GENESE
CLOUD ACADEMY

Mobile App Development Using Flutter

Course Outline

Course Duration : 40 Hours (including 10-hour project work)

Facilitator : Sashi Sharma, App Developer at FritsGo Nepal

Class Schedule : Monday to Friday, 5:00 - 7:00 PM

Introduction

The aim of this course is to familiarize students with Flutter, an open-source UI software development kit, used to develop applications for Android, iOS, Linux, Mac, Windows, Google Fuchsia and the web from a single codebase. This course covers the key concepts of app development using flutter and dart. Major topics include:

- Introduction to flutter.
- Learning how to use widgets.
- Building apps with state.
- Basic Dart.
- State Management.
- Firebase

At the end students will be involved in projects of a 20-hour duration where they will be implementing concepts covered in the above topics.

Learning Outcomes

After successful completion of all the learning units and the requirements of the course, participants should be able to:

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- Learn Flutter and Dart from the ground up, step-by-step
- Build engaging native mobile apps for both Android and iOS
- Use features like Google Maps, the device camera, authentication and much more!
- Learn how to upload images and how to send manual and automated push notifications
- Learn all the basics without stopping after them: Dive deeply into Flutter & Dart and become an advanced developer

Delivery of the Course

The approach of faculty during the session will be as a facilitator of the course. Necessary conceptual and methodological input will be covered using interactive learning methods, e.g., interactive lectures, group discussion, and case study. The modality of the course will be online. Students will be enrolled in the learning management system of Genese Cloud Academy. All the resources, including assignments and quizzes, will be provided on the same course page. Attendance, session recordings and meeting links to join regular zoom live sessions will also be available there.

Students are required to actively participate in class. The sessions will be interactive and facilitated by the instructor to discuss the topic being dealt. There will be assignments that are provided by facilitators to students for evaluating progress.

Course Requirements

Exam: There will be one exam after the completion of the course. Students should pass the exam by securing above 60% of the full mark to receive the certificate of successful completion.

Assignments: There will be homework assignments required throughout the course. Assignments will be posted on the course page on a weekly basis. You are responsible for knowing that the assignment is due. NO LATE HOMEWORK ASSIGNMENTS WILL BE ACCEPTED.

Attendance/Participation: Your active participation in class is necessary, both for you and for your classmates. Your participation will be monitored by your attendance, your contributions to class discussions, and your overall positive demeanor during class.

Session Plan

PLEASE NOTE THAT THIS SESSION PLAN IS TENTATIVE. We will address the topics in the order described below, but our timing may be off a bit, as we adjust the pace of the class to your needs. We will not sacrifice thoroughness or clarity simply to remain on this schedule.

Sessions	Topics
Week 1	**Introduction to Flutter (2 – 4 Hours)** • What is flutter? Why should you learn flutter? • Install flutter on Linux/MacOS/Windows. • Preparing devices (Virtual/Physical) to run flutter apps **First step into Flutter (1 Hour)** • Creating the first Flutter project. • Using pubspec.yaml file to include dependencies and assets. Hot reload and restart to quickly refresh UI. • An introduction to the Widget build() method. **Widgets (1 Hour)** • Basic widget tree • Learn to use widgets • Container, • Text, • TextField, • Button Widgets, • Row, • Column, • Stack, • ListView, • Image Widgets and more. **Building app with state (2 Hour)** • Understanding Stateful and Stateless widget and when to use them. Understanding how to perform action with user's interaction on widgets. Understanding setState() method.

	• Using packages. **Basic Dart (2 Hour)** • Data types and variables. • Conditional statements. • Operations on List and Map. • Class, object, and constructor.
Week 2	**Custom Widgets (2 Hour)** • Single page app with simple UI. • Navigating through multiple screens. • Making our own Custom Widget. **Powering app with backend (5 Hour)** • Asynchronous programming. • Using async/await/Future in flutter. • Handling exceptions in dart with try/catch and throw. • Using a http package to get data from API endpoints. • Understanding how to parse JSON **State Management (3 Hour)** • Need for state management. • State Management with GetX
Week 3	**Introduction to Firebase (5 Hour)** • Integrating Firebase into a flutter app. • CRUD operation into a cloud firestore. • Firebase Authentication. • Firebase Storage. • Firebase Cloud Messaging.

	Persistence (5 Hour) • Basic File Handling. • Shared Preferences to store data as key value pair. • Sqlite.
Week 4	**Project Work (10 Hour)**