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.

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

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