



Desenvolvimento  
Mobile 1  
Aula 02

Prof. Me Daniel Vieira

**SENAI**

# Agenda

- 1- A Linguagem Dart
- 2 - Tipos de variáveis
- 3 - Desenvolvimento de um aplicativo com três botões
- 4- Exercícios

# Linguagem Dart

- Dart é uma linguagem de programação apresentada pelo Google em 2011 com o objetivo de substituir o JavaScript como principal linguagem utilizada nos navegadores.
- Sintaxe C-Like.
- Paradigma de orientação a objetos.
- Todos os objetos herdam da classe object
- Fortemente tipada, mas não é necessário colocar um tipo, pois o Dart consegue inferir os tipos.
- No Java, C# utilizamos a palavra reservada private, enquanto no Dart, basta colocar um underline(\_) no início do nome de um atributo, método ou classe para torná-lo privado.
- Dart pode ser compilada em ahead-of time(AOT) e just-in-time(JIT)
- Compilação em tempo real e retorno em tempo real da alteração (Hot reload).

# Tipos de variáveis

Variável - Área de memória associada a um nome que pode armazenar valores de um determinado tipo.

- var nome = "Daniel Vieira";
- String email = "[danielvieira2006@gmail.com](mailto:danielvieira2006@gmail.com)";
- int numero = 50;
- double preco = 19.99;
- bool acesso = true; // false;

Declaração

```
var nome(mutável)  
const pi (imutável)
```

Memória do computador	
X	
nome	Daniel Vieira
pi	3,14

# Tipos de variáveis Dart

```
import "dart:io";
void main()
{
    // Variável que armazena números inteiros
    int idade = 28;
    print("Idade: $idade");
    // Variável que armazena números decimais
    double raio = 10.25;
    print("Raio: $raio");
    // Variável que armazena caracteres e textos
    String nome = "Daniel";
    print("Olá $nome, seja bem vindo");
    //Variavel que armazena verdadeiro ou false
    bool ligado = true;
```

# Tipos de variáveis Dart

// Variável que guarda uma lista genérica

```
List numerosgenericos = [10,"Daniel", true,20];  
print(numerosgenericos);
```

// Variável que guarda uma lista de números inteiros

```
List<int> numerosinteiros = [10,20,30,40];  
print(numerosinteiros);
```

// Variável que guarda um dicionário com chave e valor em formato texto

```
Map<String, String> nome_sobrenome = {"Daniel": "Vieira", "Senai": "Roberto Mange"};
```

// Variável sem tipo pré definido, seu tipo é igual ao tipo do primeiro valor que recebe

```
var sobrenome = "Vieira";  
print(sobrenome);
```

# Operadores relacionais e lógicos

== (igual a)

!= (diferente)

> (maior que)

< (menor que)

Exemplo:

```
var notaAluno =8;
```

```
bool resultado = notaAluno>=6;
```

```
print(resultado);
```

&& (e)

|| or

```
var notaProva=4;
```

```
var notaTrabalho=8
```

```
print(notaProva>=6 || notaTrabalho >=6);
```

```
print(notaProva>=6 && notaTrabalho >=6);
```

Operador not !(negação)

# Exemplo código Dart

```
import 'dart:io';
void main()
{
    print("Digite seu nome");
    var nome = stdin.readLineSync();
    print("Seu nome é $nome");
}
```

```
import 'dart:io';

void main() {
    // Solicitando ao usuário que digite
    // seu nome
    print("Digite seu nome:");
    String nome =
        stdin.readLineSync()!;
    // Solicitando ao usuário que digite
    // sua idade
    print("Digite sua idade:");
    String idadeString =
        stdin.readLineSync()!;
    int idade = int.parse(idadeString);

    // Exibindo as informações
    // digitadas pelo usuário
    print("Seu nome é: $nome");
    print("Sua idade é: $idade");
}
```

# Aplicativos Mobile - Flutter - Desenvolvimento

The screenshot shows a Flutter development setup. On the left, the `main.dart` file is open in a code editor, displaying the initial code for a Counter App. On the right, a mobile phone icon represents the running application, showing the title "Primeiro aplicativo em Flutter" and a counter value of 7. Below the counter are three buttons: "Incrementar" (green), "Reset" (blue), and "Decrementar" (red). The code editor's status bar indicates the file is at line 10 of 10, and the build folder is visible.

```
main.dart x
projeto-flutter > projeto3 > lib > main.dart > MyApp > build
  Run | Debug | Profile
void main() {
  runApp(MyApp());
}

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Counter App',
      theme: ThemeData(
        appBarTheme: AppBarTheme(
          backgroundColor: Colors.red,
        ), // AppBarTheme
      ), // ThemeData
      home: CounterScreen(),
    );
}
```

# Aplicativos Mobile - Flutter - Recursos necessários

Git <https://git-scm.com/download/win>

SDK Flutter <https://docs.flutter.dev/get-started/install>

Android Studio SDK + Emulador

[https://developer.android.com/studio?gclid=Cj0KCQjw2eilBhCCARIsAG0Pf8vTiRnMeJg5uKGukaJuvs-Y54bJas-86pWq6tzA8zHcevK57S8Mx0aAI7eEALw\\_wcB&qclsrc=aw.ds](https://developer.android.com/studio?gclid=Cj0KCQjw2eilBhCCARIsAG0Pf8vTiRnMeJg5uKGukaJuvs-Y54bJas-86pWq6tzA8zHcevK57S8Mx0aAI7eEALw_wcB&qclsrc=aw.ds)

