Chapter 8: Structuring System Logic Requirements

Multiple Choice Questions

1. Which of the following is not a logic model?
   a. Structured English
   b. decision tables
   c. decision trees
   d. data flow diagrams

   Answer: d  Difficulty: Med  Reference: p. 244

2. Which of the following is a modified version of the English language useful for representing the logic in information system processes?
   a. Structured English
   b. COBOL
   c. Unified Modeling Language
   d. pseudocode

   Answer: a  Difficulty: Med  Reference: p. 244

3. A modeling technique that allows you to represent a set of conditions and the actions that follow from them in a tabular format best describes:
   a. data flow diagram
   b. decision table
   c. decision tree
   d. Structured English

   Answer: b  Difficulty: Med  Reference: p. 244

4. Techniques used for modeling process decision logic include:
   a. decision trees
   b. decision tables
   c. Structured English
   d. all of the above

   Answer: d  Difficulty: Med  Reference: p. 244
5. In the analysis phase, logic modeling:
   a. will be complete and reasonably detailed, but it will also be generic in that it will not reflect the structure or syntax of a particular programming language
   b. should not be complete and detailed; it will be generic in that it will not reflect the structure or syntax of a particular programming language
   c. should be complete and detailed, reflecting the structure and syntax of a particular programming language
   d. should be complete and reflect the physical aspects of the system

   Answer: a  Difficulty: Hard  Reference: p. 245

6. Modeling a system's logic is part of:
   a. requirements determination
   b. requirements structuring
   c. alternative generation and selection
   d. logical design

   Answer: b  Difficulty: Med  Reference: p. 245

7. The deliverables for logic modeling include:
   a. a Structured English representation of process logic
   b. state-transition diagrams
   c. decision tree representations
   d. all of the above

   Answer: d  Difficulty: Med  Reference: p. 246

8. The deliverables for logic modeling would not include:
   a. decision table representations
   b. structure charts
   c. Structured English representations of process logic
   d. decision tree representations

   Answer: b  Difficulty: Med  Reference: p. 246

9. A modified form of the English language used to specify the logic of information system processes defines:
   a. Structured English
   b. shorthand
   c. decision logic
   d. state-transition diagram

   Answer: a  Difficulty: Med  Reference: p. 247
10. The modeling technique that relies on action verbs and noun phrases, and contains no adjectives or adverbs is called:
   a. decision logic
   b. Unified Modeling Language
   c. Structured English
   d. English pseudocode

   Answer: c  Difficulty: Med  Reference: p. 247

11. Action verbs are used in Structured English to name:
   a. data structures
   b. sources
   c. processes
   d. entities

   Answer: c  Difficulty: Med  Reference: p. 247

12. Which of the following is a true statement regarding Structured English?
   a. Adjectives and adverbs are used to enhance process descriptions.
   b. Noun phrases describe processes.
   c. Each analyst should use the standard version of Structured English.
   d. Structured English uses a subset of the English vocabulary to express information system process procedures.

   Answer: d  Difficulty: Med  Reference: p. 247

13. Which of the following processes can Structured English represent?
   a. sequence
   b. repetition
   c. conditional statements
   d. all of the above

   Answer: d  Difficulty: Med  Reference: p. 247

14. Which of the following is a difference between Structured English and pseudocode?
   a. Structured English is a communication technique between programmers and systems analysts.
   b. Pseudocode is a communication technique between analysts and users.
   c. Structured English resembles spoken English; pseudocode resembles a programming language.
   d. Actually, Structured English and pseudocode are synonymous terms.

