

## Java SE7 Fundamentals

**Duration:** 5 Days

### What you will learn

The Java SE 7 Fundamentals 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 7 (Java SE 7), and uses the Java SE Development Kit 7 (JDK 7) product.

Students taking this course will have hands on experience learning basic object oriented concepts such as inheritance, encapsulation, and abstraction. They learn how to create and use simple Java classes containing arrays, loops, and conditional constructs. They also learn to use and manipulate object references, and to write simple error handling code. The course provides a solid understanding of what the Java SE7 platform is and how it is used in real world applications.

Learn To:

Use various Java programming language constructs to create several Java technology applications

Use decision and looping constructs and methods to dictate program flow

Perform basic error handling for your Java technology programs

Implement intermediate Java programming and object-oriented (OO) concepts in Java technology programs

Demonstrate knowledge of Java technology and the Java programming language

### Audience

Application Developers

Developer

Portal Developer

Project Manager

System Administrator

Technical Administrator

Technical Consultant

Web Administrator

### Course Objectives

Develop classes and describe how to declare a class

Analyze a business problem in order to recognize objects and operations that form the building blocks of the Java progra

Define the term

Demonstrate Java programming syntax

Write a simple Java program that compiles and runs successfully

Declare and initialize variables

List several primitive data types

Instantiate an object and effectively use object reference variables

Use operators, loops, and decision constructs

Declare and instantiate Arrays and ArrayLists and be able to iterate through them

Describe the benefits of using an Integrated Development Environment (IDE)

List and describe several key features of the Java technology

Declare a method with arguments and return values  
Use inheritance to declare and define a subclass of an existing superclass  
Describe how errors are handled in a Java program  
Describe examples of how Java is used in applications, as well as consumer products

## Course Topics

### 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, JavaME, 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