VSCode <https://code.visualstudio.com/download>

Extensões Flutter

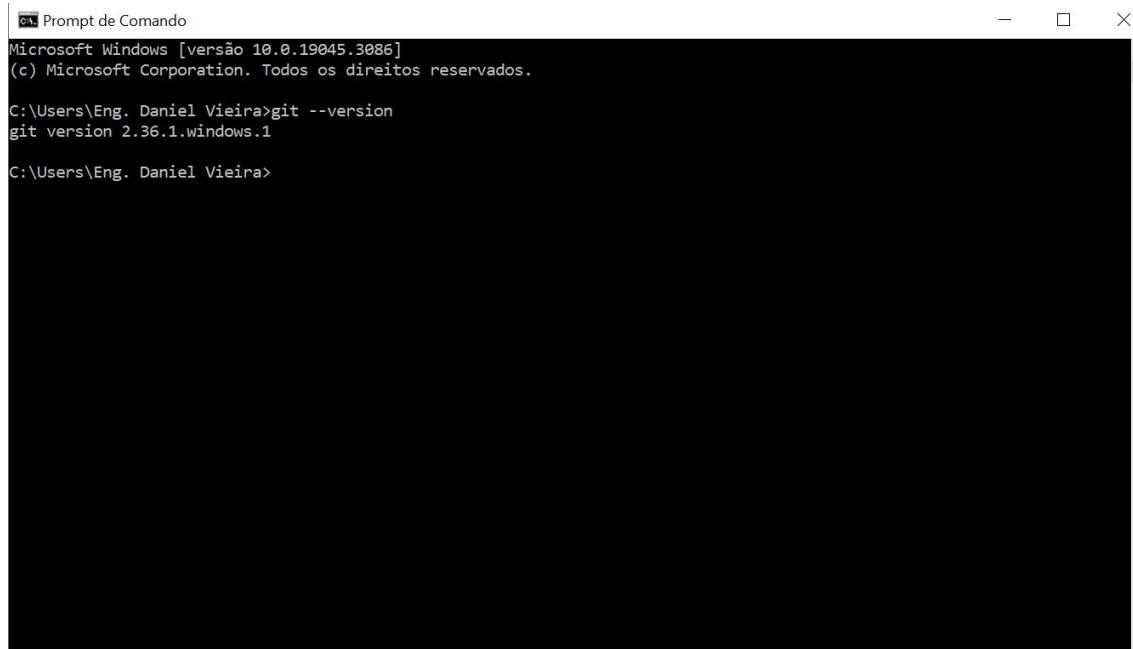
# Git instalação

1º Passo : Verificar se o Git está instalado no computador

Menu Iniciar -> Digite cmd

Vai abrir prompt de comando

Digitar o comando git --version



```
Prompt de Comando
Microsoft Windows [versão 10.0.19045.3086]
(c) Microsoft Corporation. Todos os direitos reservados.

C:\Users\Eng. Daniel Vieira>git --version
git version 2.36.1.windows.1

C:\Users\Eng. Daniel Vieira>
```

# Git instalação

1º Passo : Verificar se o Git está instalado no computador

2º Passo entrar no site Git -> Fazer o download e executar a instalação

The screenshot shows the official Git website ([git-scm.com/](https://git-scm.com/)). The main navigation menu includes links for About, Documentation, Downloads (which is highlighted in red), and Community. A sidebar on the left provides information about the Pro Git book. The central content area is titled "Download for Windows". It features a prominent call-to-action button labeled "Click here to download" pointing to the latest 64-bit version of Git for Windows. Below this, there are sections for "Other Git for Windows downloads" including a Standalone Installer, 32-bit and 64-bit Windows Setup options, and Portable ("thumbdrive edition") and 32-bit Portable versions. A "Using winget tool" section shows the command to install Git using the Winget package manager. At the bottom, there's a "Now What?" section with a link to start using Git.

git --fast-version-control

About

Documentation

Downloads

GUI Clients

Logos

Community

The entire [Pro Git book](#) written by Scott Chacon and Ben Straub is available to [read online for free](#). Dead tree versions are available on [Amazon.com](#).

## Download for Windows

[Click here to download](#) the latest (2.41.0) 64-bit version of **Git for Windows**. This is the most recent [maintained build](#). It was released [8 days ago](#), on 2023-07-13.

### Other Git for Windows downloads

Standalone Installer

[32-bit Git for Windows Setup.](#)

[64-bit Git for Windows Setup.](#)

Portable ("thumbdrive edition")

[32-bit Git for Windows Portable.](#)

[64-bit Git for Windows Portable.](#)

#### Using winget tool

Install `winget tool` if you don't already have it, then type this command in command prompt or Powershell.

```
winget install --id Git.Git -e --source winget
```

The current source code release is version 2.41.0. If you want the newer version, you can build it from [the source code](#).

### Now What?

Now that you have downloaded Git, it's time to start using it.

# Instalação do Flutter

1º Passo : Entrar no site flutter e selecionar de acordo com o sistema operacional: Windows, Linux, Mac

The screenshot shows the Flutter website's 'Install' page. At the top, there is a navigation bar with links for Multi-Platform, Development, Ecosystem, Showcase, Docs, and a search bar. To the right of the search bar is a 'Get started' button. Below the navigation bar, a blue banner says 'Read the announcement!' and has a 'Set up an editor' link with icons for GitHub and VS Code.

The main content area is titled 'Install' and shows the path 'Get started > Install'. It asks the user to 'Select the operating system on which you are installing Flutter:' and provides four options: Windows, macOS, Linux, and ChromeOS, each with its respective logo. A yellow callout box at the bottom left contains the text: 'Important: If you're in China, read [Using Flutter in China](#)'. On the right side of the page, there is another 'Set up an editor' link with GitHub and VS Code icons.

On the left side of the page, there is a sidebar with a 'Get started' section containing numbered steps: 1. Install, 2. Set up an editor, 3. Test drive, 4. Write your first app, and 5. Learn more. Below this are sections for 'From another platform?' (Dart language overview), 'Stay up to date', 'Samples & tutorials', 'User interface', 'Navigation & routing', 'Data & backend', 'Accessibility & localization', 'Platform integration', and 'Packages & plugins'.

# Instalação do Flutter

## 2º Passo : Baixar a versão do Flutter

The screenshot shows the official Flutter website's 'Get started' page for Windows. The left sidebar has sections like 'Get started' (with '1. Install' selected), 'Stay up to date', 'Samples & tutorials', and various developer tools. The main content area discusses minimum requirements (Windows 10, 1.64 GB disk space, Git for Windows 2.x), provides a link to the 'Flutter SDK' (highlighted in blue), and includes a warning about installing to paths with special characters. The right sidebar contains links for 'Contents', 'System requirements', 'Get the Flutter SDK', 'Update your path', 'Run flutter doctor', 'Android setup', 'Install Android Studio', 'Set up your Android device', 'Set up the Android emulator', 'Agree to Android Licenses', 'Windows setup', 'Additional Windows requirements', and 'Next step'.

