Chapter 14:

Systems Design and Development

## Multiple Choice:

1. When a company needs a specific application that is not available on the market, it hires:
	1. technical writers.
	2. programmers.
	3. expert system writers.
	4. purchasing agents.

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

1. The most important and often overlooked step in the four steps of problem solving is:
	1. understanding the problem.
	2. developing a plan.
	3. evaluation.
	4. carrying out the plan.

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

1. The problem-solving step that determines the set of resources that are available for a project is:
	1. defining the problem.
	2. devising, refining, and testing the algorithm.
	3. writing the program.
	4. testing and debugging the program.

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

1. The final problem solving step is:
	1. devising, refining, and testing the algorithm.
	2. writing the program.
	3. defining the problem.
	4. testing and debugging the program.

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

1. The process of breaking problems into smaller and smaller problems is known as:
	1. subproblem definement.
	2. subproblem refinement.
	3. algorithm definement.
	4. stepwise refinement.

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

1. The design process starts at the:
	1. bottom with the details.
	2. top and works down to the details.
	3. middle point and works out to the larger ideas and the smaller details simultaneously.
	4. bottom and proceeds to the top and then the middle.

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

1. A set of step-by-step instructions that, when completed, solves a problem is known as a(n):
	1. process.
	2. processing project.
	3. operating system.
	4. algorithm.

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

1. A logical structure that controls the order in which instructions are carried out is known as a(n):
	1. psuedocode structure.
	2. compiled process.
	3. interpreter process.
	4. control structure.

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

1. An “If…Then…Else” structure is used when:
	1. three or more choices are given.
	2. two options are given and a choice has to be made between them.
	3. two or more choices occur simultaneously.
	4. two programs run simultaneously.

**Answer:** B **Reference:** Control Structures **Difficulty:** Easy

1. The control structure that is used to make logical decisions is known as the:
	1. selection control structure.
	2. repetition control structure.
	3. sequence control structure.
	4. default control structure.

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

1. Testing the algorithm:
	1. tests the completed program.
	2. checks the logic.
	3. checks for wording irregularities.
	4. checks for CPU processing errors.

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

1. The following could be considered a bare-bones:

begin game

repeat turn until number is guessed or seven turns are completed

end game

* 1. algorithm.
	2. pseudocode.
	3. control structure.
	4. variable.

**Answer:** A **Reference:** Stepwise Refinement **Difficulty:** Moderate

1. When a programmer develops the language for an algorithm, it is known as:
	1. debugging.
	2. interpretation.
	3. compiling.
	4. coding.

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

1. A common programming language is:
	1. C++.
	2. B+.
	3. ftp.
	4. Z.

**Answer:** A **Reference:** From Algorithm to Program **Difficulty:** Easy

1. The list of ingredients in a recipe most closely resembles a program’s:
	1. heading.
	2. declarations and definitions of variables.
	3. body.
	4. code.

**Answer:** B **Reference:** A Simple Program **Difficulty:** Challenging

1. The named portion of a computer’s memory whose contents a program can examine and change is a(n):
	1. variable.
	2. heading.
	3. comment.
	4. algorithm.

**Answer:** A **Reference:** A Simple Program **Difficulty:** Moderate

1. What is text referred to that helps readers understand the program but is ignored by the program?
	1. Debuggers
	2. Syntax stablers
	3. Comments
	4. Variables

**Answer:** C **Reference:** A Simple Program **Difficulty:** Moderate

1. Why is a text editor necessary when programming?
	1. It can be used to save comments about a program.
	2. It can be used to enter and save a program.
	3. It can be used to compile a program.
	4. It can be used to execute a program.

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

1. To convert a program into machine language, \_\_\_\_\_\_\_\_\_\_\_\_ software is needed.
	1. translation
	2. coding
	3. text editor
	4. debugger

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

1. A program that translates each statement of a program individually is known as a(n):
	1. compiler.
	2. coder.
	3. debugger.
	4. interpreter.

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

1. When the grammar rules of a programming language are not followed, \_\_\_\_\_\_\_\_\_\_\_\_ errors occur.
	1. logic
	2. debugging
	3. syntax
	4. data structure

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

1. From the perspective of a computer, machine language is:
	1. all binary.
	2. a high-level language.
	3. a fourth-generation language.
	4. all psuedocode.

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

1. Assembly language is considered a \_\_\_\_\_\_\_\_\_ language.
	1. fourth-generation
	2. low-level
	3. high-level
	4. third-generation

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

1. The first high-level programming language was:
	1. COBOL.
	2. FORTRAN.
	3. LISP.
	4. Basic.

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

1. The easy-to-learn language developed in the mid-1960s that is often used by beginning programmers is:
	1. COBOL.
	2. C.
	3. HTML.
	4. Basic.

