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CORE JAVA WITH ANDROID AND FLUTTER TRAINING CORE JAVA

INTRODUCTION TO JAVA

- Why Java was Developed
- Application Areas of Java
- History of Java
- Platform Independency in Java
- USP of Java: Java Features
- Sun-Oracle Deal
- Different Java Platforms
- Difference between JDK, JRE, JVM
- Java Versions
- JVM Architecture
- Installing Java on Windows
- Understanding Path Variable: Why Set Path

CREATING FIRST JAVA PROGRAM

- Understanding Text Editors to Write Programs
- How to compile a java file
- Byte Code and class file
- How to run the class file

JAVA LANGUAGE FUNDAMENTALS

- Identifiers
- Keywords
- Variables
- Literals
- Data Types
- Operators
- Comments
- Looping Statements
- Condition Statements
- Type Casting

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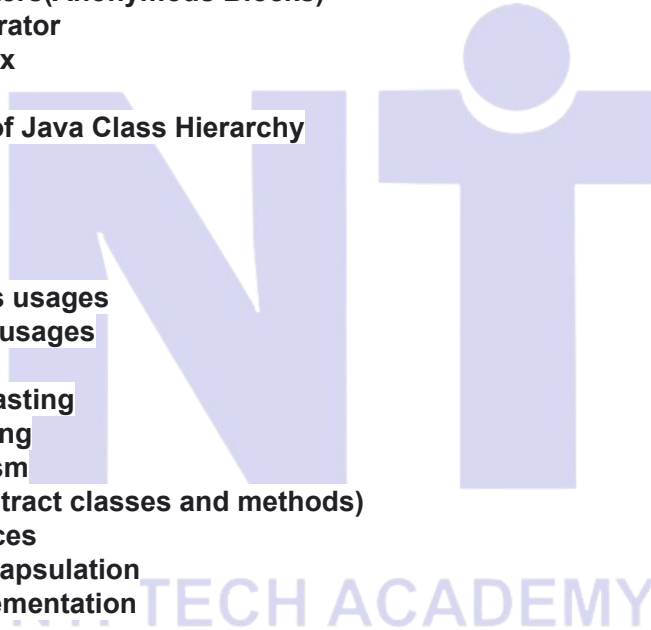


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OOP IMPLEMENTATION (PIE)

- Why OOP
- OOP Concepts with Real life examples
- Class & its Syntax
- Object & its Syntax
- Reference Variable
- Constructors
- Instance(Non-Static) & Static Variables
- Instance(Non-Static) & Static Methods
- this Keyword and its usages
- Object & Static Initializers(Anonymous Blocks)
- Understanding '+' Operator
- Inheritance & its Syntax
- Types of Inheritance
- Object Class as Root of Java Class Hierarchy
- Variable Hiding
- Method Hiding
- Method Overriding
- Method Overloading
- Super keyword and its usages
- Final keyword and its usages
- Constructor Chaining
- Upcasting and Downcasting
- Static & Dynamic Binding
- Run Time Polymorphism
- Abstract Keyword(Abstract classes and methods)
- Understanding Interfaces
- Implementation of Encapsulation
- Association with Implementation



PACKAGES

- Understanding Packages
- Setting Class path
- Reading Input from Keyboard
- Access Modifiers

NESTED TYPES

- Static Nested Class
- Non-static Nested Class

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- Local Class
- Anonymous Class
- Nested Interface

ARRAYS

- General Definition of Array
- Advantages from Array
- Arrays in Java
- 1-d Arrays
- 2-d Arrays
- Jagged Arrays
- Array of reference type
- Operations on Arrays

COMMAND LINE ARGUMENTS AND WRAPPER CLASSES

- How to read command line arguments
- Wrapper Classes
- Parsing of Numeric Strings
- String representation of Primitives

EXCEPTION HANDLING

- Types of Runtime Errors
- Understanding Exceptions
- Exception Class Hierarchy
- Try & Catch Blocks
- Patterns of Catch Block
- Nested Try statements
- Throw, throws, and finally
- Creating Custom Exceptions
- Checked & Unchecked Exceptions
- Assertion