To install and run Flutter, your development environment must meet these minimum requirements:

- **Operating Systems:** Windows 10 or later (64-bit), x86-64 based.
- **Disk Space:** 1.64 GB (does not include disk space for IDE/tools).
- **Tools:** Flutter depends on these tools being available in your environment.
  - [Windows PowerShell 5.0](#) or newer (this is pre-installed with Windows 10)
  - [Git for Windows 2.x](#), with the [Use Git from the Windows Command Prompt](#) option.

If Git for Windows is already installed, make sure you can run `git` commands from the command prompt or PowerShell.

## Get the Flutter SDK

**Important:** If you're in China, read [Using Flutter in China](#).

1. Download the following installation bundle to get the latest stable release of the Flutter SDK:

[flutter\\_windows\\_3.10.6-stable.zip](#)

For other release channels, and older builds, check out the [SDK archive](#).

2. Extract the zip file and place the contained `flutter` in the desired installation location for the Flutter SDK (for example, `C:\src\flutter`).

**Warning:** Do not install Flutter to a path that contains special characters or spaces.

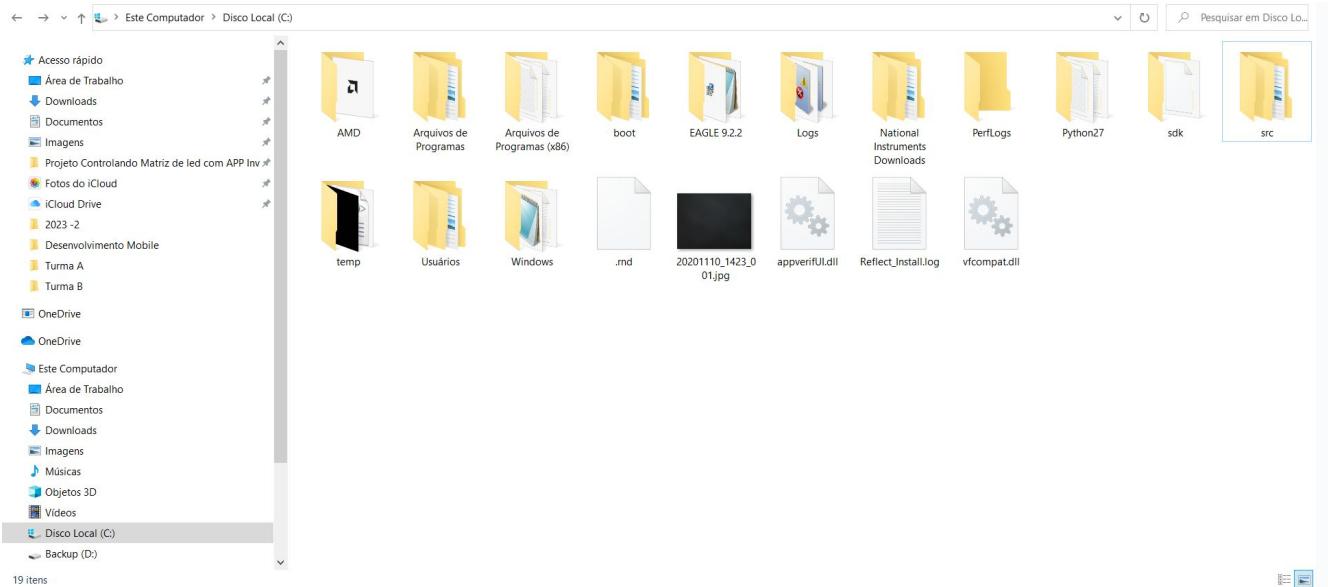
# Instalação do Flutter

3º Passo : Após fazer o download, descompactá-lo.

4º Passo Criar uma pasta no disco C chamada src.

Não colocar a pasta flutter no diretório raiz C, pois pedirá permissão de administrador.

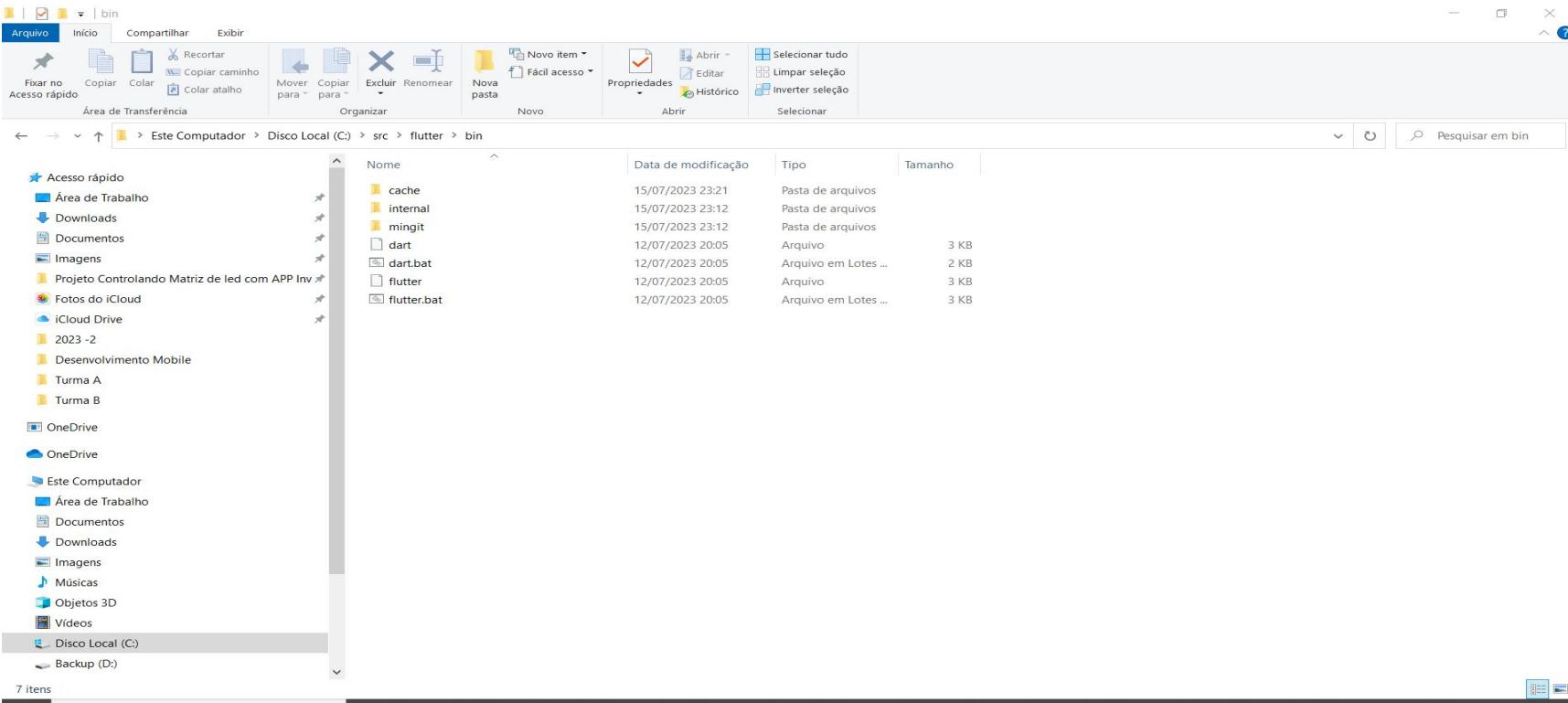
5º Passo: Copiar a pasta flutter para a pasta src



