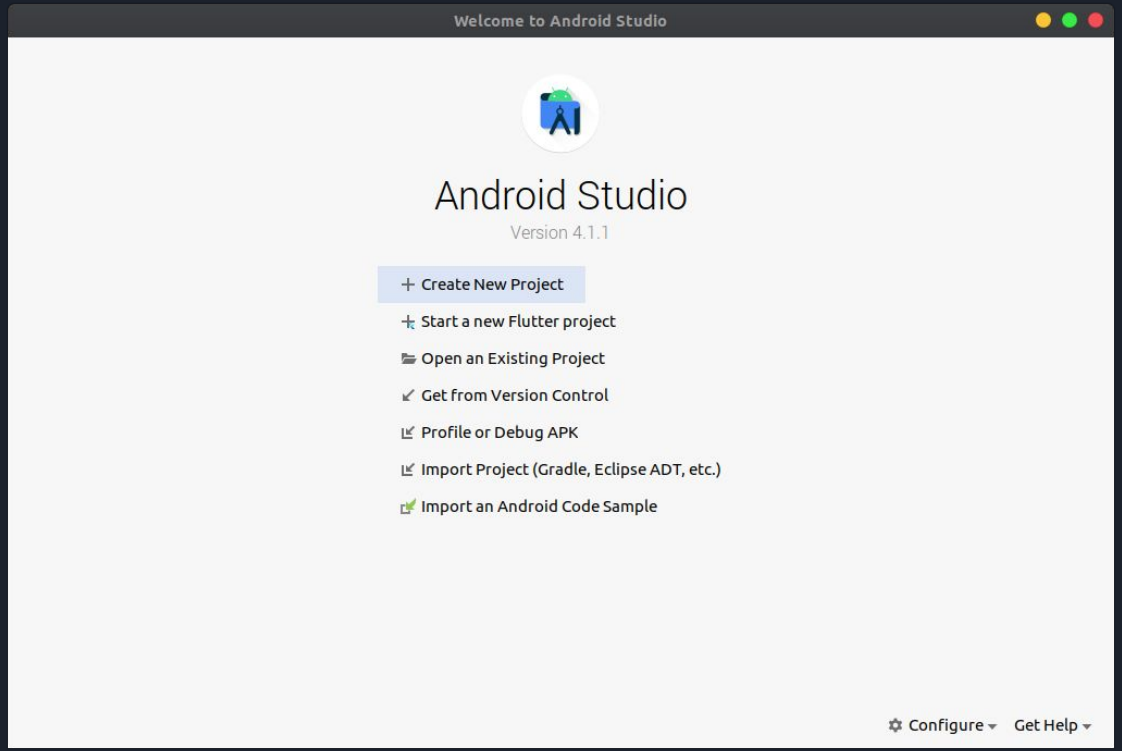
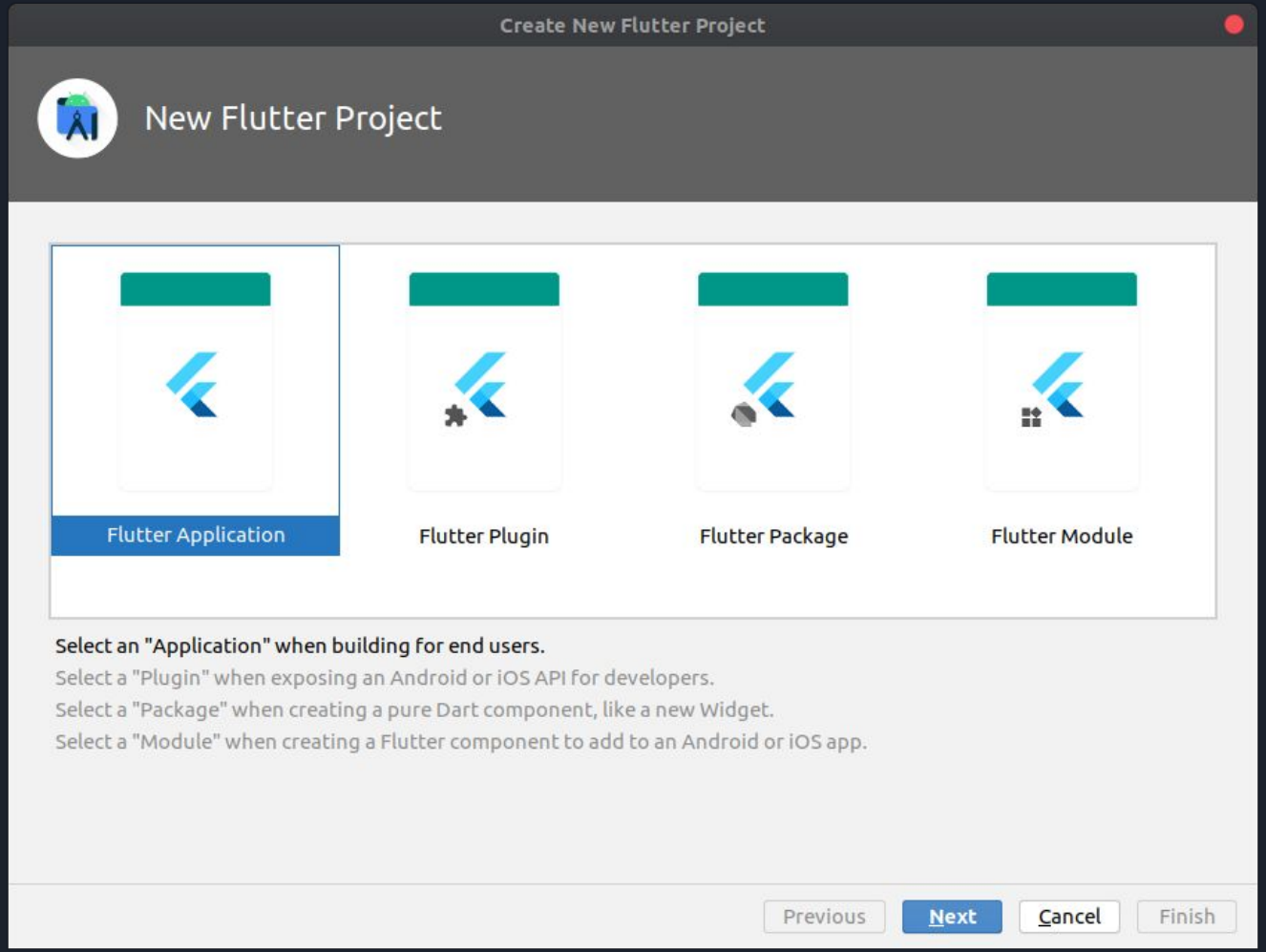
An Introduction to Flutter

