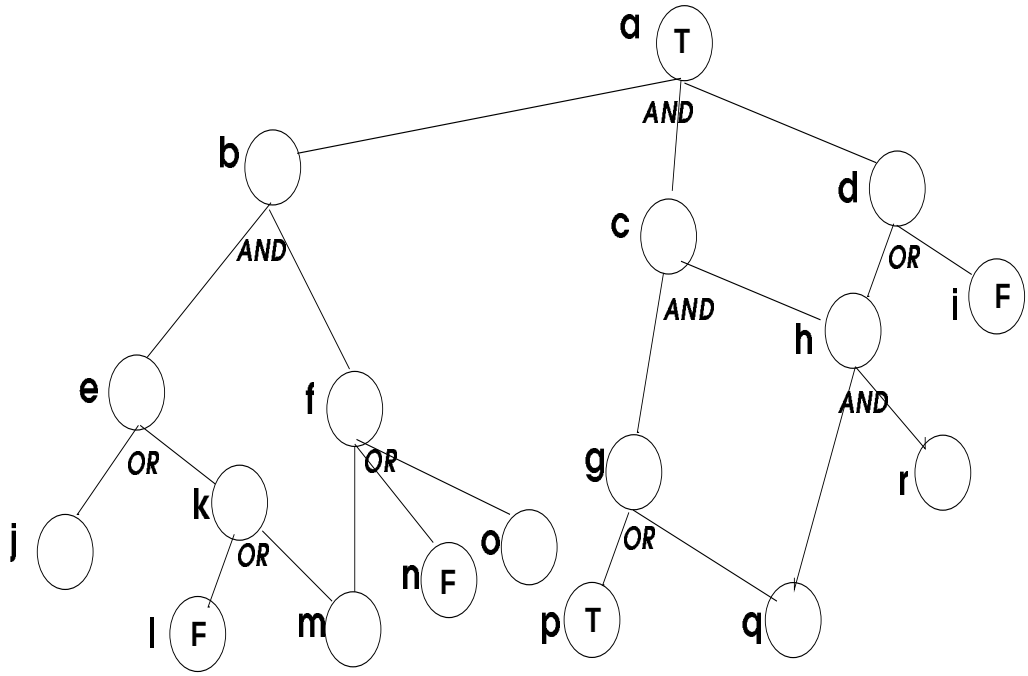
3. [20 marks]

1. (10 points) Precisely and concisely state what the Pareto principle means in the context of requirements engineering.

2. (10 points) Concisely and precisely describe the differences between a "notation" and a "methodology", as discussed in class.

4. [20 marks] **page 6/8**

Consider the following AND/OR decompositions of goals into subgoals.



1. (10 points) Fill in all empty circles with either a "T" (true) or "F" (false) in such a way that the graph becomes consistent. Also indicate where multiple assignments are possible.

2. (10 points) Produce an executable specification which corresponds to the diagram.

5. [10 marks]

1. (8 points) Using as simple a diagram as possible, show how the *call forwarding* and *call blocking* features can interact inconsistently with each other.

2. (2 points) Concisely describe how you would define the requirements on the permissible interactions between the *call forwarding* and *call blocking* features.