

Flutter Application Development

1. Introduction to Flutter and Dart Programming Language

- Introduction of Flutter
- Introduction to Dart
- Dart Pad
- Installation Dart SDK

Lab: Installing Dart IDE and Writing Dart Programs

2. Dart Programming

- Introduction
- Main() function
- Dart Variables
- Dart Data Types
- Input of Information to Dart Program
- Writing Comments
- Dart Conditional Operators
- If Statement
- If-Else and Else-IF Statement
- If Else and Logical Operators
- For Loops
- While Loops
- Do- While Loops
- Switch Case Statement
- Understanding Streams and Stream Builders

Lab : Create a Pizza Order Program

3. Dart Functions and Object-Oriented Programming

- Functions
- Function Return Types
- Function and Variable Scope
- Function Return Expression
- Class and Object
- Methods to Class
- Constructors
- Getter and Setter
- Inheritance and Abstract Class
- Dart Project Structure and Dart Libraries

Lab: create a Small Overtime Payment Program

4. Introduction to Flutter

- Flutter Framework

- Android Studio and Working
 - Flutter SDK
 - Installation and Configuring Flutter SDK
 - Introduction to Flutter Widgets
- Lab: Create a Simple Flutter App

5. Flutter Widget Fundamentals

- Scaffold
- Image
- Container
- Column and Row
- Icon
- Layouts
- Card
- App Icons
- Stateful and Stateless Widgets

Lab: Create a Restaurant Menu

6. Navigation and Routing

- Button Widget
- App Structure and Navigation
- Navigate to a New Screen and Back
- Navigate with Named Routes
- Send and Return Data Among Screens
- Animate a Widget across screens
- Web View widget

Lab : Navigation and Routing a Pizza Store App

7. Visual, Behavioral and Motion Rich Widgets

- Bottom Navigation Bar
- Tab Controller, Tab Bar and Tab Bar View Widgets
- List Tile
- List View
- Drawer
- Data Table
- Selectable Text
- Stack Widget
- Input and Selections
- Dialogs, Alerts and Panels

Lab: Creating a Hotel Reservation App

8. Introduction to Flutter and BLOC

- Introduction Flutter and BLOC Pattern
- Overview of Bloc Architecture
- State Management

9. Firebase

- Introduction
- JSON
- Firebase Authentication (Sign UP and Login to Flutter App)
- Configure App to use Firebase Services
- Firebase Database

Lab: To-DO App

- Designing the UI for a TODO app
- Implementing Features such as Adding , Editing and Deleting Task
- Managing Taks Categories and priorities
- Use of local Storage

Lab : User Authentication

- Implement User Authenticationa and Register Function
- Secure Logging and Registration using Firebase
- Managing Session and Authentication State

10. Location–Aware Apps : Using GPS and Google Maps

- Introduction
- GPS and How works
- The Camera Position
- Adding Google Maps to a Flutter App
- Location Aware Apps using GPS and Google Maps

11. App Testing and Publishing

- Setup a Test Environment
- Usability Testing
- Test Sessions
- Analysing Test