IRIS NITK Bootcamp - Session 1

Creating a new Project




Create New Flutter Project
New Flutter Project
Flutter Application
Flutter Plugin
Flutter Package
Flutter Module
Select an "Application" when building for end users.
Select a "Plugin" when exposing an Android or iOS API for developers.
Select a "Package" when creating a pure Dart component, like a new Widget.
Select a "Module" when creating a Flutter component to add to an Android or iOS app.
Previous
Next
Cancel
Finish

Create New Flutter Project

New Flutter Application

Configure the new Flutter application

Project name

introduction

Flutter SDK path

/home/harshvardhan/Flutter Installation Files/flutter_linux_v1.12.13+hotfix.7-stable/flutter ... Install SDK...

Project location

/home/harshvardhan/Desktop

Description

A new Flutter application.

☐ Create project offline

Previous | Next | Cancel | Finish

Create New Flutter Project

New Flutter Application

Set the package name

Applications and plugins need to generate platform-specific code

Package name

com.example.introduction

AndroidX

- [x] Use androidx.* artifacts

Platform channel language

- [x] Include Kotlin support for Android code
- [x] Include Swift support for iOS code

Previous | Next | Cancel | Finish

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New Flutter Application

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Previous | Next | Cancel | Finish

Activities Android Studio Jan 10 10:36

introduction – main.dart [introduction]

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

introduction lib main.dart

Redmi 8 (mobile) main.dart Loading Devices...