   Answer: c  Difficulty: Med  Reference: p. 250
15. Structured English requires the analyst to:
   a. note the opening and closing of files
   b. use adverbs and adjectives when describing data structures
   c. initialize variables
   d. do none of the above

   Answer: d  Difficulty: Med  Reference: p. 250

16. If several different conditions are involved, and combinations of these conditions dictate which of several actions should be taken, then:
   a. Structured English is preferred over a state-transition diagram
   b. a decision table is much clearer than a Structured English statement
   c. Structured English provides a better representation than a decision tree
   d. decision tables are less effective in presenting the process logic

   Answer: b  Difficulty: Med  Reference: p. 250

17. A decision table does not include:
   a. statements
   b. condition stubs
   c. action stubs
   d. rules

   Answer: a  Difficulty: Med  Reference: p. 250

18. The part of a decision table that links conditions to actions is the section that contains the:
   a. action statements
   b. rules
   c. condition statements
   d. decision stubs

   Answer: b  Difficulty: Med  Reference: p. 250

19. A matrix representation of the logic of a decision, which specifies the possible conditions for the decision and the resulting actions, defines a:
   a. structure chart
   b. state transition diagram
   c. decision table
   d. sequence diagram

   Answer: c  Difficulty: Med  Reference: p. 250
20. The part of a decision table that lists the actions that result for a given set of conditions is called:

   a. action stubs
   b. condition stubs
   c. rule section
   d. condition execution

Answer: a  Difficulty: Easy  Reference: p. 250

21. The part of a decision table that lists the conditions relevant to the decision is called:

   a. action stubs
   b. condition stubs
   c. condition list
   d. condition execution

Answer: b  Difficulty: Easy  Reference: p. 250

22. The part of a decision table that specifies which actions are to be followed for a given set of conditions refers to:

   a. action stubs
   b. condition list
   c. rules
   d. decision list

Answer: c  Difficulty: Med  Reference: p. 250

23. In a decision table, a condition whose value does not affect which actions are taken for two or more rules is referred to as a(n):

   a. indifferent condition
   b. static condition
   c. fixed condition
   d. flexible condition

Answer: a  Difficulty: Med  Reference: p. 251

24. If Rules 2, 4, and 6 are indifferent conditions, then:

   a. Rules 2, 4, and 6 are eliminated from the matrix
   b. the number of rules is reduced by condensing Rules 2, 4, and 6 into one rule
   c. Rules 2, 4, and 6 will result in at least two additional rules being included in the matrix
   d. Rules 2, 4, and 6 have no impact on the interpretation of the matrix

Answer: b  Difficulty: Med  Reference: p. 251
25. An indifferent condition is represented by a(n):
   a. dash (-)
   b. asterisk (*)
   c. exclamation point (!)
   d. pound sign (#)
   Answer: a Difficulty: Med Reference: p. 251

26. Basic procedures for constructing a decision table do not include:
   a. listing all possible rules
   b. naming the conditions and the values each condition can assume
   c. identifying selection criteria
   d. simplifying the decision table
   Answer: c Difficulty: Hard Reference: pp. 251-252

27. When condition values are either “yes” or “no”, these values are called a(n):
   a. extended entry
   b. simple entry
   c. complex entry
   d. limited entry
   Answer: d Difficulty: Med Reference: p. 251

28. A condition that has more than two values is a(n):
   a. extended entry
   b. simple entry
   c. complex entry
   d. limited entry
   Answer: a Difficulty: Med Reference: p. 251

29. To determine the number of rules required for the decision table, you would:
   a. add the number of values for each condition to the number of values for every other condition
   b. multiply the number of conditions by two
   c. add the number of values for each condition to the number of values for every other condition, then subtract 1
   d. multiply the number of values for each condition by the number of values for every other condition
   Answer: d Difficulty: Hard Reference: p. 251
30. Assume we have three conditions. Condition one has two values; condition two has three values; condition three has three values. How many rules are needed?
   a. 8  
   b. 6  
   c. 5  
   d. 18  
   Answer: d Difficulty: Med Reference: p. 251

31. Assume the first condition has two values; the second condition has two values; the third condition has three values. How many rules will there be?
   a. 7  
   b. 12 
   c. 6  
   d. 11  
   Answer: b Difficulty: Med Reference: p. 251

