

Java 5 Programming Essentials with JSP and Servlets (Customized for Boeing)

Course Summary

Description

This course will introduce the student to the Java programming language using the Java EE Ganymede Eclipse. Through hands-on exercises, the student will become familiar with the Java syntax and the object oriented approach that this language utilizes. It is based on the new Java 1.5

Objectives

By the end of this course, students will be able to:

- Use the desired Java EE Ganymede Eclipse proficiently
- Understand the Java language syntax
- Create, compile, run and debug Java applications
- Manage the Java files
- Translate a class diagram into Java code (and vice-versa)
- Use the Collections framework
- Familiar with Using the Java API

Topics

- Basic Java syntax (data types, operators, control statement)
- Object-oriented programming in Java
- UML notation - Class Diagram
- Using Collections Framework
- Using Exceptions
- Navigating Sun's API documentation
- Generics and Collections Framework
- Varargs
- Getting Started with JEE Eclipse and Tomcat 6.0
- Servlets
- JavaServer Pages

Prerequisites

The student must be familiar object oriented programming and with basic programming concepts with prior programming experience in at least one language (COBOL, Visual Basic, C, etc.).

Audience

This course is designed for new Java programmers who have not previously programmed in an object-oriented language.

Duration

Four days

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Course Outline

I. Overview of the Course

- A. Java keyword: package
- B. The Lab Disk
- C. The Labs
- D. File Hierarchy of Eclipse Based IDE
- E. Mapping the Lab Disk with the IDE
- F. Notations

II. Overview of Eclipse

- A. What is the Eclipse Platform?
- B. Eclipse Architecture
- C. Getting Eclipse
- D. Verify the Installed JRE

III. First Java Application

- A. Class Declaration Syntax
- B. Java Application
- C. First Java Application
- D. Using the Source Code
- E. Comments

IV. Variables

- A. Variables
- B. Legal Identifiers
- C. Reserved Words
- D. Declaring Variables
- E. Terminologies
- F. Primitive Data Types
 - Integers
 - Floating Point
 - Character
 - boolean
- G. Assignment and Conversion
- H. Strings

V. Operators

- A. Arithmetic Operators
- B. String Operators
- C. Assignment Operator
- D. Relational Operators
- E. Increment/Decrement Operators
- F. Logical Operators
- G. Boolean Operators
- H. Logical Not

VI. Flow of Control

- A. Organizing Statements
- B. Control Flow Statements
- C. The if-then Statement

- D. The if-then-else Statement
- E. The if-then-if else Statement
- F. Ternary Operator
- G. The while Statement
- H. The do-while Statement
- I. The for Statement
- J. The `break` keyword
- K. The switch statement
- L. The `continue` keyword

VII. Classes vs Objects

- A. What is an Object?
- B. What is a Class?
- C. Classes
- D. Revisiting: Class Declaration Syntax
 - What are the Attributes of a Class?
 - Attribute Definition Syntax
 - Attributes of PartTime Class
- E. Revisiting: Class Declaration Syntax
 - Methods of a Class
 - Method Definition Syntax
 - Signature of the Method
 - Overloading a Method
 - Methods of PartTime Class
- F. Classes vs Object
- G. The `this` keyword
 - In Variable
 - In Method
- H. The `static` keyword
 - In Variable
 - In Method

VIII. Constructors

- A. Revisiting: Class Declaration Syntax
- B. Constructors
- C. Constructor Declaration Syntax
- D. Constructors of PartTime Class
- E. Invoking the Constructors
- F. Revisiting: The `this` keyword
 - In Constructors

IX. Arrays

- A. Arrays Defined
- B. Array Variable Syntax
 - Primitive Data Types
 - Object Data Types
 - Shortcut

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Course Outline (cont'd)

- C. Referencing the Array
 - D. Exceptions in Arrays
 - E. Arrays of Array
- X. Inheritance**
- A. Inheritance
 - B. Revisiting: Class Declaration Syntax
 - C. The `extends` Keyword
 - D. The `super` keyword
 - In Constructors
 - In a Variable
 - In a Method
 - E. The `final` keyword
 - In a Variable
 - In a Method
 - In a Class
- XI. Polymorphism**
- A. Polymorphism
 - B. Revisiting: Reference Variables
- XII. Encapsulation**
- A. Encapsulation
 - B. Applying Encapsulation
 - C. Access Modifiers
 - D. The `package` keyword
 - Using the `package` keyword
 - E. The `import` keyword
- XIII. Abstraction**
- A. Abstraction
 - B. The `abstract` Keyword
 - In Method
 - In Class
 - C. Interface
 - Interface Declaration Syntax
 - Revisiting: Class Declaration Syntax
 - Using an Interface
- XIV. Exception Handling**
- A. What is an Exception ?
 - B. How it Works
 - C. Exception Hierarchy
 - D. Error and Exception
 - E. Exception Class
 - F. Types of Exception
 - G. How to Handle Exception
 - H. Constructing an Exception Handler
- The try block
 - The catch block
 - The finally block
 - I. Throwing an Exception
 - J. Create and Use Your Own Exception
 - K. Chained Exception
- XV. Navigating the Java API (under development)**
- A. Java API
 - Instance Method
 - Class Method
 - B. The String Class
 - C. The Math Class
 - D. The StringBuilder Class
 - E. The Wrapper Classes
 - F. Boxing and Autoboxing
- XVI. Enumerations**
- A. Enumeration
 - B. Enumeration Declaration Syntax
 - C. Using an Enumeration
 - D. Advantages of Enumeration
- XVII. Generics and Collection Framework**
- A. Generics
 - B. Why Generics
 - C. Class Declaration Syntax: Using Generics
 - D. Using Parameterized Type Class
 - E. Collections
 - F. What is the Collection Framework?
 - G. The `import` keyword
 - H. To Traverse a Collection
 - I. Revisiting: For Each Loop
 - J. Collection Interfaces
 - K. Collection Classes
 - Priority Queue
 - Vector
 - ArrayList
 - LinkedList
 - Iterator
 - HashSet
 - TreeSet
 - TreeMap

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Course Outline (cont'd)

**XVIII. Getting Started with Java EE Eclipse
and Tomcat Server**

- A. Software Requirements
- B. JRE 1.5
- C. Eclipse Platform
- D. Eclipse Architecture
- E. Apache Tomcat Server 6.0
- F. JEE Web and Tomcat

XIX. Servlets

- A. What is a servlet?
- B. Typical Uses of Servlets
- C. How Servlets Work
- D. Java Servlet Architecture
- E. Servlet's Lifecycle
- F. The service() method
- G. Writing HelloServlet
- H. Deployment Descriptor

XX. JavaServer Pages

- A. JavaServer Pages
- B. Why Use JSP?
- C. How JSP Works
- D. JSPs Life