Project

- introduction ~/Desktop/introduction
  - .dart_tool
  - .idea
  - android [introduction_android]
  - ios
  - lib
    - main.dart
  - test
  - .gitignore
  - .metadata
  - .packages
  - introduction.iml
  - pubspec.lock
  - pubspec.yaml
  - README.md
- External Libraries
- Scratches and Consoles

main.dart

```
1  import 'package:flutter/material.dart';
2
3  void main() {
4    runApp(MyApp());
5  }
6
7  class MyApp extends StatelessWidget {
8    // This widget is the root of your application.
9    @override
10   Widget build(BuildContext context) {
11     return MaterialApp(
12       title: 'Flutter Demo',
13       theme: ThemeData(
14         // This is the theme of your application.
15         //
16         // Try running your application with "flutter run". You'll see the
17         // application has a blue toolbar. Then, without quitting the app, try
18         // changing the primarySwatch below to Colors.green and then invoke
```

Terminal: Local

```
harshvardhan@harshvardhan:introduction$
```

6: Logcat Profiler Database Inspector TODO Terminal Dart Analysis Layout Inspector Event Log

11:24 LF UTF-8 2 spaces

Terminology

https://flutter.dev/

Native Android and iOS

Cross Platform

SDK: This is a complete kit of software development tools for a specific platform. This “kit” can include all sorts of things such as: Libraries, APIs, IDEs, Documentation, etc. For example the Android SDK, which provides everything you may need for Android development.

Framework: A framework is a generic structure that provides a skeleton architecture with which specific software can be implemented.

A “tool” that allows you to build native cross-platform (iOS, Android) apps with one programming language and codebase.

A SDK (Software Development Kit)

Tools to compile your code to native machine code + develop with ease

A Framework/ Widget Library

Re-usable UI building blocks (= widgets), utility functions, packages

Terminology

UI Toolkit

Seems like a loose term to refer to any collection of “tools” (another loose term) that have a common goal.

Is Flutter only for UI?

Yes, Flutter alone is used for getting the UI or Frontend part done!

Terminology

But wait then how are people creating Flutter apps?

Flutter is powered with **Dart** language. So, everything else apart from the UI is pure dart. Meaning, every function you code for getting API response or getting data from database will be written in Dart.

https://medium.com/@shashvatshukla/framework-vs-library-vs-platform-vs-api-vs-sdk-vs-toolkits-vs-ide-50a9473999db

Terminology

- A **plugin** is about making native functionality available to Flutter.
- A **module** is about integrating Flutter with an existing native application.
- A **package** is a namespace that contains a group of similar types of classes, interfaces, and sub-packages. We can think of packages as similar to different folders on our computers where we might keep movies in one folder, images in another folder, software in another folder, etc.

