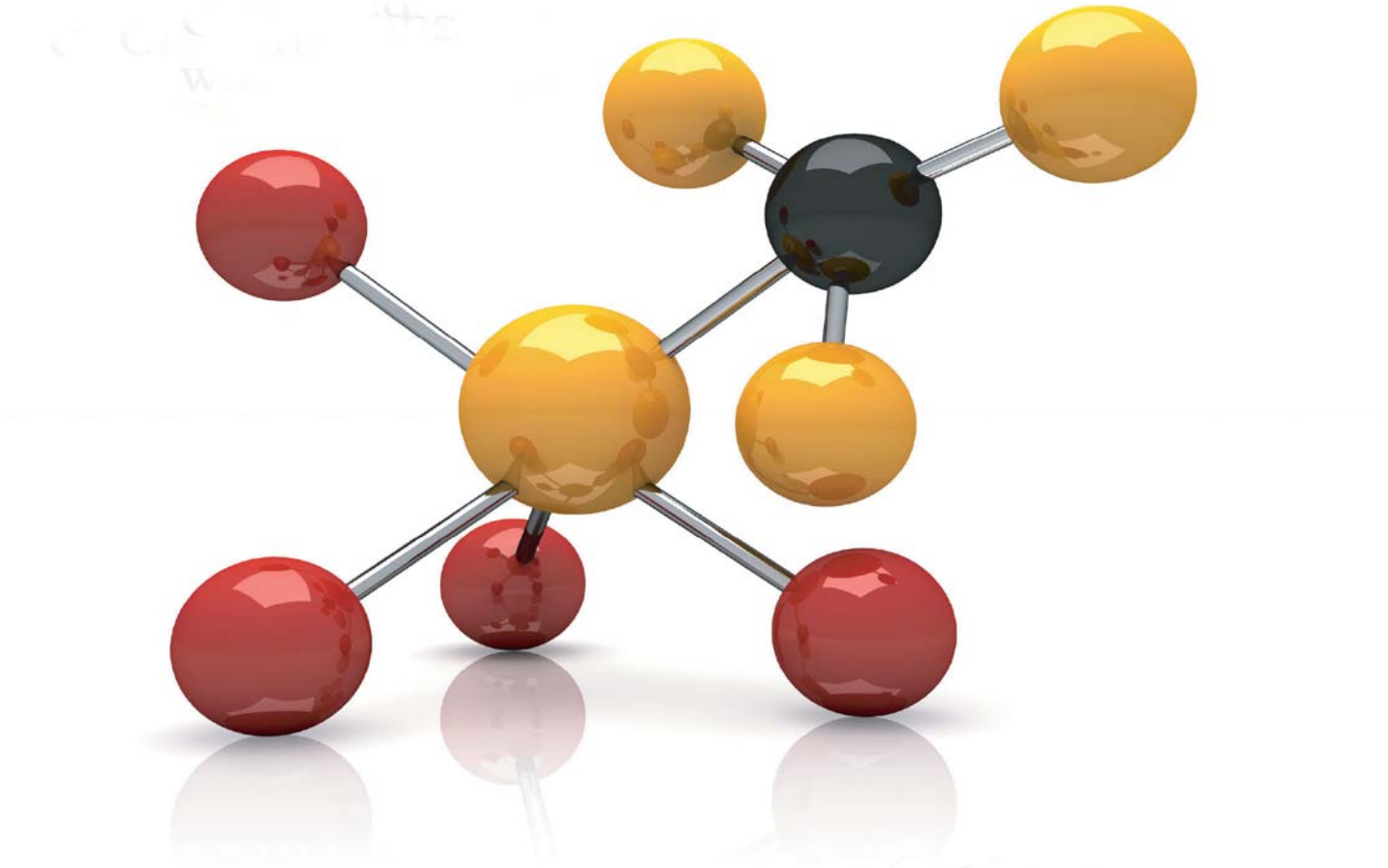
Course Catalog
2012-2013

Beginning Java
Application Development



CSLiT
.....Connecting Technology

Java Programming

This hands on Java Programming course provides an introduction to programming using the Java language. Students are introduced to the application development cycle, structure of programs, and specific language syntax. The course introduces important algorithmic constructs, string and character manipulation, dynamic memory allocation, standard I/O, and fundamental object-oriented programming concepts. The course explains the use of inheritance and polymorphism early on so the students can practice extensively in the hands on labs. Structured programming techniques and error handling are emphasized. The course includes the processing of command line arguments and environment variables so students will be able to write flexible, user-friendly programs.

Students Will Learn

- Fundamental Elements of Programming
- Classes, Objects and Methods
- Structured Programming Techniques
- Arrays and Data Structures
- Exception Handling
- String Handling
- Fundamental Algorithms
- GUI Programming Concepts

Who Should Attend

Java programmers who wish to increase their depth of knowledge in Java programming and explore the uses of the various advanced packages.

