

Core Java + kotlin

CURRICULUM

① Java Language Environment

Object Oriented

Platform Independent

Automatic Memory Management

Compiled / Interpreted approach

Robust

Secure

Dynamic Linking

Multi-Threaded

Built-in Networking

② Java Fundamentals

Data types

Operators

Control Statements

Arrays

Enhanced for-loop

Enumerated types,

Static import

Auto boxing

C-style formatted I/O

Variable arguments

3 Essentials of Object-Oriented Programming

Object and Class Definition

Using encapsulation to combine methods and data in a single class

Inheritance and Polymorphism

4 Writing Java Classes

Encapsulation

Polymorphism

Inheritance

OOP in Java

Class Fundamentals

Using Objects

Constructor

Garbage Collection

Method Overloading

Method Overriding

Static Members

Understanding Interface

Using Interfaces

5 Packages

- Why packages
- Understanding Class path
- Access modifiers & their Scope

6 Exception Handling

- When an exception occurs.
- Importance of Exception Handling
- Exception Propagation
- Exception Types
- Using try and catch
- throw, throws, finally
- Writing User defined Exceptions

7 WORKING WITH STRINGS

- What is String
- String Class
- Creating String Object
- Operations on String
- String Buffer Class and it's Methods
- Difference between String and StringBuffer class
- String Builder Class and it's Methods
- Difference between StringBuffer and StringBuilder

8 I/O Operations in Java

- Byte Oriented Streams
- File Handling
- Readers and Writers

9 Multithreaded Programming

- Introduction to Multi-Threading
- Understanding Threads & its States
- Java Threading Model
- Thread class & Runnable Interface
- Thread Priorities
- Thread Synchronization
- Interthread Communication
- Preventing Deadlocks

10 Java Util Package / Collections Framework

- Collection & Iterator Interface
- Enumeration
- List and ArrayList
- Vector
- Comparator
- Set Interface & SortedSet
- Hashtable
- Properties

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Generics

Introduction to Generics

Using Built-in Generics Collections

Writing Simple Generic Class

Bounded Generics

Wild Card Generics

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Abstract Window Toolkit

Graphics

Color and Font

AWT Components/Controls

Event Handling & Layouts

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Swing Programming

Introduction to Swing & MVC Architecture

Light Weight Component

Swing Hierarchy

Atomic Components e.g. JButton, JList and more

Intermediate Container e.g. JPanel, JSplitPane and more

Top-Level Container e.g. JFrame and JApplet

Swing Related Events



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Java Abstraction

Abstract class

Interface

Abstract vs Interface

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Overview of Kotlin

Features

Environment Setup

Editing

Compiling

and Running

Execute for Android

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Kotlin Basics

Basic Types

Defining local variables

Comments

Functions

Packages and Imports

If Expression

When Expression

For Loops

While Loops

Break and continue Loop



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OOP's in Kotlin

Object Oriented Programming

Association

Composition

Aggregation Inheritance

Lists Sets and Maps

Interfaces and Implementation

Design by Contract

Classes and Objects

Constructors

static methods

public private internal protected class

methods Objects

Delegation

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Functional Programming in Kotlin

Functions as objects

Creating and returning functions

Nested functions

Dynamic functions

Anonymous(lambda) functions

Unit returning functions

Inline Functions

Extension Functions

Couroutines

Dictionary and Set Comprehensions

Collection interconversion patterns

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Kotlin JavaScript Interaction

Calling JavaScript from Kotlin

Calling Java from Kotlin

Calling Kotlin from Java

Tools in Kotlin

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Other

Destructuring Declarations

Collections

Ranges

Type Checks and Casts

This expressions

Equality

Operator overloading

Null Safety

Exceptions

Annotations

Reflection

Type-Safe Builders

Dynamic Type



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