Directory Structure

- https://stacksecrets.com/flutter/breaking-down-flutter-project-file-folders

Theory

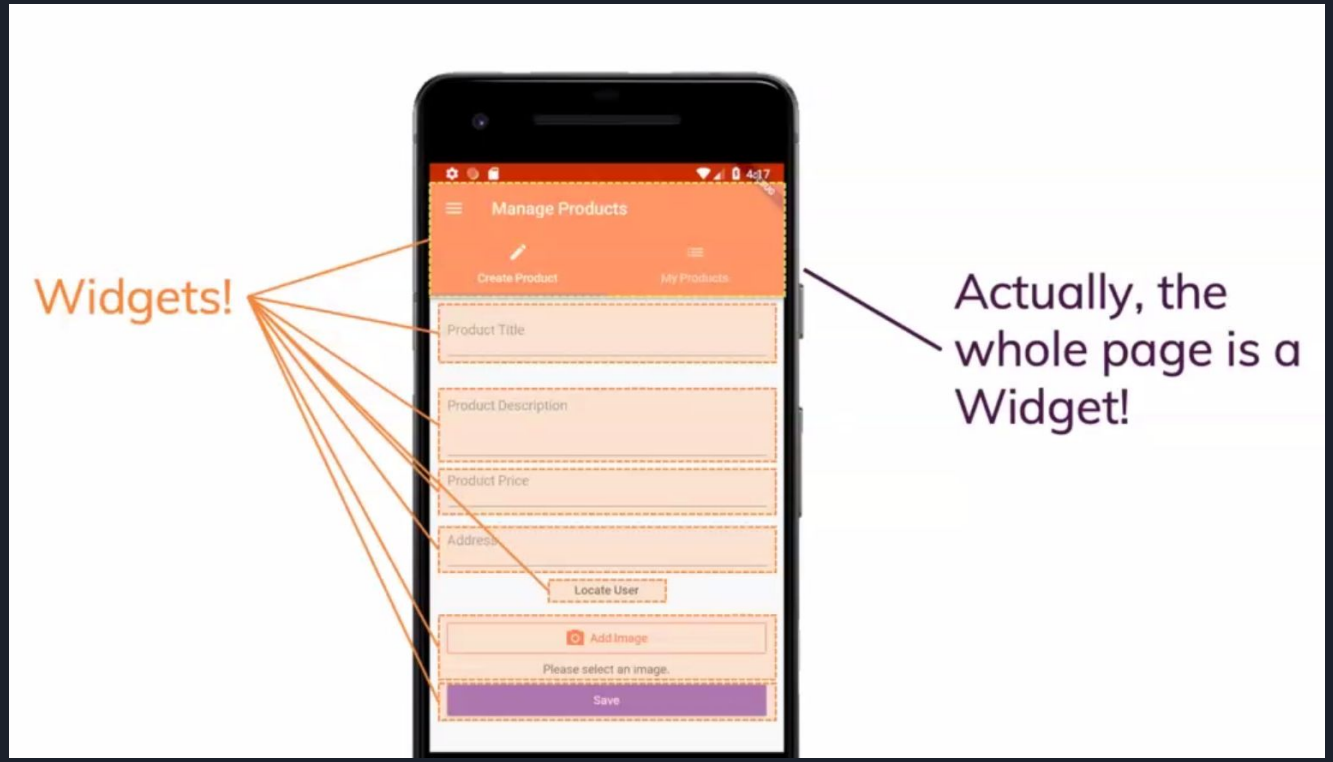
iOS : Swift or Objective C code and using the iOS development environment

Android: Java or Kotlin with Android Framework

Dart: it's an object oriented and strongly typed language and its syntax is a bit like a mixture of Javascript, Java, C#

Strongly typed :not possible for the programmer to work around the restrictions imposed by the type system.

Widget


Widgets!
Manage Products
Create Product
My Products
Product Title
Product Description
Product Price
Address
Locate User
Add Image
Please select an image.
Save
Actually, the whole page is a Widget!

State

It holds the information about the current behaviour or condition of the widget

Stateful vs. Stateless Widgets

Stateful Widget	Stateless Widget
When a widget changes (user interacts with it) it's Stateful	No internal state to manage or no direct user interaction, it's Stateless
CheckBox, RadioButton, Form, TextField	Text, RaisedButton, Icon, IconButton
Overrides the createState() and returns a State	Overrides the build() and returns a Widget
Use when the UI can change dynamically	Use when the UI depends on the information within object itself
When the widget's state changes, the state object calls setState(), telling the framework to redraw the widget.	

Using Stateful Widgets

- Create a class that extends a “StatefulWidget”, that returns a State in “createState()”
- Create a “State” class, with properties that may change
- Within “State” class, implement the “build()” method
- Call the setState() to make the changes. Calling setState() tells framework to redraw widget

Assignment

https://docs.google.com/document/d/1jfHEwC16m75JXTWQ8oL9Oe1eMkoZZV5Qrm6YF9cYPo8/edit

https://dartpad.dev/