**Answer:** D **Reference:** High-Level Languages **Difficulty:** Moderate

1. Small programs or subprograms within a program are known as:
	1. modules.
	2. GoTo statements.
	3. variables.
	4. compiled statements.

**Answer:** A **Reference:** Structured Programming **Difficulty:** Challenging

1. Modern Basic programming language is:
	1. Structured Basic.
	2. Visual Basic.
	3. Early Basic.
	4. QuickBASIC.

**Answer:** B **Reference:** How It Works 14.1: The Evolution of Basic **Difficulty:** Moderate

1. What type of programming language is C++?
	1. Object-oriented language
	2. Machine language
	3. Assembly language
	4. Structured language

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

1. Visual programming uses:
	1. an array of squares, circles, and rectangles to create programs.
	2. graphics and pointing to onscreen objects.
	3. a collection of objects.
	4. requests from the user to access information.

**Answer:** B **Reference:** Visual Programming **Difficulty:** Moderate

1. Apple’s HyperCard and Visual Basic are examples of:
	1. object-oriented languages.
	2. structured languages.
	3. visual programming languages.
	4. macro languages.

**Answer:** C **Reference:** Macro Languages **Difficulty:** Challenging

1. \_\_\_\_\_\_\_\_\_\_\_\_ are used to automate repetitive tasks.
	1. Structures
	2. Macros
	3. Modules
	4. Variables

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

1. Which of the following types of languages is the easiest to use and closest to natural English?
	1. High-level languages
	2. Machine language
	3. Assembly language
	4. Fourth-generation languages

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

1. \_\_\_\_\_\_\_\_\_\_\_\_ language enables a user to request information from a database.
	1. Query
	2. Fourth-generation
	3. High-level
	4. Macro

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

1. \_\_\_\_\_\_\_\_\_\_\_\_ progamming is a collaborative approach to programming.
	1. Extreme
	2. Fourth-generation language
	3. High-level language
	4. HTML

**Answer:** A **Reference:** Extreme Programming **Difficulty:** Moderate

1. \_\_\_\_\_\_\_\_\_\_\_\_ is a page-description language commonly used to create Web pages.
	1. JavaScript
	2. C++
	3. HTML
	4. Perl

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

1. All of the following are benefits of outsourcing IT services EXCEPT:
	1. lower payroll expenses.
	2. the ability to hire the most talented individuals in the field.
	3. the ability to retain fewer permanent employees.
	4. more employees.

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

1. The first phase of the systems development life cycle (SDLC) is:
	1. analysis.
	2. investigation.
	3. development.
	4. design.

**Answer:** B **Reference:** The Systems Development Life Cycle **Difficulty:** Moderate

1. The final phase of the SDLC is:
	1. maintenance.
	2. retirement.
	3. development.
	4. implementation.

**Answer:** B **Reference:** The Systems Development Life Cycle **Difficulty:** Moderate

1. The process of turning a design into an actual working system occurs during the \_\_\_\_\_\_\_\_\_\_\_\_ phase.
	1. design
	2. analysis
	3. development
	4. implementation

**Answer:** C **Reference:** The Systems Development Life Cycle **Difficulty:** Moderate

1. A limited working system that gives users and management an idea of what a completed system will look like is known as a(n):
	1. prototype system.
	2. beta tested system.
	3. alpha tested system.
	4. development system.

**Answer:** A **Reference:** The Systems Development Life Cycle **Difficulty:** Moderate

1. A graphical depiction of a physical system that currently exists or is being proposed is known as a:
	1. data flow diagram.
	2. system flowchart.
	3. prototype.
	4. decision table.

**Answer:** B **Reference:** Modeling Tools **Difficulty:** Challenging

1. A graphical depiction of the movement of data through a system is known as a:
	1. data flow diagram.
	2. system flowchart.
	3. prototype.
	4. data dictionary.

**Answer:** A **Reference:** Modeling Tools **Difficulty:** Challenging

1. When a software engineer attempts to prove the correctness of her program, she is developing \_\_\_\_\_\_\_\_\_\_\_\_ techniques.
	1. beta testing
	2. alpha testing
	3. prototype
	4. program verification

**Answer:** D **Reference:** Software Solutions **Difficulty:** Moderate

1. MIS stands for:
	1. management information system.
	2. machinery information system.
	3. management informative solutions.
	4. marginal information systems.

