

CHAPTER 14:

SYSTEMS DESIGN AND DEVELOPMENT

Multiple Choice:

1. US Navy officer, _____ played a key role in developing the first compiler and the business programming language called COBOL.
- A. Grace Murray Hopper
 - B. Jeff Bezos
 - C. Andy Grove
 - D. Alan Kay

Answer: A **Reference:** Grace Murray Hopper Sails on Software **Difficulty:** Moderate

2. The step in the problem-solving process that determines the resources that are available for a project is:
- A. understanding the problem.
 - B. developing a plan.
 - C. evaluating.
 - D. carrying out the plan.

Answer: B **Reference:** How People Make Programs **Difficulty:** Moderate

3. In programming, another term describing top-down design is:
- A. reverse engineering.
 - B. subproblem alteration.
 - C. problem modification.
 - D. stepwise refinement.

Answer: D **Reference:** How People Make Programs **Difficulty:** Moderate

4. _____ is the process of breaking problems into smaller and smaller problems.

- A. Reverse engineering
- B. Sub problem alteration
- C. Problem modification
- D. Stepwise refinement

Answer: D **Reference:** From Idea to Algorithm

Difficulty: Moderate

5. A(n) _____ is a set of steps used to solve a problem.

- A. syntax
- B. computer architecture
- C. operating system
- D. algorithm

Answer: D **Reference:** How People Make Programs

Difficulty: Moderate

6. In the programming process, testing the algorithm checks the:

- A. completed program.
- B. logic.
- C. syntax.
- D. pseudocode.

Answer: B **Reference:** Testing the Algorithm

Difficulty: Moderate

7. A programmer is _____ when he/she uses an algorithm to write programming language statements.

- A. debugging
- B. interpreting
- C. compiling
- D. coding

Answer: D **Reference:** From Algorithm to Program

Difficulty: Moderate

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8. A common programming language is:

- A. C++.
- B. pseudocode.
- C. FTP.
- D. Mark III.

Answer: A **Reference:** A Simple Program

Difficulty: Easy

9. A(n) _____ is a named portion of a computer's memory whose contents can be examined and changed.

- A. variable
- B. heading
- C. comment
- D. algorithm

Answer: A **Reference:** A Simple Program

Difficulty: Moderate

10. When executing the _____ control structure, the computer performs each instruction in the order it appears.

- A. repetition
- B. decision
- C. sequence
- D. selection

Answer: C **Reference:** Control Structures

Difficulty: Moderate

11. A _____ control structure tells a computer what to do, based on whether a condition is true or false.

- A. sequence
- B. selection
- C. pseudocode
- D. compiled

Answer: B **Reference:** Control Structures

Difficulty: Easy

12. The control structure used to make logical decisions is known as the:

- A. selection.
- B. pseudocode.
- C. sequence.
- D. compiled.

Answer: A **Reference:** Control Structures

Difficulty: Moderate

13. The control structure that repeats steps until a condition is satisfied is known as:

- A. repetition.
- B. serial.
- C. synchronization.
- D. control unit.

Answer: A **Reference:** Control Structures

Difficulty: Moderate

14. A(n) _____ translates an entire program before passing it on to the computer for execution.

- A. parser
- B. syntax stabilizer
- C. compiler
- D. interpreter

Answer: C **Reference:** Into the Computer

Difficulty: Moderate

15. A(n) _____ translates one program statement at a time.

- A. compiler
- B. coder
- C. parser
- D. interpreter

Answer: D **Reference:** Into the Computer

Difficulty: Challenging

16. _____ is defined as grammar rules of a programming language.

- A. Logic
- B. Debugging
- C. Syntax
- D. Data structure

Answer: C **Reference** Into the Computer

Difficulty: Moderate

17. A computer treats machine language as:

- A. binary.
- B. macro language.
- C. 4GL.
- D. psuedocode.

Answer: A **Reference:** Machine Language and Assembly Language

Difficulty: Moderate

18. For subtraction, if a SUB statement is used instead of 10110111, the programmer is using _____ language.

- A. fourth-generation
- B. assembly
- C. C++
- D. macro

Answer: B **Reference:** Machine Language and Assembly Language

Difficulty: Moderate

19. All of the following are true of assembly language EXCEPT:

- A. it is a low level language.
- B. it is used when speed and direct communication with hardware is essential.
- C. it must be rewritten if used on a computer with a different machine language.
- D. it requires little detail to be effective.

