IT SPECIALIST EXAM OBJECTIVES

Java

1. Java Fundamentals
   1.1 Describe the use of main in a Java application
      • Signature of main, how to consume an instance of your own class, command-line arguments
   1.2 Perform basic input and output using standard packages
      • Print statements, import and use the Scanner class
   1.3 Evaluate the scope of a variable
      • Declare a variable within a block, class, or method
   1.4 Comment and document programs
      • Evaluate the syntax of Javadoc, write syntactically correct code comments

2. Data Types, Variables, and Expressions
   2.1 Declare and use primitive data type variables
      • Data types, including byte, char, int, double, short, long, float, Boolean; identify when precision is lost; initialization; how primitives differ from wrapper object types such as Integer and Boolean
   2.2 Construct and evaluate code that manipulates strings
      • String class and string literals, comparisons, concatenation, case, and length; String.format methods; string operators; the immutable nature of strings; initialization; null
   2.3 Construct and evaluate code that creates, iterates, and manipulates arrays and array lists
      • One- and two-dimensional arrays, including initialization, null, size, iterating elements, accessing elements; array lists, including adding and removing elements, traversing the list
   2.4 Construct and evaluate code that performs parsing, casting, and conversion
      • cast between primitive data types, convert primitive types to equivalent object types, parse strings to numbers, convert primitive data types to strings
   2.5 Construct and evaluate arithmetic expressions
      • Arithmetic operators, assignment, compound assignment operators, operator precedence

3. Flow Control Implementation
   3.1 Construct and evaluate code that uses branching statements
      • if, else, else if, switch; single-line vs. block; nesting; logical and relational operators
3.2 Construct and evaluate code that uses loops
• while, for, for each, do while; break and continue; nesting; logical, relational, and unary operators

4. Object-Oriented Programming
4.1 Construct and evaluate class definitions
• Constructors, constructor overloading, one class per .java file, this keyword, basic inheritance and overriding

4.2 Declare, implement, and access data members in classes
• private, public, protected; instance data members; static data members; use static final to create constants; describe encapsulation

4.3 Declare, implement, and access methods
• private, public, protected; method parameters; return type; void; return value; instance methods; static methods; overloading

4.4 Instantiate and use class objects in programs
• Instantiation, initialization, null, access and modify data members, access methods, access and modify static members, import packages and classes

5. CodeCompilation and Debugging
5.1 Troubleshoot syntax errors, logic errors, and runtime errors
• Print statements, javac command output, logic errors, console exceptions, stack trace evaluation

5.2 Implement exception handling
• try, catch, finally; Exception class; exception class types; display exception information