32. Assume the first condition has four values; the second condition has two values; the third condition has two values. How many rules will there be?
   a. 8  
   b. 7  
   c. 16 
   d. 24  
   Answer: c Difficulty: Med Reference: p. 251

33. A decision table is simplified by:
   a. removing extended entries  
   b. removing any rules with impossible actions  
   c. removing simple entries  
   d. removing any rules with static actions  
   Answer: b Difficulty: Med Reference: p. 252

34. Which of the following is true regarding decision tables?
   a. Decision tables can model the relatively complicated logic of a process.  
   b. Decision tables are more useful than Structured English for complicated logic.  
   c. Decision tables convey information in a tabular format.  
   d. All of the above.  
   Answer: d Difficulty: Med Reference: p. 253
35. Which of the following is not true regarding decision tables?

a. Structured English is more useful than decision tables when modeling the complicated logic of a process.
b. Decision tables are compact.
c. Decision tables allow you to check for the extent to which your logic is complete, consistent, and not redundant.
d. Decision tables can model the relatively complicated logic of a process.

Answer: a  Difficulty: Med  Reference: p. 253

36. A graphical technique that depicts a decision or choice situation as a connected series of nodes and branches is a:

a. decision tree  
b. decision table  
c. structure chart  
d. hierarchical chart

Answer: a  Difficulty: Med  Reference: p. 254

37. A graphical representation of a decision situation in which decision points are connected together by arcs and terminate in ovals is a:

a. state-transition diagram  
b. decision tree  
c. decision table  
d. sequence diagram

Answer: b  Difficulty: Med  Reference: p. 254

38. Components of a decision tree include:

a. states  
b. rules  
c. decision points  
d. stubs

Answer: c  Difficulty: Med  Reference: p. 254

39. On a decision tree, decision points are represented by:

a. arrows  
b. ovals  
c. squares  
d. nodes

Answer: d  Difficulty: Med  Reference: p. 254
40. To read a decision tree, you begin at the:
   a. top root node
   b. far-left root node
   c. far-right root node
   d. bottom root node

   Answer: b  Difficulty: Med  Reference: p. 254

41. Which of the following is not true regarding a decision tree?
   a. To read a decision tree, you begin at the top root node.
   b. Each path leaving a node corresponds to one of the options for that choice.
   c. All possible actions are listed on the far right of the diagram in leaf nodes.
   d. Decision points are represented by nodes.

   Answer: a  Difficulty: Med  Reference: p. 254

42. Based on the criteria of determining conditions and actions, decision trees:
   a. are considered to be not as effective as Structured English and decision tables
   b. support the process better than Structured English, but not as well as decision tables
   c. are considered to be the best technique to support the process
   d. support the process better than decision tables, but not as well as Structured English

   Answer: c  Difficulty: Hard  Reference: p. 256

43. When converting conditions and actions to sequential statements, Structured English:
   a. is superior to decision tables and decision trees
   b. and decision trees are viewed as being the best techniques
   c. is rated the third best
   d. is rated second best

   Answer: b  Difficulty: Med  Reference: p. 256

44. For checking consistency and completeness, Structured English was rated as:
   a. the best technique
   b. the second best technique
   c. the third best technique
   d. not very useful

   Answer: c  Difficulty: Med  Reference: p. 256
45. For checking consistency and completeness, decision tables:
   a. were rated as second best when compared with Structured English and decision
trees
   b. were rated best when compared with Structured English and decision trees
   c. were rated third best when compared with Structured English and decision trees
   d. tied with decision trees as the best technique

   Answer: d Difficulty: Hard Reference: p. 256

46. For which of the following criteria are decision tables rated best when compared to
decision trees?
   a. portraying complex logic
   b. making decisions
   c. portraying simple problems
   d. none of the above