# Instalação do Flutter

6º Passo : Entrar na pasta src ->flutter->bin e copiar esse caminho, pois iremos configurar as variáveis de ambiente

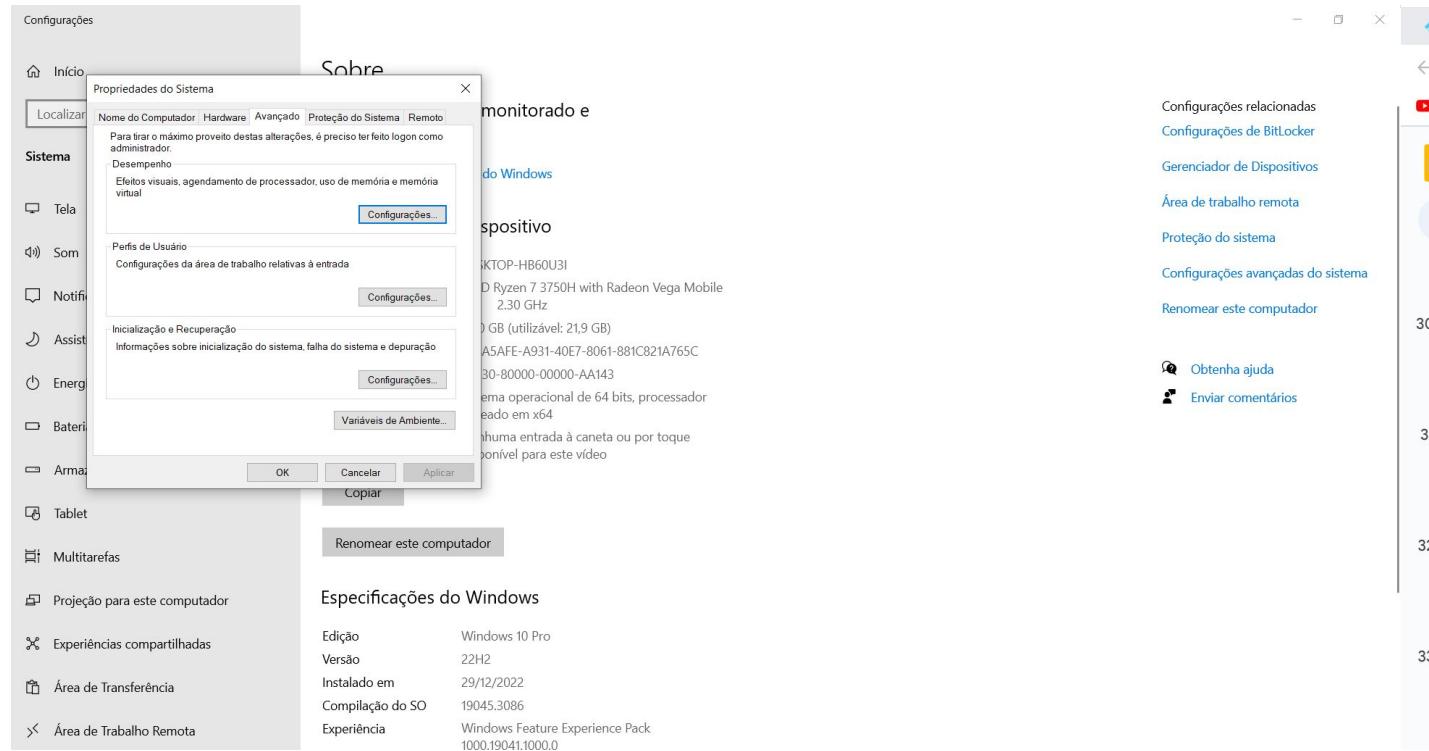
C:\src\flutter\bin



# Instalação do Flutter

## 7º Passo : Configurar variáveis de ambiente

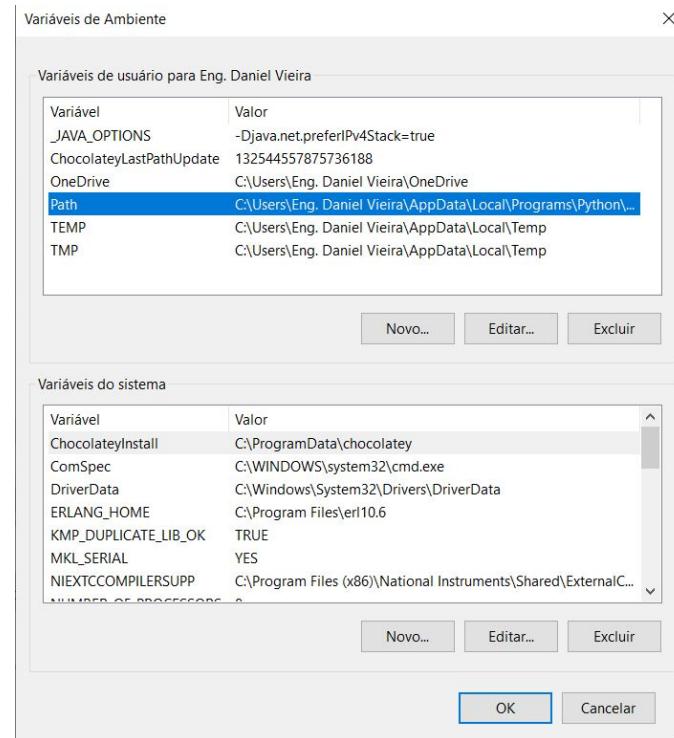
Meu Computador -> Propriedades -> Configurações avançadas do sistema