WORKING WITH STRINGS

- What is String
- String Class
- Creating String Object

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- 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

MULTITHREADED PROGRAMMING

- Multitasking: Why Concurrent Execution
- Multiprocessing v/s Multithreading
- Main Thread (Default Java Thread)
- Creating Child Threads and understanding context switching
- Thread States
- Thread Group
- Thread Synchronization: Methods and Blocks
- Inter-Thread communication
- Daemon Threads
- Deadlock

I/O STREAMS

- What is I/O
- Why Need Streams
- Byte Streams and Character Streams
- Read/Write operations with file
- Scanner Class
- Object Serialization & Deserialization
- Transient keyword
- File Class and it's Methods

EXTENDED & UTILITY CONCEPTS

- Generics
- Lambda Expression
- Annotations
- Object Cloning
- Vargs
- Static-import
- Enum
- Static, Default, and Private Methods of Interface
- Var Type

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- Java Modules

COLLECTIONS FRAMEWORK

- What is Collection?
- What is Framework?
- Collections Framework
- Core Interfaces
- Collection, List, Queue, Deque
- Set, NavigableSet, SortedSet
- Map, NavigableMap, SortedMap
- Core Classes
- ArrayList, LinkedList, PriorityQueue, ArrayDeque
- HashSet, LinkedHashSet, TreeSet,
- HashMap, IdentityHashMap, WeakHashMap, LinkedHashMap, Tree Map
- Accessing a Collection via an Iterator
- Accessing List via ListIterator
- Accessing a Collection via for each loop
- Working with User Defined Objects
- The Comparator and Comparable Interfaces
- The Legacy classes and Interfaces.
- Enumeration, Vector, Stack
- Hashtable, Properties

ANDROID

INTRODUCTION TO ANDROID

- Brief history of Android
- What is Android?
- Why is Android important?
- What is OHA?
- Advantages of Android
- Android features
- Android Market

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INSTALLATION AND CONFIGURATION OF ANDROID

- Details about the software requirement
- Download and installation process of Android Studio
- Creation of AVD
- Details of AVD
- Platforms
- Tools
- Version

GETTING STARTED

- How to Select Android Version
- Step To Create Android Project
- Running Your Application
- Create Switching App
- Run Application in your Android Mobile
- Create a List by the use of Listview

INTRODUCTION TO APPLICATION COMPONENT

- What is Activity
- Activity Life Cycle
- The ManifestFile.xml
- Layout Resources
- Project File and Folder

LISTENERS

- Introduction of Listeners
- Working with Their Abstract methods
- OnClickListener
- OnLongClickListener
- OnCheckedChangeListener
- OnItemClickListener
- OnItemSelectedListener
- OnKeyFocus
- OnInitListener

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ANDROID COMPONENTS

- Button
- Toggle Button
- Checkbox
- Spinner
- Progress Bar
- Radio Group
- Rating Bar
- Switch

LAYOUTS

- Linear Layout
- Relative Layout
- Frame Layout
- Constraint Layout

COMPOSITE

- List View
- Grid View
- Scroll View
- Horizontal Scroll View
- Sliding Drawer
- Web View
- RecyclerView
- Card View



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IMAGE AND MEDIA

- Image View
- Image Button
- Gallery
- Media Controller
- Video View
- How to Play Audio
- How to Play Video
- Audio Recording
- Video Recording
- How to Click Picture Using Camera

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- How to Set Wallpaper
- Time Picker And Date Picker

ANDROID MENU

- How To Create Menu
- Option Menu
- Context Menu
- Popup Menu

CREATING DIALOGS

- Introduction to Dialogs
- Showing and Dismissing of dialog Boxes.
- Alert Dialog
- Progress Dialog
- Threading and Handler

DATA STORAGE

- Editor
- Modes In SharedPreferences
- ContentProvider
- External Storage
- Internal Storage
- Database Structure
- SQLiteDatabase
- SQLiteOpenHelper
- CRUD operation
- Handling Database



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INTRODUCTION TO SMS

- Using SMS in your Application
- Using Intent and the native client
- How to send Messages to other Mobile

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ANDROID TELEPHONY

- Launching the dialer to initiate phone
- Accessing phone and network properties and status
- Reading Phone Device Details
- Reading Network Details

