Java SE7 Fundamentals

Introducing the Java Technology

- Relating Java with other languages
- Showing how to download, install, and configure the Java environment on a Windows system.
- Describing the various Java technologies such as Java EE, Java ME, Embedded Java SE
- Describing key features of the technology and the advantages of using Java
- Using an Integrated Development Environment (IDE)

Thinking in Objects

- Defining the problem domain
- Identifying objects and recognizing the criteria for defining objects

Introducing the Java Language

- Defining classes
- Identifying the components of a class
- Creating and using a test class
- Compiling and executing a test program

Working with Primitive Variables

- Declaring and initializing field variables
- Describing primitive data types such as integral, floating point, textual, and logical
- Declaring variables and assigning values
- Using constants
- Using arithmetic operators to modify values

Working with Objects

- Declaring and initializing objects
- Storing objects in memory
- Using object references to manipulate data
- Using JSE javadocs to look up the methods of a class
- Working with String and StringBuilder objects

Using operators and decision constructs

- Using relational and conditional operators
- Testing equality between strings
- Evaluating different conditions in a program and determining the algorithm
- Creating if and if/else constructs
- Nesting and chaining conditional statements
- Using a switch statement

Creating and Using Arrays

- Declaring, instantiating, and initializing a one-dimensional Array
- Declaring, instantiating, and initializing a two-dimensional Array
- Using a for loop to process an Array
- Creating and initializing an ArrayList
- Using the import statement to work with existing Java APIs
- Accessing a value in an Array or and ArrayList
- Using the args Array

Using Loop Constructs

- Creating while loops and nested while loops
- Developing a for loop
- Using ArrayLists with for loops
- Developing a do while loop
- Understanding variable scope

Working with Methods and Method Overloading

- Creating and Invoking a Method
- Passing arguments and returning values
- Creating static methods and variables
- Using modifiers
- Overloading a method

Using Encapsulation and Constructors

- Creating constructors
- Implementing encapsulation

Introducing Advanced Object Oriented Concepts

- Using inheritance
- Using types of polymorphism such as overloading, overriding, and dynamic binding
- Working with superclasses and subclasses
- Adding abstraction to your analysis and design
- Understanding the purpose of Java interfaces
- Creating and implementing a Java interface

Handling Errors

- Understanding the different kinds of errors that can occur and how they are handled in Java
- Understanding the different kinds of Exceptions in Java
- Using Javadocs to research the Exceptions thrown by the methods of foundation classes
- Writing code to handle Exceptions

The Big Picture

- Creating packages and JAR files for deployment using java
- Two and three tier architectures
- Looking at some Java applications examples