# Instalação do Flutter

## 8º Passo : Configurar variáveis de ambiente

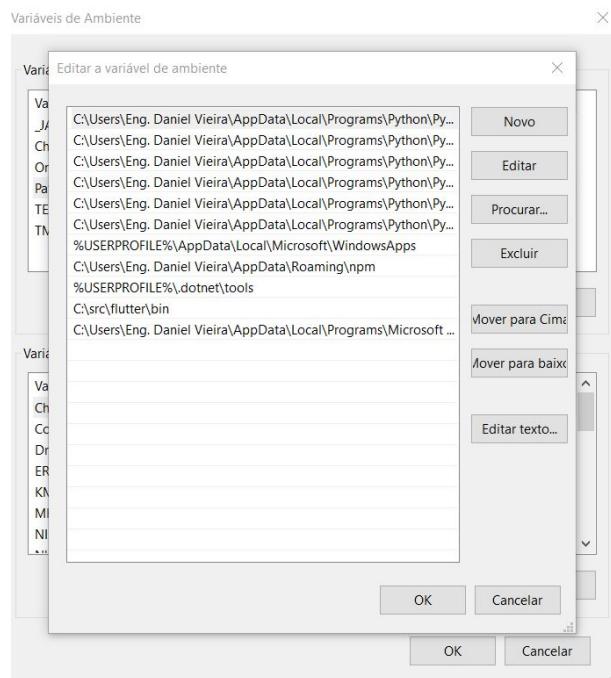
Clicar em variáveis de ambiente -> Procurar pelo campo Path e clicar em editar



# Instalação do Flutter

## 9º Passo : Configurar variáveis de ambiente

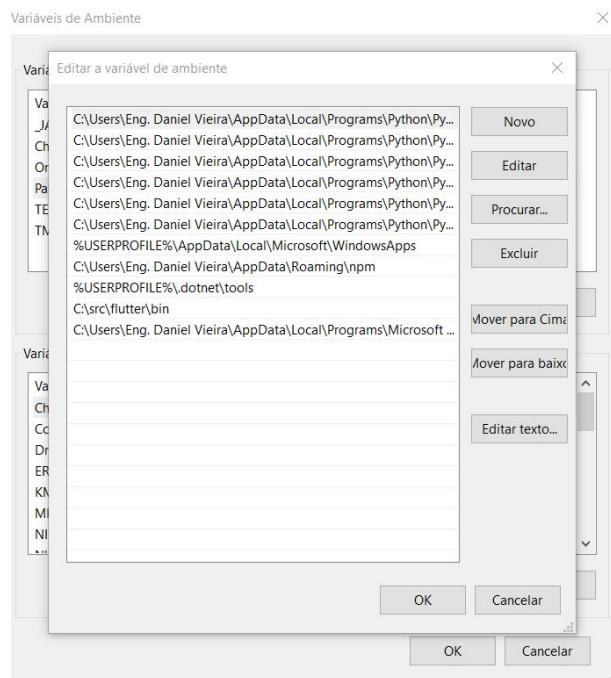
Procurar pelo campo Path e clicar em editar-> Novo e colar o caminho copiado anteriormente  
C:\src\flutter\bin



# Instalação do Flutter

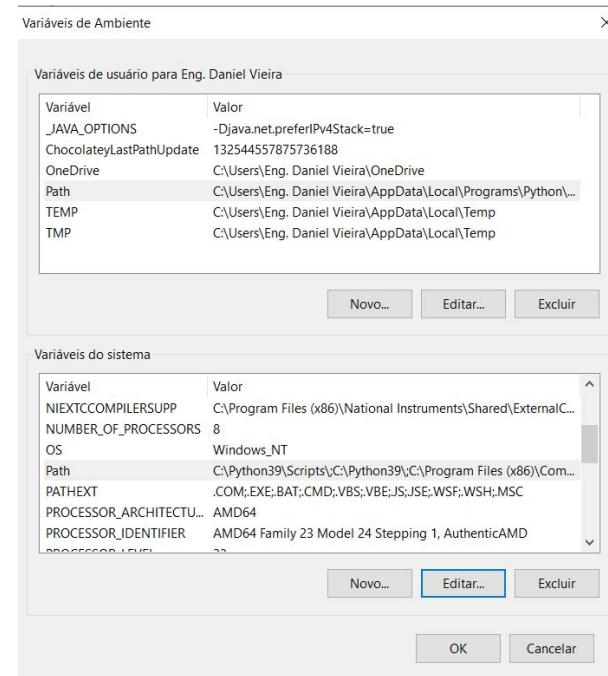
## 9º Passo : Configurar variáveis de ambiente

Procurar pelo campo Path e clicar em editar-> Novo e colar o caminho copiado anteriormente  
C:\src\flutter\bin



# Instalação do Flutter

Aqui na escola temos que colocar como variável do sistema, só do usuário dá conflito.  
Procurar pelo campo Path e clicar em editar-> Novo e colar o caminho copiado anteriormente  
C:\src\flutter\bin - Clicar ok e fecha as janelas