FRAGMENT

- Multipane Fragment
- Fragment Life Cycle
- Addition Fragment

MAPS ,GEO CODING AND LOCATION BASED SERVICE

- Using Location Based Service
- Working with Location Manager
- Working With Location Class
- SharedPreferences

WEBSERVICES

- What is Web Services
- Web Service Architecture
- Rest and Soap
- Parsing Techniques
- CRUD operation over Server

FIREBASE

- Realtime database
- Cloud Storage
- Authentication

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Dart

Overview

- What is Dart..?
- Dart Introduction
- Basic Language requirement for Dart

Environment

- Setting Up the Local Environment
- Using the Text Editor
- Installing the Dart SDK
- IDE Support

Syntax

- Your First Dart Code
- Execute a Dart Program
- Dart Command-Line Options
- Keywords in Dart
- Comments in Dart

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Basic Fundamentals

- Data Types
- Variables
- Functions
- Operators
- Loops
- Decision Making
- Numbers
- String

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Implementation of OOPs

- Classes
- Object
- Inheritance
- Interface

Collection

- Lists
- Map
- Generics
- Libraries & Packages



INTRODUCTION TO FLUTTER

- Learn to set up a new Flutter project using Android Studio.
- Understand the Widget tree and learn to use pre-made Flutter Widgets for user interface design.
- Learn to incorporate Image and Text Widgets to create simple user interfaces.
- Learn to incorporate App Icons for iOS and Android.
- Learn how to add and load image assets to Flutter projects.
- Run Flutter apps on iOS Simulator, Android Emulator and physical devices.

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CREATING BEAUTIFUL UI WITH FLUTTER

- Use Hot Reload and Hot Restart to quickly refresh the app UI and understand when to use each.
- Dependencies, custom assets, and fonts.
- An introduction to the Widget build() method.
- Learning to use layout widgets such as Columns, Rows, Containers, and Cards.
- Incorporating Material icons using the Icons class.
- Customise apps with Theme widgets.
- Refactoring widgets by extracting them as separate Widget classes.
- Create custom Flutter Widgets by combining smaller widgets.
- Learn to build multi-screen Flutter apps by learning about routes and the Navigator

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widget. • Understand why flutter favours composition vs. inheritance when customising widgets.

BUILDING APPS WITH STATES

- Understand the difference between Stateful and Stateless
- Widgets and when they should each be used.
- Understand how callbacks can be used to detect user interaction in button widgets. • Understand the declarative style of UI programming and how Flutter widgets react to state changes. • Learn to import dart libraries to incorporate additional functionality.
- Build flexible layouts using the Flutter Expanded widget.
- Understand the relationship between setState(), State objects and Stateful Widgets.

FLUTTER PACKAGES

- Learn to use the Dart package manager to incorporate Flutter compatible packages into your projects
- Incorporate the audioplayers package to play sound.
- Learn more about functions in Dart and the arrow syntax.
- Learn to refactor widgets and understand Flutter's philosophy of UI as code.

STRUCTURING FLUTTER APPS

- Learn about how lists and conditionals work in Dart.
- Learn about classes and objects in Dart and how it apply to Flutter widgets. • Understand Object Oriented Dart and how to apply the fundamentals of OOP to restructuring a Flutter app.
- Learn to use Dart Constructors to create customisable Flutter widgets.
- Apply common mobile design patterns to structure Flutter apps.
- Learn about structuring and organising Flutter apps

FLUTTER APPS WITH BACKEND DATA

- Getting location data from both iOS and Android.
- Using the HTTP package to perform networking and get live data from open APIs. • Flutter Database using SQLite
- Understanding how to parse JSON data using the dart:convert library.
- Understand how to pass data to State objects via the Stateful Widget.

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- Use the TextField Widget to take user input.
- Understand how to pass data backward using the Navigator widget.

FLUTTER APPS WITH FIREBASE

- Flutter with firebase Database
- Flutter with firebase Authentication
- Flutter with cloud Storage

- TESTING THE APP
- TROUBLESHOOTING
- SUMMARY AND CONCLUSION



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