Answer: D **Reference:** Machine Language and Assembly Language

Difficulty: Challenging

20. The following are all high-level languages EXCEPT:

- A. COBOL.
- B. Assembler.
- C. Java.
- D. Basic.

Answer: B **Reference:** High-Level Languages

Difficulty: Easy

21. In structured programming, small programs or subprograms within a program are known as:

- A. modules.
- B. basic programs.
- C. variables.
- D. compiled statements.

Answer: A **Reference:** Structured Programming

Difficulty: Challenging

22. To overcome the problem of “spaghetti code”, _____ was developed:

- A. structured programming
- B. assembling
- C. compiling
- D. extreme programming

Answer: A **Reference:** Structured Programming

Difficulty: Moderate

23. An example of an object-oriented programming language is:

- A. Java.
- B. Machine language.
- C. Assembly language.
- D. BASIC.

Answer: A **Reference:** Object-Oriented Programming

Difficulty: Challenging

24. All of the following are true of object-oriented programming EXCEPT

- A. it is easy to use features from one program in another program.
- B. it is good for highly interactive simulations.
- C. it supports hierarchical categorization of objects so that a new object can inherit properties and methods of the object from which it descends.
- D. it cannot be used in multimedia authoring tools.

Answer: D **Reference:** Object-Oriented Programming

Difficulty: Challenging

25. In object-oriented programming, objects

- A. contain both data and instructions.
- B. can only receive messages.
- C. can only send messages.
- D. cannot be reused.

Answer: A **Reference:** Object-Oriented Programming

Difficulty: Moderate

26. Visual programming enables programmers to:

- A. write machine code.
- B. point to objects on the screen to incorporate them into the program code.
- C. bypass tight security systems.
- D. populate a database of visual products.

Answer: B **Reference:** Visual Programming

Difficulty: Moderate

27. Apple's HyperCard and Visual Basic are examples of:

- A. second-generation languages.
- B. machine languages.
- C. visual programming languages.
- D. macro languages.

Answer: C **Reference:** Visual Programming

Difficulty: Moderate

28. _____ are used to automate tasks that are repeated frequently.

- A. Pseudocodes
- B. Macros
- C. Accelerator boards
- D. Emulators

Answer: B **Reference:** Macro Languages **Difficulty:** Moderate

29. Of the following, _____ language is the easiest to use and closest to natural English,

- A. macro
- B. machine
- C. assembly
- D. fourth-generation

Answer: D **Reference:** Fourth-Generation Languages **Difficulty:** Moderate

30. _____ is a standard language used to find information in a database.

- A. SQL
- B. XP
- C. Assembler
- D. Compiler

Answer: A **Reference:** Fourth-Generation Languages **Difficulty:** Moderate

31. _____ software tools enable a user to construct an application using only the features he/she will need.

- A. Object-oriented
- B. SQL
- C. Component
- D. Macro

Answer: C **Reference:** Component Software **Difficulty:** Moderate

32. _____ programming is a collaborative approach to programming.

- A. Extreme
- B. Fourth-generation language
- C. High-level language
- D. HTML

Answer: A **Reference:** Extreme Programming

Difficulty: Moderate

33. An extreme programming team includes all of the following EXCEPT:

- A. programmers.
- B. interpreters.
- C. clients.
- D. customers.

Answer: B **Reference:** Extreme Programming

Difficulty: Moderate

34. _____ is a page-description language commonly used to create Web pages.

- A. Word
- B. C++
- C. HTML
- D. Perl

Answer: C **Reference:** Programming for the Web

Difficulty: Moderate

35. All of the following are benefits of outsourcing IT services EXCEPT:

- A. lower payroll expenses.
- B. able to hire the most talented individuals in the field.
- C. able to retain fewer permanent employees.
- D. employees develop more IT expertise.

Answer: D **Reference:** Systems Development

Difficulty: Moderate

Chapter 14: Systems Design and Development

36. The first phase of the systems development life cycle (SDLC) is:

- A. analysis.
- B. investigation.
- C. development.
- D. design.