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

1. The field of \_\_\_\_\_\_\_\_\_\_\_\_ deals with the way hardware and software work together.
	1. prototyping
	2. beta testing
	3. alpha testing
	4. computer architecture

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

## Fill in the Blank:

1. A(n) \_\_\_\_\_\_\_\_\_\_\_\_ control structure is a group of instructions followed in a specific order.

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

1. A(n) \_\_\_\_\_\_\_\_\_\_\_\_ control structure is a looping mechanism.

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

1. The name of a recipe is most similar to the \_\_\_\_\_\_\_\_\_\_\_\_ part of a program.

**Answer:** program heading **Reference:** A Simple Program **Difficulty:** Challenging

1. The actual writing of a program is known as \_\_\_\_\_\_\_\_\_\_\_\_.

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

1. An integrated programming environment includes a text editor, a compiler, and a(n) \_\_\_\_\_\_\_\_\_\_\_\_ for locating and correcting errors.

**Answer:** debugger **Reference:** From Algorithm to Program **Difficulty:** Moderate

1. Assembly language and machine language are both considered \_\_\_\_\_\_\_\_\_\_\_\_ languages.

**Answer:** low-level **Reference:** Machine Language and Assembly Language **Difficulty:** Moderate

1. OOP technology stands for \_\_\_\_\_\_\_\_\_\_\_\_.

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

1. 4GL stands for \_\_\_\_\_\_\_\_\_\_\_\_.

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

1. \_\_\_\_\_\_\_\_\_\_\_ is a programming language that uses English-like phrases.

**Answer:** 4GL or fourth-generation language **Reference:** Fourth-Generation Languages **Difficulty:** Moderate

1. \_\_\_\_\_\_\_\_\_\_\_\_ is a full-featured object-oriented language that is often used to create Web applets.

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

1. A(n) \_\_\_\_\_\_\_\_\_\_\_\_ is a person who directly uses information produced by a system.

**Answer:** end-user **Reference:** Systems Development **Difficulty:** Moderate

1. SDLC stands for \_\_\_\_\_\_\_\_\_\_\_\_.

**Answer:** systems development life cycle **Reference:** Systems Development Life Cycle **Difficulty:** Moderate

1. A(n) \_\_\_\_\_\_\_\_\_\_\_\_ consists of the programs, people, machines, data, and methods that accomplish specific functions to solve specific problems of a company.

**Answer:** information system **Reference:** Program in Perspective: Systems Analysis and the Systems Life Cycle **Difficulty:** Challenging

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

**Answer:** investigation **Reference:** The Systems Development Life Cycle **Difficulty:** Moderate

1. The \_\_\_\_\_\_\_\_\_\_\_\_ phase of SDLC includes gathering documents, interviewing users, observing the system in use, and analyzing data.

**Answer:** analysis **Reference:** The Systems Development Life Cycle **Difficulty:** Moderate

1. In the development phase of the SDLC, when a system is nearly finished, potential end-users may \_\_\_\_\_\_\_\_\_\_\_\_ the system and report bugs to the developers.

**Answer:** beta test **Reference:** The Systems Development Life Cycle **Difficulty:** Moderate

1. CASE, commercially available software, stands for \_\_\_\_\_\_\_\_\_\_\_\_.

**Answer:** computer-aided systems engineering **Reference:** Computer-Aided Systems Engineering **Difficulty:** Moderate

1. 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

1. \_\_\_\_\_\_\_\_\_\_\_\_ involves the study and integration of how hardware and software harmonize, thereby coordinating both into a fully integrated system.

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

1. \_\_\_\_\_\_\_\_\_\_\_\_ is a new experimental approach to software development, modeled after microchip manufacturing techniques, that combines formal notation, proofs of correctness, and statistical quality control.

**Answer:** Clean-room programming **Reference:** Software Solutions **Difficulty:** Challenging

## Matching:

1. Match the following programming languages to the keywords that describe them:

I. FORTRAN A. developed in 1960 and still used today by many programmers

II. COBOL B. used in artificial intelligence

III. LISP C. first high-level language

IV. Basic D. object-oriented programming language

V. C++ E. named after a 17th century mathematician

VI. Pascal F. Java-like language from Windows

VII. Python G. easy-to-learn language often used by beginning programmers

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

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

I. Investigation A. training as well as equipment, file, and system conversion

II. Analysis B. use of data flow diagrams to illustrate the flow of data

III. Design C. monitoring and evaluating a new system

IV. Development D. use of flowcharts

 V. Implementation E. identification of problems with computer systems

VI. Maintenance F. bringing the system down, soon to be replaced with a new system

VII. Retirement G. plan of schedule deadlines and milestones for a new system

**Answers:** E, B, D, G, A, C, F **Reference:** How It Works: The Systems Development Lifecycle
**Difficulty:** Moderate