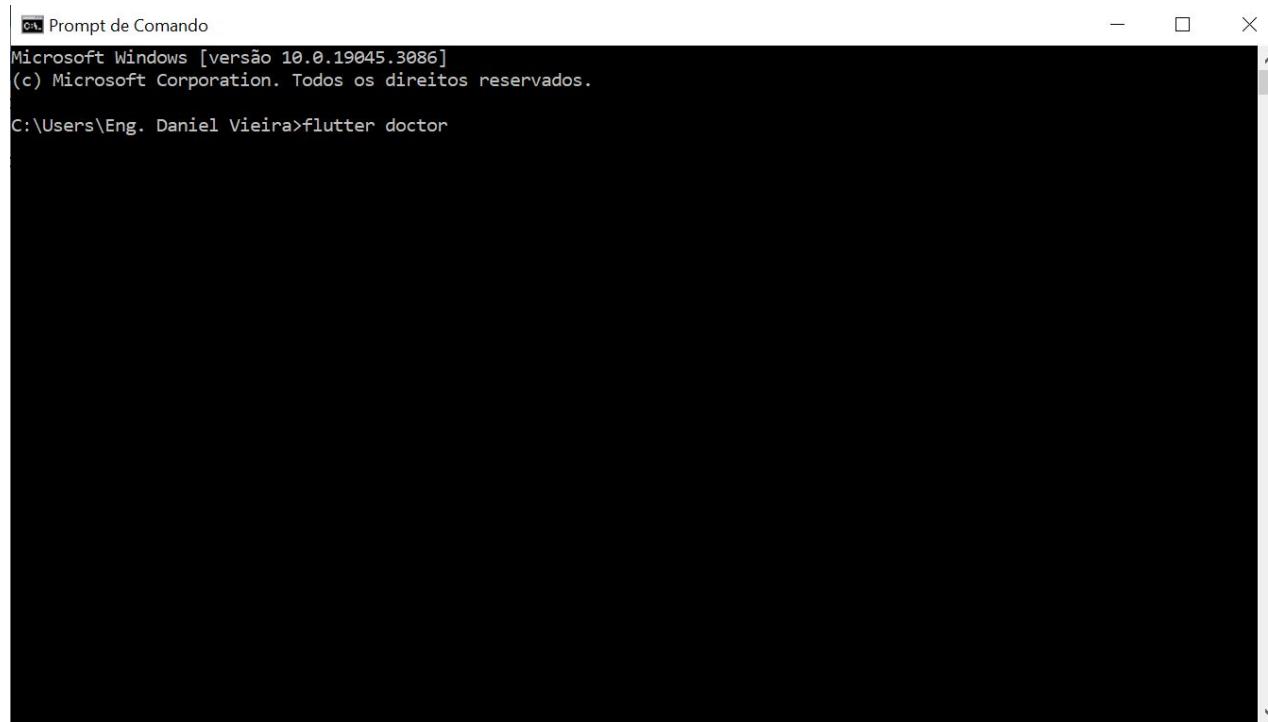


# Instalação do Flutter

10º Passo

Menu iniciar -> cmd

11º Passo digitar flutter doctor para verificar os componentes instalados

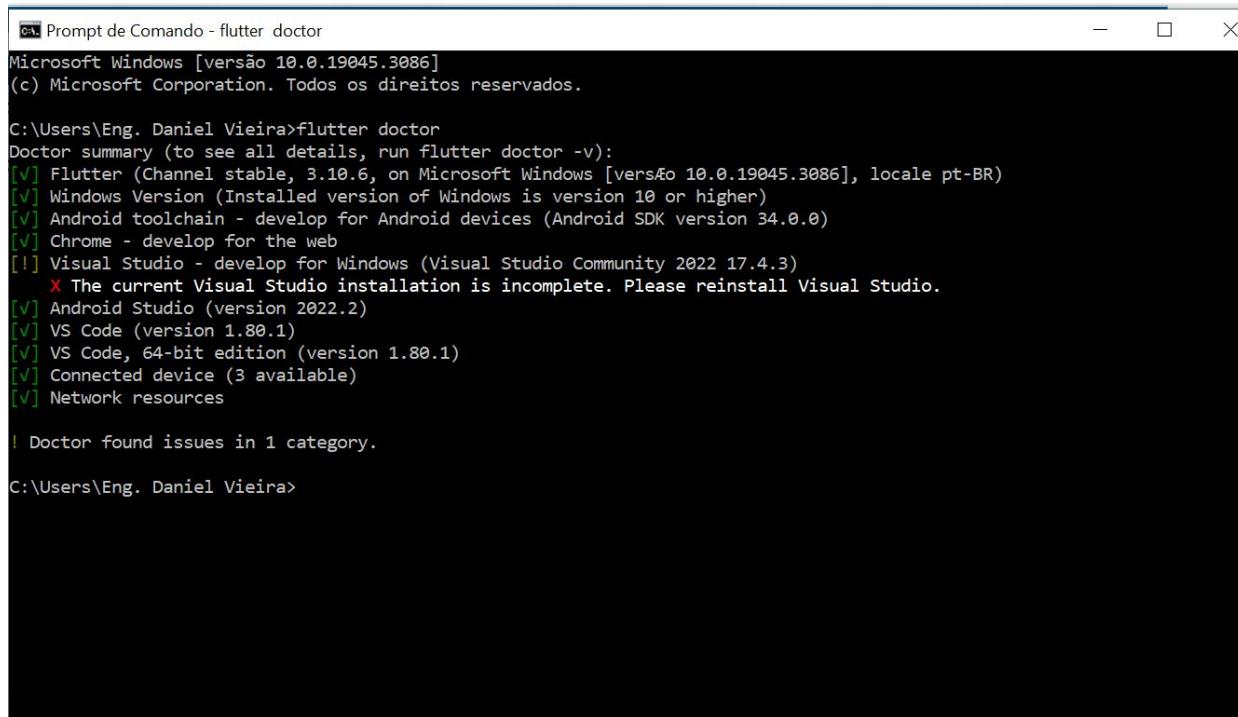


```
Prompt de Comando
Microsoft Windows [versão 10.0.19045.3086]
(c) Microsoft Corporation. Todos os direitos reservados.

C:\Users\Eng. Daniel Vieira>flutter doctor
```

# Instalação do Flutter

12º Se as configurações das variáveis de ambiente foram realizadas com sucesso, aparecerá a tela abaixo



```
Prompt de Comando - flutter doctor
Microsoft Windows [versão 10.0.19045.3086]
(c) Microsoft Corporation. Todos os direitos reservados.

C:\Users\Eng. Daniel Vieira>flutter doctor
Doctor summary (to see all details, run flutter doctor -v):
[✓] Flutter (Channel stable, 3.10.6, on Microsoft Windows [versão 10.0.19045.3086], locale pt-BR)
[✓] Windows Version (Installed version of Windows is version 10 or higher)
[✓] Android toolchain - develop for Android devices (Android SDK version 34.0.0)
[✓] Chrome - develop for the web
[!] Visual Studio - develop for Windows (Visual Studio Community 2022 17.4.3)
  X The current Visual Studio installation is incomplete. Please reinstall Visual Studio.
[✓] Android Studio (version 2022.2)
[✓] VS Code (version 1.80.1)
[✓] VS Code, 64-bit edition (version 1.80.1)
[✓] Connected device (3 available)
[✓] Network resources

! Doctor found issues in 1 category.

C:\Users\Eng. Daniel Vieira>
```

