Java

Introduction

This course introduces Java as an implementation language for object-oriented applications. The user will be able to write simple Java applications based on a combination of any existing foundation expertise together with the knowledge gained through practicing the concepts covered in this course.

The course is aimed at newly trained developers or developers experienced in a very different field wishing to make the transition to Java.

Prerequisites

- ECDL Beginners or O-Level Computing
- Knowledge of another programming language (e.g. Pascal or C)

Certifications

Students will benefit from the following:

- Holistic Certificate of Attendance: This is a certificate issued by Holistic Technologies Ltd that confirms that the student attended the course. The Holistic Institute of Technologies is recognized and licensed by the Maltese Ministry of Education (license number 219).

Course Outline

1. Introduction to Java
Java programs
Requirements
Product versions

2. A simple Java application
Comments and JavaDoc documentation
The Java class
The "main" method
Keeping track of states

3. Real world object modelling
Software Modelling in Java
Statements, Blocks and Indentation
Coding practices

4. Classes and objects
Overloading methods
Constructors
References to other objects
Packages
Fully qualified class names
System classes
Accessing packages in other folders
The Default Package

5. Data Types, Scope and Operators
Primitive & Integral Types
Floating Point Types
The character type char
The boolean type
Converting between numeric types
Reference types
Garbage collection
The special type void
Scope of Variables
Method Arguments (or Parameters)
Local Variables
Instance (or Member) Variables
Class (or Static) Variables
Variable Shadowing and the this Reference
The finalize method
Arithmetic, Logical & Bitwise operators
Assignment Operators
Operator Precedence
Strings
Concatenation
String Length
Arrays
Initialising Arrays
Arrays of Objects
Copying, searching and Sorting

6. Flow of Execution
Conditional Statements (the if statement)
Nested if statements

The while Loop
The do while Loop
The for Loop
Using break and continue
The switch Statement
Methods and Recursion

7. Java Object Oriented Programming
Encapsulation
Inheritance
Polymorphism
Reference Types and OOP
The instanceof Operator
The Object class
The toString method
The equals method
The hashCode method
The clone method
Primitive Types Class Wrappers
Modifiers
The Access Modifiers — public, protected and private
The static modifier
The final Modifier
The abstract modifier
Constants
Interfaces and Multiple Inheritance

8. Exceptions
Exception Types
Handling Exceptions
Throwing Exceptions

9. Streams
Chaining Streams
Flushing Streams
Reading and Writing Text
PrintStream, Sytem.out, System.in and System.err
Accepting Input from System.in

Duration

Duration: 20 hours