Answer: B **Reference:** Systems Development Lifecycle

Difficulty: Moderate

37. The final phase of the SDLC is:

- A. maintenance.
- B. retirement.
- C. development.
- D. implementation.

Answer: B **Reference:** Systems Development Lifecycle

Difficulty: Moderate

38. A feasibility study is part of the _____ phase.

- A. investigation
- B. analysis
- C. design
- D. development

Answer: A **Reference:** Investigation

Difficulty: Moderate

39. _____ feasibility determines if the proposed system will meet the needs of the organization and be developed in a timely manner.

- A. Technical
- B. Operational
- C. Economic
- D. Organizational

Answer: B **Reference:** Investigation

Difficulty: Easy

Chapter 14: Systems Design and Development

40. _____ feasibility studies the hardware and software needed for the proposed system and considers its reliability and whether or not it should be purchased or developed.
- A. Organizational
 - B. Operational
 - C. Economic
 - D. Technical

Answer: D **Reference:** Investigation

Difficulty: Easy

41. The project team investigates legal implications of the proposed system while doing the _____ feasibility study.
- A. organizational
 - B. technical
 - C. operational
 - D. economic

Answer: A **Reference:** Investigation

Difficulty: Moderate

42. Following on the feasibility studies, the steering committee decides whether or not to proceed with the _____ phase of the SDLC.
- A. investigation
 - B. development
 - C. analysis
 - D. design

Answer: C **Reference:** Analysis

Difficulty: Moderate

43. During the _____ phase of the SDLC, the systems analyst identifies requirement by interviewing users of the current system.
- A. analysis
 - B. development
 - C. design
 - D. investigation

Answer: A **Reference:** Analysis

Difficulty: Moderate

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44. The functional requirements report documents the work done in the _____ phase.

- A. analysis
- B. development
- C. design
- D. investigation

Answer: A **Reference:** Analysis

Difficulty: Moderate

45. Prototyping is used in the _____ phase of the SDLC.

- A. analysis
- B. development
- C. design
- D. investigation

Answer: C **Reference:** Design

Difficulty: Easy

46. A(n) _____ system is a limited working system that gives users and management an idea of what the completed system will look like.

- A. prototype
- B. beta tested
- C. alpha tested
- D. development

Answer: A **Reference:** Design

Difficulty: Moderate

47. The process of turning a design into an actual working system occurs during the _____ phase.

- A. design
- B. analysis
- C. development
- D. implementation

Answer: C **Reference:** Development

Difficulty: Moderate

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48. Alpha testing is done in the _____ phase of the SDLC.

- A. implementation
- B. development
- C. design
- D. analysis

Answer: B **Reference:** Development

Difficulty: Moderate

49. The _____ phase of the SDLC includes end-user education and training, equipment replacement, and file conversion.

- A. implementation
- B. maintenance
- C. development
- D. design

Answer: A **Reference:** Implementation

Difficulty: Moderate

50. When converting to the new system, a company uses the _____ approach by using the new system at a test site until it is deemed ready for implementation throughout the company.

- A. direct cutover
- B. phase-in
- C. pilot
- D. parallel systems

Answer: C **Reference:** Implementation

Difficulty: Moderate

51. Periodic evaluation of the new system is part of the _____ phase of the SDLC.

- A. implementation
- B. maintenance
- C. development
- D. design

Answer: B **Reference:** Maintenance

Difficulty: Easy

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52. Monitoring, evaluating, repairing, and enhancing are done throughout the _____ phase of the SDLC.
- A. design
 - B. investigation
 - C. maintenance
 - D. development

Answer: C **Reference:** Maintenance

Difficulty: Moderate

53. A(n) _____ is used by systems analysts to determine what project milestone is scheduled next and that milestone's target completion date.
- A. data flow diagram
 - B. decision table
 - C. systems flowchart
 - D. Gantt chart

Answer: D **Reference:** The Systems Development Lifecycle

Difficulty: Easy

54. A(n) _____ uses standard symbols to show the overall structure of a system, the sequence of activities in the system, and the type of media or technology used at each step.
- A. data flow diagram
 - B. system flowchart
 - C. prototype
 - D. decision table

Answer: B **Reference:** Modeling Tools

Difficulty: Challenging

55. A graph showing the movement of data through a system is known as a:
- A. data flow diagram.
 - B. system flowchart.
 - C. prototype.
 - D. data dictionary.