# Instalação do SDK Android

## 1º Fazer o download do Android Studio

The screenshot shows the official Android Studio download page. At the top, there's a navigation bar with links for 'developers' (with a logo), 'Essentials', 'Design & Plan', 'Docs', 'Google Play', 'Search' (with a magnifying glass icon), 'Português - ...' (language dropdown), 'Android Studio' (selected), and 'Fazer login' (login). Below the navigation, the page title 'ANDROID STUDIO' is displayed. A horizontal menu bar includes 'Download' (selected), 'Android Studio editor', 'Android Gradle Plugin', 'SDK tools', and 'Preview'. The main content area features a large 'Android Studio' logo and a brief description: 'Get the official Integrated Development Environment (IDE) for Android app development.' Below this is a green button with the text 'Download Android Studio Flamingo' and a downward arrow icon. To the right, the actual Android Studio IDE is shown. It displays a Java code snippet for a Composable function named 'TopicSelection'. The code uses 'rememberLazyGridState' and 'LazyHorizontalGrid' to create a scrollable grid of items. On the right side of the IDE, there's a 'Layout Inspector' tool showing a wireframe of a mobile device screen with various UI components like cards and icons. At the bottom of the IDE window, there's a 'App Quality Insights' section with a chart showing issues over time across different devices and operating systems.

developers

Essentials ▾ Design & Plan ▾ Docs Google Play

Search

Português - ...

Android Studio Fazer login

ANDROID STUDIO

Download Android Studio editor Android Gradle Plugin SDK tools Preview

# Android Studio

Get the official Integrated Development Environment (IDE) for Android app development.

Download Android Studio Flamingo

Read release notes

```
rowinandroid - 10 main - ForYouScreen.kt
```

```
@Composable
private fun TopicSelection(
    onBoardingUIState: OnboardingUIState,
    onTopicCheckedChanged: (String, Boolean) -> Unit,
    modifier: Modifier = Modifier
) = tree(sectionsName = "TopicSelection") {
    val lazyGridState = rememberLazyGridState()
    val topicSelectionTestTag = "ForYou:topicSelection"
    TrackScrollViewLazyGridState(lazyGridState, stateName = topicSelectionTestTag)

    LazyHorizontalGrid(
        state = lazyGridState,
        rows = GridCells.Fixed(count = 3),
        horizontalArrangement = Arrangement.spacedBy(12.dp),
        verticalArrangement = Arrangement.spacedBy(12.dp),
        contentPadding = PaddingValues(16.dp),
        modifier = modifier
            .heightIn(max(240.dp, with(LocalDensity.current) { 240.sp.toDp() }))
            .fillMaxWidth()
            .testTag(topicSelectionTestTag)
    )
}
```

App Quality Insights Google Firebase Crashlytics

Issue	Last 60 days	Events	Users	Details
! has extra)	24	7	Google 29%	
! apps.newinandroid/u0a	12	4	Other 8%	
! add system_server and system app only, unless they are annotated with @Readable.	10	3	Android Versions	
! long IndianaOrphanedException - Index 4, size: 4	7	1	Android (12) 58%	
! java.sql.SQLException - Database or disk is full (code 13 SQLITE_FULL)	1	1	Android (13) 25%	
! long IndianaOrphanedException - consensus	1	1	Android (9) 8%	
			Other 8%	

# Instalação do SDK Android

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developers

Essentials ▾ Design & Plan ▾ Docs Google Play

Search

Português - ...

Android Studio Fazer login

ANDROID STUDIO

Download Android Studio editor Android Gradle Plugin SDK tools Preview

# Android Studio

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Download Android Studio Flamingo

Read release notes

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rowinandroid - 10 main - ForYouScreen.kt
```

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@Composable
private fun TopicSelection(
    onBoardingUIState: OnboardingUIState,
    onTopicCheckedChanged: (String, Boolean) -> Unit,
    modifier: Modifier = Modifier
) = tree(sectionsName = "TopicSelection") {
    val lazyGridState = rememberLazyGridState()
    val topicSelectionTestTag = "ForYou:topicSelection"
    TrackScrollViewLazyGridState(lazyGridState, stateName = topicSelectionTestTag)

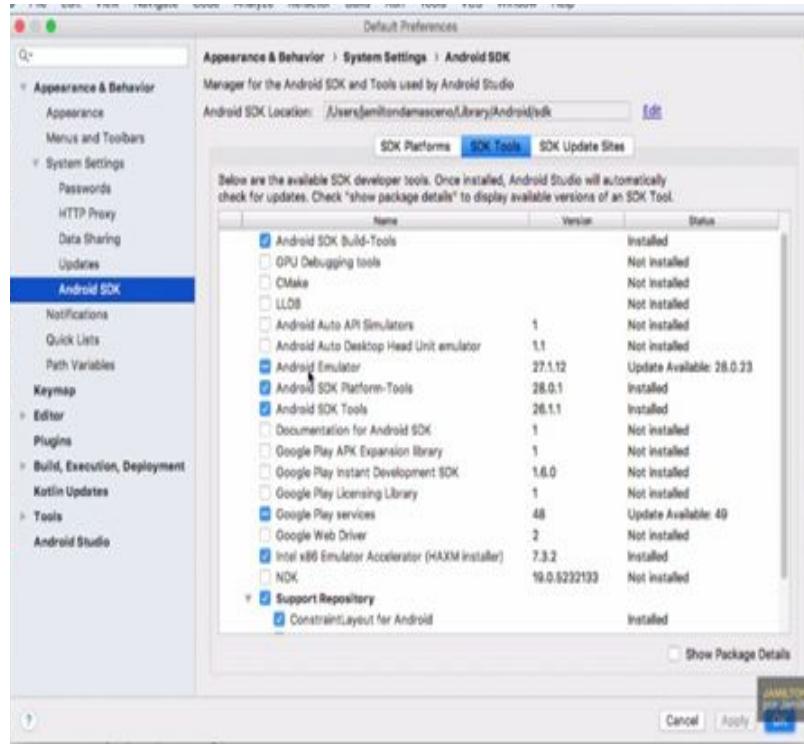
    LazyHorizontalGrid(
        state = lazyGridState,
        rows = GridCells.Fixed(count = 3),
        horizontalArrangement = Arrangement.spacedBy(12.dp),
        verticalArrangement = Arrangement.spacedBy(12.dp),
        contentPadding = PaddingValues(16.dp),
        modifier = modifier
            .heightIn(max(240.dp, with(LocalDensity.current) { 240.sp.toDp() }))
            .fillMaxWidth()
            .testTag(topicSelectionTestTag)
    )
}
```

