

# Java Programming using Eclipse

CDT715-E

This course makes extensive use of hands-on examples and exercises to familiarize the student with the fundamentals of Java programming. Eclipse is used as the development platform. Emphasis is on the development of applications which illustrate object oriented programming techniques.

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## Audience

- Programmers who want to learn the Java language
- Mainframe programmers who want a better understanding of object-oriented programming concepts
- Programmers who will be developing applications with Eclipse

## Prerequisites

- Experience with Windows is required
- Programming experience is required

## Learning Objectives

- Understand object oriented programming concepts
- Create Java applications utilizing the Eclipse IDE
- Create database applications using JDBC

## Teaching Methods

- Lecture
- Hands-on examples
- Supplemental hands-on exercises

## Course Length

- Five days

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## Course Outline

QE6

### Getting Started

- The Eclipse IDE
- Our first program
- System.out.println
- Escape sequences

### The Java Language

- Data types
- Integer arithmetic
- Casting
- Prefix and Postfix operators
- String class
- Get input from the user
- selection: if, ternary if, switch
- iteration: for, while, do
- programmer-defined methods

### Object Oriented Concepts

- Objects vs. classes
- Attributes (fields)
- Behaviors (methods)
- Implementation vs. Interface
- Private vs. public vs. protected
- Constructors: default & overloaded
- Accessor methods
- Mutator methods
- Final

### Advanced OO Concepts

- Comparing objects
- Cloning objects
- Composition
- Inheritance
- Polymorphism
- Abstract classes and methods

### Arrays

- Arrays of primitive data types
- Arrays of objects
- The Vector class

### Exceptions

- try and catch blocks
- finally
- Effect of System.exit() within catch
- Creating your own exception
- Throwing the exception
- Handling the exception
- RuntimeException
- Nested exceptions
- The printStackTrace() method

### Files

- Writing objects to a comma-delimited file
- Reading objects to a comma-delimited file
- Writing objects to a file with UTF
- Reading objects from a file written with UTF
- Writing objects to a file using serialization
- Reading objects from a file written with serialization

### JDBC

- Relational database concepts
- Defining an ODBC data source
- Adding records to a database
- Reading selected records from a database
- Read all records from a database

### JUnit: Unit and regression testing framework