Answer: A **Reference:** Modeling Tools

Difficulty: Easy

Chapter 14: Systems Design and Development

56. In a data flow diagram, a process is indicated by a:

- A. diamond.
- B. triangle.
- C. arrow.
- D. circle.

Answer: D **Reference:** Modeling Tools

Difficulty: Challenging

57. In a data flow diagram, data flow is indicated by a(n):

- A. rectangle.
- B. square.
- C. circle.
- D. arrow.

Answer: D **Reference:** Modeling Tools

Difficulty: Challenging

58. A(n) _____ is a modeling tool that uses a tabular method of visualizing and specifying rules based on multiple factors.

- A. decision table
- B. spreadsheet
- C. DFD
- D. SDLC

Answer: A **Reference:** Modeling Tools

Difficulty: Moderate

59. For a complex procedure, a systems analyst uses a(n) _____ to document if-then statements.

- A. data flow diagram
- B. systems flowchart
- C. Gantt chart
- D. decision table

Answer: D **Reference:** Modeling Tools

Difficulty: Easy

60. _____ is a modeling tool that shows where an information system physically stores data.
- A. Data flow diagram
 - B. Decision table
 - C. Gantt chart
 - D. System flowchart.

Answer: D **Reference:** Modeling Tools

Difficulty: Moderate

61. MIS stands for:
- A. management information systems.
 - B. machinery information systems.
 - C. management informative solutions.
 - D. marginal information systems.

Answer: A **Reference:** The Science of Computing

Difficulty: Moderate

62. The field of _____ deals with the way hardware and software work together.
- A. prototype analysis
 - B. beta testing
 - C. computer design
 - D. computer architecture

Answer: D **Reference:** The Science of Computing

Difficulty: Moderate

63. When a software engineer attempts to prove the correctness of the program, he/she is using _____ techniques.
- A. beta testing
 - B. alpha testing
 - C. prototype
 - D. program verification

Answer: D **Reference:** Software Solutions

Difficulty: Moderate

Chapter 14: Systems Design and Development

64. A new experimental approach to software development in which each system is developed individually and quality is certified before it is integrated with other systems is called _____ programming.
- A. clean-room
 - B. structured
 - C. visual basic
 - D. object-oriented

Answer: A **Reference:** Software Solutions

Difficulty: Moderate

Fill in the Blank:

65. The first step in the problem-solving process is _____.

Answer: understanding the problem **Reference:** How People Make Programs

Difficulty: Moderate

66. The last step in the programming process is _____.

Answer: testing and debugging the program **Reference:** How People Make Programs

Difficulty: Challenging

67. Programmers use stepwise refinement or _____ design when they start with the main idea and work their way down to the details of the problem.

Answer: top-down **Reference:** How People Make Programs

Difficulty: Moderate

68. _____ is a mix of English and a computer language.

Answer: Pseudocode **Reference:** How People Make Programs

Difficulty: Easy

69. Writing computer program statements is known as _____.

Answer: coding **Reference:** From Algorithm to Program

Difficulty: Moderate

70. A named portion of memory whose contents is examined and changed by a computer program is called a(n) _____.

Answer: variable **Reference:** A Simple Program

Difficulty: Challenging

71. A(n) _____ control structure starts with the first instruction and stops with the last instruction.

Answer: sequence **Reference:** Control Structures

Difficulty: Moderate

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72. A(n) _____ control structure tells a computer what to do based on whether a condition is true or false.

Answer: selection or decision **Reference:** Control Structures **Difficulty:** Moderate

73. A(n) _____ control structure is a looping mechanism.

Answer: repetition **Reference:** Control Structures **Difficulty:** Moderate

74. A(n) _____ is a program that translates and transmits computer program statements one at a time.

Answer: interpreter **Reference:** Into the Computer **Difficulty:** Moderate

75. A(n) _____ is a program that translates all statements in a computer program at the same time.

Answer: compiler **Reference:** Into the Computer **Difficulty:** Moderate

76. _____ errors are violations of the grammar rules of a programming language.

Answer: Syntax **Reference:** Into the Computer **Difficulty:** Easy

77. An integrated programming environment includes a text editor, a compiler, and a(n) _____ which locates and corrects errors.