Prerequisite

Basic programming skills in a structured language. Knowledge and experience with Object-Oriented Design (OOD) is helpful, but not required.

Course Duration

48 Hours, 16 Classes, 3 Hours per class

Course Details

Lesson 01: Getting Started with Java SE

- What is Java?
- How to Get Java
- A First Java Program
- Compiling and Interpreting Applications
- The JDK Directory Structure

Lesson 02: Data types and Variables

- Primitive Datatypes
- Declarations
- Variable Names
- Numeric Literals
- Character Literals
- String
- String Literals
- Arrays
- Non-Primitive Datatypes
- The Dot Operator

Lesson 03: Operators and Expressions

- Expressions
- Assignment Operator
- Arithmetic Operators
- Relational Operators
- Logical Operators
- Increment and Decrement Operators
- Operate-Assign Operators (+=, etc.)
- The Conditional Operator
- Operator Precedence
- Implicit Type Conversions
- The Cast Operator

Lesson 04: Control Flow

- Statements
- Conditional (if) Statements
- Adding an else if
- Conditional (switch) Statements
- while and do-while Loops
- for Loops
- A for Loop Diagram
- Enhanced for Loop
- The continue Statement
- The break Statement

Lesson 05: Methods

- Methods
- Calling Methods
- Defining Methods
- Method Parameters
- Scope
- So, Why All the static?

Lesson 06: Object-Oriented Programming

- Introduction to Object-Oriented Programming
- Classes and Objects
- Fields and Methods
- Encapsulation
- Access Control
- Inheritance
- Polymorphism
- Best Practices

Lesson 07: Objects and Classes

- Defining a Class
- Creating an Object
- Instance Data and Class Data
- Methods
- Constructors
- Access Modifiers
- Encapsulation

Lesson 08: Using Java Objects

- Printing to the Console
- printf Format Strings
- String Builder and String Buffer
- Methods and Messages
- to String
- Parameter Passing
- Comparing and Identifying Objects
- Destroying Objects
- Using the Primitive-Type Wrapper Classes
- Auto boxing

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Lesson 09: Inheritance in Java

- Inheritance
- Inheritance in Java
- Casting
- Method Overriding
- Polymorphism
- super
- The Object Class

Lesson 10: Advanced Inheritance and Language Constructs

- Enumerated Types - Pre-Java 5.0
- Enumerated Types Today
- More Enumerated Types
- Abstract Classes
- Interfaces
- Using Interfaces
- Comparable
- Collections
- Generics

Lesson 11: Packages

- Packages
- The import Statement
- Static Imports
- CLASSPATH and Import
- Defining Packages
- Package Scope

Lesson 12: Exception Handling

- Exceptions Overview
- Catching Exceptions
- The finally Block
- Exception Methods
- Declaring Exceptions
- Defining and Throwing Exceptions
- Errors and Runtime Exceptions
- Assertions

Course Details

Lesson 13: Input/Output Streams

- Overview of Streams
- Bytes vs. Characters
- Converting Byte Streams to Character Streams
- File Object
- Binary Input and Output
- Print Writer Class
- Reading and Writing Objects
- Basic and Filtered Streams

Lesson 14: Core Collection Classes

- The Collections Framework
- The Set Interface
- Set Implementation Classes
- The List Interface
- List Implementation Classes
- The Queue Interface
- Queue Implementation Classes
- The Map Interface
- Map Implementation Classes

Lesson 15: Collection Sorting and Tuning

- Using Java 5.0 Features with Collections
- Sorting with Comparable
- Sorting with Comparator
- Sorting Lists and Arrays
- Collections Utility Methods
- Tuning Array List
- Tuning Hash Map and Hash Set

Lesson 16: Inner Classes

- Inner Classes
- Member Classes
- Local Classes
- Anonymous Classes
- Instance Initializers
- Static Nested Classes+

Lesson 17: Introduction to JDBC

- The JDBC Connectivity Model
- Database Programming
- Connecting to the Database
- Creating a SQL Query
- Getting the Results
- Updating Database Data
- Finishing Up

Lesson 18: Introduction to Threads

- Non-Threaded Applications
- Threaded Applications
- Creating Threads
- Thread States
- Runnable Threads
- Coordinating Threads
- Interrupting Threads
- Runnable Interface
- Thread Groups

Lesson 19: JDBC SQL Programming

- Error Checking and the SQL Exception Class
- The SQL Warning Class
- JDBC Types
- Executing SQL Queries
- Result Set Meta Data
- Executing SQL Updates
- Using a Prepared Statement
- Parameterized Statements
- Stored Procedures
- Transaction Management