Course Name: **Advanced Diploma on JAVA & ANDROID (ADJA)**

Course Duration: 320 Hours; 6 Months (4 Months Training + 2 Months Project Work)

Prerequisites:Candidate should be HSC pass out&Basic knowledge of Computer

Features:

a. 6 Months Diploma Certificate
b. 3 Certifications
c. 6 Months Industrial Training Certificate
d. 2 Projects and their Certificates (1 each in JAVA & AND)
e. International Validity of the Certifications & the Diploma
f. 6 Months Webinar Subscription Inclusive
g. 24X7 Student Support Desk
h. 100% Job Assistance

Course Module

Core JAVA Modules:-

Part 1 - Introduction to Java and Java Architecture

- Understanding OO approach
- OO programming and procedural programming
- What is object?
    - State
    - Identity
    - Responsibility
- 4+1 major pillars and 3 minor pillars of object oriented programming.
    - Abstraction
    - Encapsulation
    - Inheritance
    - Polymorphism
        - Static
        - Dynamic
        - Modularity
    - Strong type casting
    - Persistence
    - Concurrency
- How Java fits in OO programming?
- History of Java
- Features of Java
- Java Architecture

- Java compiler
- Class loader
- Bytecode verifier
- JVM

Part 2 – Data types and Variables

- Java primitive data types
- Classification of data types
- Declare java classes
- Use Primitives, Arrays, Enums& Legal Identifiers
- Access control mechanism

Part 3 – Operators

- Relational operators
- Arithmetic operators
- Conditional operators
- Logical operators

Part 4 – Statement Control

- Loops
  - Basic loops
  - Advance loops
- Conditional statements
- Switch statements
- Continue & break
- Compound statements

Part 5 – Arrays

- Creating, Initializing, and Accessing an Array
- Passing & copying Arrays

Part 6 – Abstract classes and methods

- Abstract classes
- Abstract methods
- When & where to use abstract classes

Part 7 – Packages and Interfaces

- Access control mechanism
- Interfaces in Java
- Why & when to use interfaces?
- What is programming by contract?

Part 8 – Collections

- Purpose of collections
- Collection hierarchy
- Classes under List and there usage
- Classes under Set and there usage
- Classes under Map and there usage

Part 9 – Exception Handling

- Need of exception handling
- Exception hierarchy in Java
- Try, Catch & finally constructs
- Cascading exceptions
- Distinguish between throw & throws keywords
- User defined exceptions

Part 10 – Threads

- What is a thread? What is the advantage of using thread?
- Life cycle of thread
- How OS and JVM handle threads?
- Implementing threads in Java

Part 11 – JAVA Multithreading

- Implementing multithreading in java
- Pros & cons of multithreading
- Synchronization
- Utility methods

Part 12 – I/O Streams

- Purpose of I/O
- Understanding streams
- Describing I/O hierarchy
- Understanding need of buffer streams
- Reader & Writer classes

Part 13 – Basics of Networking

- Purpose of networking
- Understanding socket programming
- Implementing one-way and two-way communication

Part 14 – Database connectivity with JDBC/ODBC

- JDBC API
- 4 type of drivers
- Important classes & interfaces
- Executing queries and procedures
- Batch programming
- Handling transactions

Part 15 – AWT and Swing

- Identifying need of AWT
- Understand the hierarchy of classes in AWT
- Write AWT class
- Understanding Component & Container classes
- Writing code for AWT classes with components
- Using call back methods
- Swing component hierarchy
- Swing programming

- Event handling

Part 16 – Applets
- Defining an Applet
- Life Cycle of an Applet
- Restriction on applets
- Parameter passing in applets
- Applet container & applet context
- Inter applet communication

Part 17 – JAVA Reflection API
- Uses of Reflection
- When & where to use reflection
- Drawbacks of Reflection

Part 18 – Advanced Concepts
- Reusable Software Components
- Abstraction
- Inheritance
- Polymorphism
- Iterators
- Auto-Boxing

Advance JAVA Modules:-

Part 1 – Introduction - DBMS, RDBMS, ORDBMS
- Introduction to databases
- Difference between DBMS, RDBMS and ORBBMS
- About 4-5 more subtopics needed.

Part 2 – SQL, PL/SQL & T/SQL
- Writing SQL queries
- Writing PL/SQL queries
- Writing T/SQL queries
- About 4-5 more subtopics needed.

Part 3 – WebServers& Application Servers (Weblogic, Websphere, Tomcat)
- What are web servers and application servers?
- How to do initial Server configurations?
- How to install/uninstall applications?