Answer: debugger **Reference:** Into the Computer **Difficulty:** Moderate

78. _____ language is a low-level language in which instructions are represented by 1s and 0s that the CPU can execute directly.

Answer: Machine **Reference:** Machine Language and Assembly Language **Difficulty:** Moderate

79. In _____ language, programmers use alphabetic codes that correspond to the machine's numeric instructions.

Answer: assembly **Reference:** Machine Language and Assembly Language **Difficulty:** Easy

80. Machine language is often translated into _____, a number system with base 16.

Answer: hexadecimal **Reference:** Machine Language and Assembly Language **Difficulty:** Moderate

81. Structured programming addresses the problem of _____ code in computer programs.

Answer: spaghetti **Reference:** Structured Programming **Difficulty:** Moderate

82. OOP stands for _____.

Answer: object-oriented programming **Reference:** Object-Oriented Programming **Difficulty:** Challenging

83. Using OOP, programmers can build programs from prefabricated _____.

Answer: objects **Reference:** Object-Oriented Programming **Difficulty:** Easy

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84. Programmers can use _____ programming tools to draw pictures or choose objects shown on the screen.

Answer: visual **Reference:** Visual Programming **Difficulty:** Easy

85. User-oriented _____ languages are also called scripting languages.

Answer: macro **Reference:** Macro Languages **Difficulty:** Moderate

86. 4GL stands for _____.

Answer: fourth-generation language **Reference:** Fourth-Generation Languages **Difficulty:** Moderate

87. A recent development in the software industry is _____ software, with which users make up custom applications using only the features they will need.

Answer: component **Reference:** Component Software **Difficulty:** Moderate

88. _____ is a type of collaborative programming that has pairs of programmers working on an application at the same time.

Answer: Extreme programming **Reference:** Extreme Programming **Difficulty:** Easy

89. _____ programming is a new methodology which emphasizes team work and frequent releases of software updates.

Answer: Extreme **Reference:** Extreme Programming **Difficulty:** Easy

90. _____ is a full-featured object-oriented language used to create Web applets.

Answer: Java **Reference:** Programming for the Web **Difficulty:** Moderate

91. _____ is a powerful markup language that separates Web page content from layout and overcomes HTML's limitations.

Answer: XML **Reference:** Programming for the Web **Difficulty:** Moderate

92. _____ systems are collections of people, machines, data, and methods organized to accomplish specific functions and solve specific problems.

Answer: Information **Reference:** Programs in Perspective: Systems Analysis and the Systems Lifecycle **Difficulty:** Moderate

93. _____ is a problem-solving process that begins when someone recognizes a problem or opportunity and ends with evaluation of the solution.

Answer: Systems development **Reference:** Systems Development **Difficulty:** Moderate

94. A(n) _____ committee made up of representatives from each functional area in a company is responsible for deciding which IT project will be done first.

Answer: steering **Reference:** Systems Development **Difficulty:** Easy

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95. _____ is used by companies who wish to contract systems analysts instead of hiring them.

Answer: Outsourcing **Reference:** Systems Development **Difficulty:** Easy

96. SDLC stands for _____.

Answer: systems development life cycle **Reference:** The Systems Development Lifecycle **Difficulty:** Moderate

97. The _____ phase of the SDLC studies an existing problem or opportunity and determines if a new system is feasible.

Answer: investigation **Reference:** Investigation **Difficulty:** Moderate

98. _____ feasibility determines if the cost for the proposed system will be offset by the anticipated benefits.

Answer: Economic **Reference:** Investigation **Difficulty:** Moderate

99. In the _____ phase of the SDLC, the systems analyst gathers data about the current system and identifies requirements of the new system.

Answer: analysis **Reference:** Analysis **Difficulty:** Easy

100. In the SDLC, the investigation phase focuses on why, while the analysis phase focuses on what. The _____ phase focuses on how.

Answer: design **Reference:** Design **Difficulty:** Easy

101. _____ is an iterative process in which the systems analyst uses a limited working system to show users how the completed system will work.

Answer: Prototyping **Reference:** Design **Difficulty:** Easy

102. The _____ phase of the SDLC includes scheduling; hardware, software and communications purchasing; documentation; and programming.

