Java Fundamentals

Overview
This course of study engages students with little or no programming experience. Students are introduced to object-oriented concepts, terminology, and syntax, and the steps required to create basic Java programs using hands-on, engaging activities. Students will learn to program 3-D animations, develop 2-D games and create Java applications.

Duration

- Recommended total course time: 90 hours*
- Professional education credit hours for educators who complete Oracle Academy training: 30

* Total course time includes instruction, self-study/homework, practices, projects and assessment

Target Audiences

Educators
- Technical, vocational, and 2- and 4-year college and university faculty members who teach computer programming, information communications technology (ICT), or a related subject at a foundational level.
- Secondary and vocational school teachers who teach computer programming

Students
- Students who wish start their Java programming experience and learn how to create animations, games and applications using fun and engaging tools.
- This course is a suitable foundational class for computer science majors and non-majors alike, and when taught in sequence with Java Programming may be used to prepare students for the AP Computer Science A exam.

Prerequisites

Required:
- None

Suggested:
- Oracle Academy Workshop - Getting Started with Java Using Alice
- Oracle Academy Workshop - Creating Java Programs with Greenfoot

Suggested Next Courses

- Oracle Academy Course - Java Programming

Lesson-by-Lesson Topics

Welcome and Introduction
- Welcome
- Introduction

Using Alice 3
- Get Started with Alice 3
- Add and Position Objects
- Use Procedures and Arguments
- Add Rotation and Randomization
- Declare Procedures
- Use Control Statements
Use Functions
Use the IF and WHILE Control Structures
Use Expressions
Use Variables
Use Keyboard Controls
Develop a Complete Animation
Correlating Java Variables, Data Types, and Expressions with Alice 3 Tools
Correlating Java Methods, Classes, and Other Structures with Alice 3 Tools

Using Greenfoot

Getting Started With Greenfoot
Using Methods, Variables and Parameters
Working with Source Code and Documentation
Developing and Testing an Application
Using Randomization and Understanding Dot Notation and Constructors
Defining Methods
Using Sound and Keyboard Control
Creating a World, Animating Actors, and Ending a Game
Understanding Abstraction
Using Loops, Variables, and Strings
Putting it All Together with Greenfoot
Creating an Inventory of Java Fundamentals

Using Eclipse

Compiling with Eclipse – A First Program
Using Object Classes and Driver Classes
Programming with Data Types and Operators
Using Strings

Using Control Statements, Classes, Objects and Methods

Using Scanner and Conditional Statements
Using Program Control Statements

Using Arrays and Strings

Using Arrays
Sorting and Searching
Handling Errors

Using Recursion, Abstraction, and Inheritance

Creating Classes, Objects, and Methods
Passing Objects and Overloading Methods
Understanding Recursion, the Static Modifier, and Nested Classes
Understanding Inheritance
Understanding Polymorphism

To search and register for events scheduled in your area, visit the Academy events calendar.