Part 4 – Eclipse
- Eclipse Introduction
- Project definition and configurations
- Creating Projects (Java, J2EE) in Eclipse

- Importing/Exporting Existing Projects
- Server Configuration
- Execution and debugging
- Advance features

Part 5 – Hibernate

- Hibernate Introduction
- Object-Relational Persistence and ORM
- Entity definitions
- Hibernate Configuration
- Hibernate Mapping
- Working with Persistent Classes/Objects
- Hibernate Query Language
- Hibernate Caching
- Advanced Concepts

Part 6 – JUnit

- Unit Testing
- Unit Testing with JUnit
- Create a JUnit test
- Run your test via Eclipse
- Run your test via code
- Annotations
- Assert statements
- Mocking
- Life cycle, Test execution and Debugging

Part 7 – Log4J

- Installation
- Architecture
- Configuration
- Sample Program
- Logging Methods
- Logging Levels
- Log Formatting
- Logging in Files
- Logging in Database
- Case study
- Implementation Strategies

Part 8 – Ant

- Ant Introduction
- Installation of Ant
- Preparing Ant project
- Creating build xml
- Run your Ant build from Eclipse
- Run your Ant build from the command line

- Case study and configurations
- Script definitions and executions
- Application deployment

Part 9 – Servlet

- Developing Web Application
- History of Web programming
- Web Infrastructure setup
- Purpose of Servlet in J2EE
- Servlet life cycle
- Servlet Basics
- Servlet API
- HTTP Basics
- Session management mechanisms
- Servlet context and Servlet config
- Redirecting web application using Servlet
- Advance Servlet features (Forward, Include, Redirect)

Part 10 – JSP

- JSP Introduction
- How to write & deploy JSP
- Advantages of JSP over Servlet
- JSP Elements (Directives, Declaration, Scriplets, Actions)
- Implicit objects in JSP
- Custom tags
- JSP and JavaBeans

Part 11 – Struts

- MVC Architecture
- Struts Framework
- Struts Controller Components
- Struts View Components
- Struts Model Components
- Struts Tag Libraries
- Exception Handling in Struts

Part 12 – JNDI

- Naming and Directory Concepts
- JNDI Overview
- Examples
- Common Problems (and Their Solutions)
- Context lookups and Bindings

Part 13 – EJB

- Stateless and Stateful Session EJB
- Session EJB Life Cycle
- Enity EJB and Life Cycle
- EJB Queries

- JTA and Transaction management

Part 14 – JMS

- Architecture
- Message Delivery Models
- MDB life cycles
- The JMS Programming Model
- Producing and Consuming Messages
- Client to Produce Messages
- Client to Consume Messages
- Synchronous and Asynchronous Message Consumption

Part 15 – Spring Framework

- Introduction to spring framework
- Environment setup
- Wiring beans
- Minimizing XML configurations
- AOP
- Dependency Injection and Inversion of control
- Bean Managed container and its configurations
- Bean definitions and their usage
- Hibernate Integration
- Struts Integration
- Developing Applications with spring

Part 16 – Design Patterns

- Why to use Patterns?
- Popular J2EE Patterns
- MVC-II
- Front Controller
- Composite Views
- Intercepting Filter
- Business Delegate
- Service Locator
- Session Façade
- Transfer Objects
- DAO
- DAO Factories

Part 17 – SCWCD/OCP-WCD

- SCWCD/OCP-WCD Certification
- Exam pattern
- Comment Questions
- Exam Preparation

Part 18 – JAXP

- Introduction to JAXP
- Simple API for XML
- Document Object Model
- XML Document Structure
- Parsing Techniques
- DOM and SAX parsing

Part 19 – JAAS
- Core fundamentals
- Authentication
- Authorization

Android Application Development Modules:-

Part 1: Android – The Big Picture
- Android Introduction
- Android Development Environment – Software Development Kit
- Understanding Android code architecture & basic components

Part 2: User Interface Layouts & Events
- User Interface Layout
- User Interface Events

Part 3: Menus & Dialogs
- Creating Menu – using code and inflating XML resources
- Creating Alert Dialog, Confirmation Dialog, Error reporting Dialog.

Part 4: Data Storage Methods
- Shared Preferences
- Using the Filesystem
- Persistent database: SQLite database
- Content Provider

Part 5: Notification & Alarms
- Introducing Toast
- Introducing Notifications
- Introducing Alarms

Part 6: Telephony
- Accessing telephony information.
- Interacting with the phone.
- Working with messages: SMS

Part 7: Multimedia
- Images
- Audio
- Video

Part 8: Location & Location Manager

- Using LocationManager&LocationProvider
- Simulating your location within the emulator
- Converting places and addresses with Geocoder

Part 9: Graphics & Animations

- Graphics in Android
- Creating Animations
- Introduction to OpenGL ES for animation in Android

Part 10: Sample Project & Publishing your Application