Answer: development **Reference:** Development **Difficulty:** Moderate

103. In the development phase, _____ testing is the initial testing done by the system development team.

Answer: alpha **Reference:** Development **Difficulty:** Easy

104. At the end of the development phase, _____ testing is done by potential end users.

Answer: beta **Reference:** Development **Difficulty:** Moderate

105. The systems analyst can choose one of four approaches for converting to a new system: direct cutover, parallel, phase-in or _____.

Answer: pilot **Reference:** Implementation **Difficulty:** Moderate

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106. When converting to a new system, the _____ approach involves stopping the old system and then starting the new system.

Answer: direct cutover

Reference: Implementation

Difficulty: Moderate

107. When converting to the new system, the _____ approach operates the old system along with the new system for a period of time.

Answer: parallel

Reference: Implementation

Difficulty: Moderate

108. The _____ phase of the SDLC includes on-going monitoring, evaluating, repairing, and enhancing the new system.

Answer: maintenance

Reference: Maintenance

Difficulty: Easy

109. A(n) _____ chart is used by the systems analyst to plan the schedule deadlines and determine milestones for systems development.

Answer: Gantt

Reference: How it Works: The Systems Development Lifecycle

Difficulty: Moderate

110. During system design, the systems analyst uses a(n) _____ with standard symbols to show the sequence of activities as well as the type of media or technology used in each step.

Answer: system flowchart

Reference: Modeling Tools

Difficulty: Moderate

111. The _____ is a modeling tool that shows how data moves through a system.

Answer: data flow diagram

Reference: Modeling Tools

Difficulty: Moderate

112. A(n) _____ is a catalog of all the data flowing through a system.

Answer: data dictionary

Reference: Modeling Tools

Difficulty: Moderate

113. A(n) _____ uses rows and columns to document rules and what happens when certain conditions occur.

Answer: decision table

Reference: Modeling Tools

Difficulty: Moderate

114. CASE stands for _____.

Answer: computer-aided systems engineering

Reference: Computer-Aided Systems Engineering

Difficulty: Moderate

115. The academic discipline of _____ includes programming, engineering, database management, graphic design, learning artificial intelligence, and creating and working with networks.

Answer: computer science

Reference: The Science of Computing

Difficulty: Easy

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116. _____ involves the study and integration of how hardware and software are coordinated into an integrated system.

Answer: Computer architecture **Reference:** The Science of Computing **Difficulty:** Moderate

117. _____ determine the logical structure of data.

Answer: Data structures **Reference:** The Science of Computing **Difficulty:** Moderate

118. Computer _____ deals with the way hardware and software work together.

Answer: architecture **Reference:** The Science of Computing **Difficulty:** Moderate

119. _____ specialists apply the theoretical concepts of computer science to real-world, practical business problems.

Answer: Management information system, MIS **Reference:** The Science of Computing **Difficulty:** Moderate

120. _____ programming is a new experimental approach to software development that combines formal notation, proofs of correctness, and statistical quality control.

Answer: Clean-room **Reference:** The State of Software **Difficulty:** Challenging

Matching:

121. Match the following programming languages to the phrases that describe them:

- | | |
|-------------|--|
| I. macro | A. developed in 1960 and still in use |
| II. COBOL | B. language used in artificial intelligence |
| III. LISP | C. automates tasks done over and over again |
| IV. Java | D. low-level language used for applications that need to communicate directly with the hardware and operate very quickly |
| V. assembly | E. code a computer's CPU can understand and obey without translation |
| VI. machine | F. excels at producing Web-based applets |

Answers: C, A, B, F, D, E **Reference:** Multiple locations **Difficulty:** Challenging

122. Match the following SDLC phases to the keywords that describe them:

- | | |
|-------------------|--|
| I. Investigation | A. training and system conversion |
| II. Analysis | B. end product is a functional requirements report |
| III. Design | C. monitoring and evaluating new system |
| IV. Development | D. includes prototyping |
| V. Implementation | E. identifying of problems or opportunities |
| VI. Maintenance | F. phasing out of system |
| VII. Retirement | G. scheduling, purchasing, documenting, programming, and testing |

Answers: E, B, D, G, A, C, F

Difficulty: Moderate

Reference: The Systems Development Lifecycle