   Answer: a Difficulty: Med Reference: p. 256

47. For which of the following criteria are decision trees rated best when compared to
decision tables?
   a. portraying complex logic
   b. more compact
   c. easier to manipulate
   d. making decisions

   Answer: d Difficulty: Med Reference: p. 256

48. For which of the following criteria were decision tables rated worst when compared to
decision trees?
   a. more compact
   b. easier to manipulate
   c. portraying complex logic
   d. portraying simple problems

   Answer: d Difficulty: Med Reference: p. 256

49. For which of the following criteria were decision trees rated worst when compared to
decision tables?
   a. being harder to graph
   b. portraying complex logic
   c. making decisions
   d. portraying simple problems

   Answer: b Difficulty: Med Reference: p. 256
50. Which of the following is a true statement?

a. Both decision tables and trees can be checked for completeness, consistency, and degree of redundancy.
b. The pioneers of structured analysis and design thought decision tables were best for portraying complex logic.
c. The pioneers of structured analysis and design thought decision trees were better for simpler problems.
d. All of the above.

Answer: d  Difficulty: Med  Reference: p. 256
“List …” Type of Questions

1. Specify “Best”, “2nd Best” and “3rd Best” for the following comparison criteria for Structured English, Decision Tables and Decision Trees.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Structured English</th>
<th>Decision Tables</th>
<th>Decision Trees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determining Conditions and Actions</td>
<td>Second Best</td>
<td>Third Best</td>
<td>Best</td>
</tr>
<tr>
<td>Transforming Conditions and Actions into Sequence</td>
<td>Best</td>
<td>Third Best</td>
<td>Best</td>
</tr>
<tr>
<td>Checking Consistency and Completeness</td>
<td>Third Best</td>
<td>Best</td>
<td>Best</td>
</tr>
</tbody>
</table>

Answer: PPT slide Difficulty: High

2. Specify “Best” and “Worst” for the following comparison criteria for Decision Tables and Decision Trees

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Decision Tables</th>
<th>Decision Trees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portraying complex logic</td>
<td>Best</td>
<td>Worst</td>
</tr>
<tr>
<td>Portraying simple rules</td>
<td>Worst</td>
<td>Best</td>
</tr>
<tr>
<td>Making decisions</td>
<td>Worst</td>
<td>Best</td>
</tr>
<tr>
<td>More compact</td>
<td>Best</td>
<td>Worst</td>
</tr>
<tr>
<td>Easier to manipulate</td>
<td>Best</td>
<td>Worst</td>
</tr>
</tbody>
</table>
“Do an Exercise” Type of Problem

1. Exercise 1, page 260
   Answer: HW # 8

2. Exercise 5, page 260
   Answer: HW # 8

3. Exercise 7, page 260
   Answer: HW # 8

4. An individual wishes to withdraw cash from an ATM machine. Prepare a decision table to represent this situation. Please note any assumptions that you make.

   A suggested answer is provided below.

<table>
<thead>
<tr>
<th>Conditions/ Courses of Actions</th>
<th>Rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct User ID</td>
<td>Y</td>
</tr>
<tr>
<td>Withdrawal Amount</td>
<td>&lt; or = Balance</td>
</tr>
<tr>
<td>Give Cash</td>
<td>X</td>
</tr>
<tr>
<td>Generate Receipt</td>
<td>X</td>
</tr>
<tr>
<td>Update Checking Balance</td>
<td>X</td>
</tr>
<tr>
<td>End Transaction</td>
<td>X</td>
</tr>
</tbody>
</table>

   **Rules:**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>N</td>
<td>Y</td>
</tr>
</tbody>
</table>
5. An individual wishes to withdraw cash from an ATM machine. Prepare a decision tree to represent this situation. Please note any assumptions that you make.

A suggested answer is provided below.

6. Construct a decision tree for the following situation. A student can only enroll in an MIS class if the class is not full and if he has completed the necessary prerequisite course.

A suggested answer is provided below.