

Course Overview

Fundamentals of the Java Programming Language

Overview

The Fundamentals of the Java Programming Language course was designed to enable students with little or no programming experience to begin to learn programming using the Java programming language. The course teaches the significance of object-oriented programming, the keywords and constructs of the Java programming language, and the steps required to create simple Java technology programs.

Students taking this course can receive a solid basis in the Java programming language upon which to base continued work and training. The course features the Java Platform, Standard Edition 6 (Java SE 6) platform, and uses the Java SE Development Kit 6 (JDK 6) product.

Students who can benefit from this course:

- Beginners to programming who have basic mathematical, logical, and analytical problem-solving skills and who want to begin learning the Java programming language. This includes technical writers, web developers, technical managers, and individuals with a technical, non-programming background, such as system administrators
- Novice programmers and those programmers who prefer to start learning the Java programming language at an introductory level.
- Students who wish to begin their study of the Sun Certified Java Associate (SCJA) exam.

Delegates will learn how to

- demonstrate knowledge of Java technology, the Java programming language, and the product life cycle
- use various Java programming language constructs to create several Java technology applications
- use decision and looping constructs and methods to dictate program flow
- implement intermediate Java technology programming and object-oriented (OO) concepts in Java technology programs

Course Outline

Explaining Java Technology

- Describe key concepts of the Java programming language
- List the three Java technology product groups
- Summarize each of the seven stages of the product life cycle

Analyzing a Problem and Designing a Solution

- Analyze a problem using object-oriented analysis
- Design classes from which objects will be created

Developing and Testing a Java Technology Program

- Identify the four components of a class in the Java programming language
- Use the main method in a test class to run a Java technology program from the command line
- Compile and execute a Java technology program

Declaring, Initializing, and Using Variables

- Identify the use the syntax for variables and define the syntax for a variable
- List the eight Java programming language primitive data types
- Declare, initialize, and use variables and constants according to Java programming language guidelines and coding standards

- Modify variable values using operators
- Use promotion and type casting

Creating and Using Objects

- Declare, instantiate, and initialize object reference variables
- Compare how object reference variables are stored in relation to primitive variables
- Use a class (the String class) included in the Java Software Developer Kit (SDK)
- Use the Java 2 Platform, Standard Edition (J2SE[™]) class library specification to learn about other classes in this application programming interface (API)

Using Operators and Decision Constructs

- Identify relational and conditional operators
- Create if and if/else constructs
- Use the switch construct

Using Loop Constructs

- Create while loops
- Develop for loops
- Create do/while loops

Developing and Using Methods

- Describe the advantages of methods and define worker and calling methods
- Declare and invoke a method
- Compare object and static methods
- Use overloaded methods

Implementing Encapsulation and Constructors

- Use encapsulation to protect data
- Create constructors to initialize objects

Creating and Using Arrays

- Code one-dimensional arrays
- Set array values using length attribute and a loop
- Pass arguments to the main method for use in a program
- Create two-dimensional arrays

Implementing Inheritance

- Define and test your use of inheritance
- Explain abstraction
- Explicitly identify class libraries used in your code

Prerequisites

Required Prerequisites:

- Create and edit text files using a text editor
- Use a World Wide Web (WWW) browser
- Solve logic problems

Suggested Prerequisites:

- Describe the concept of a variable
- Execute commands using a command-line interface

Special Notices