App Quality Insights Google Firebase Crashlytics

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! has extra)	24	7	Google 29%	
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! add system_server and system app only, unless they are annotated with @Readable.	10	3	Android Versions	
! long IndianaOrphansException - Index 4, size: 4	7	1	Android (12) 58%	
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! long IndianaOrphansException - consensus	1	1	Android (9) 8%	
! long IndianaOrphansException	1	1	Other 8%	

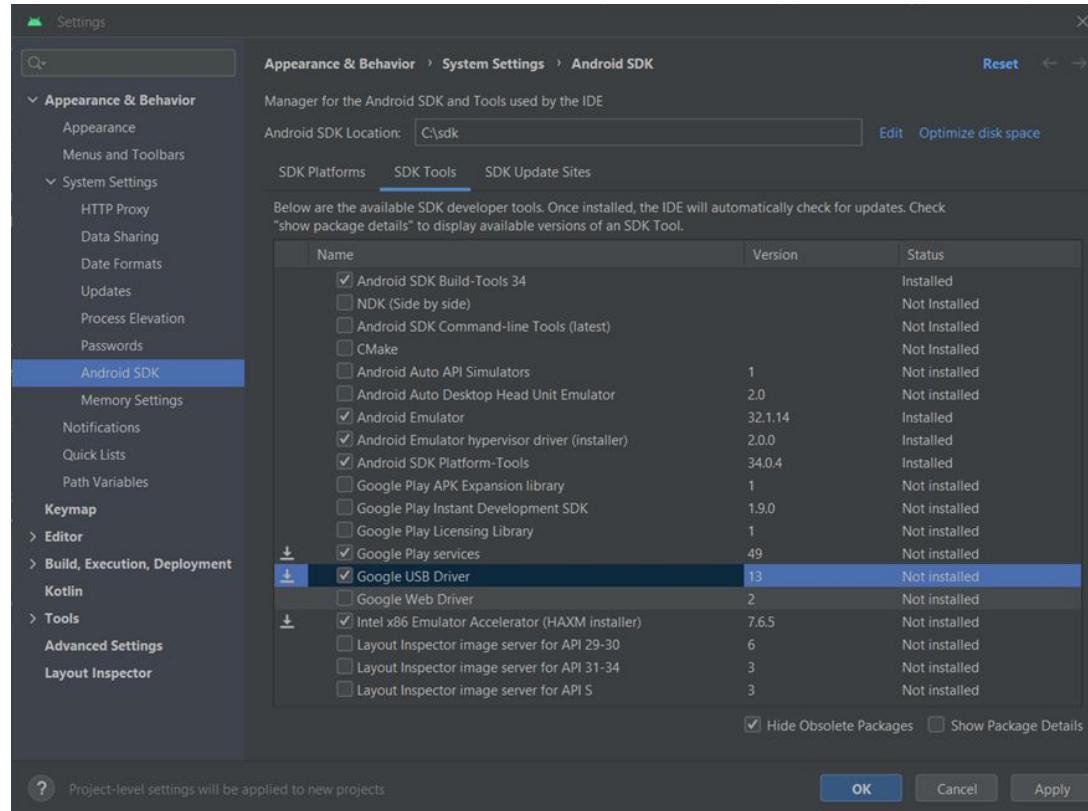
# Instalação do SDK Android

## 2º Instalar o Android Studio



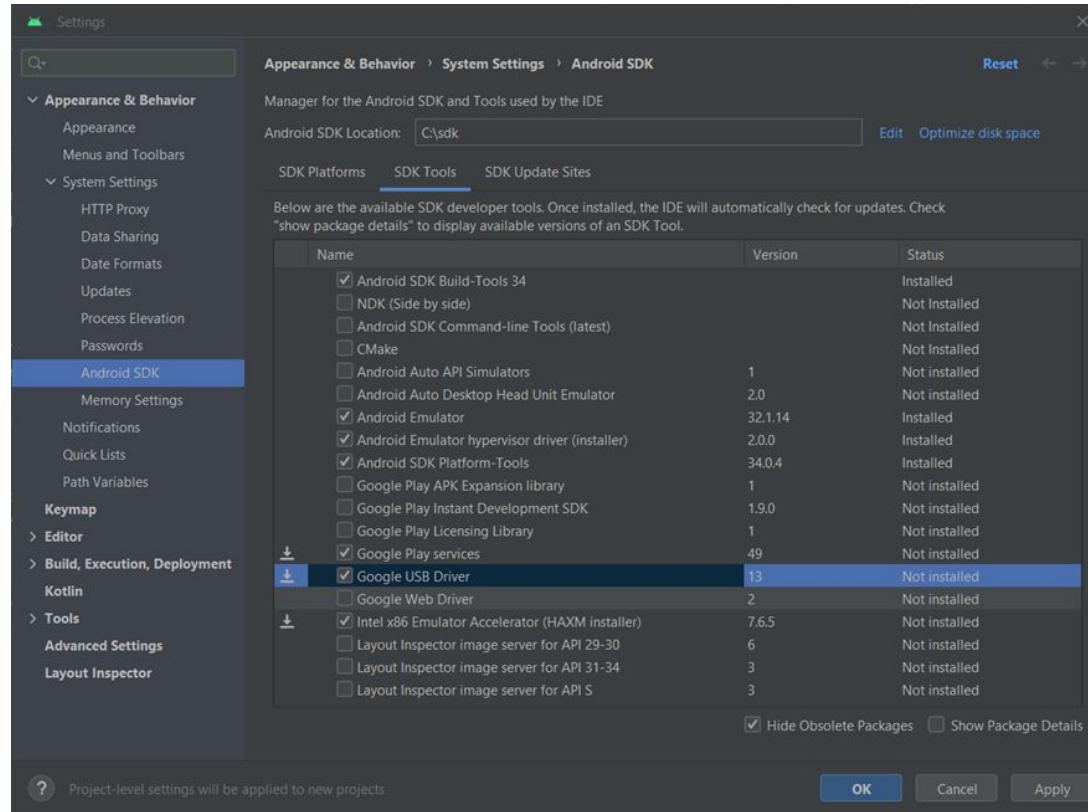
# Instalação do SDK Android

## 2º Instalar o SDK



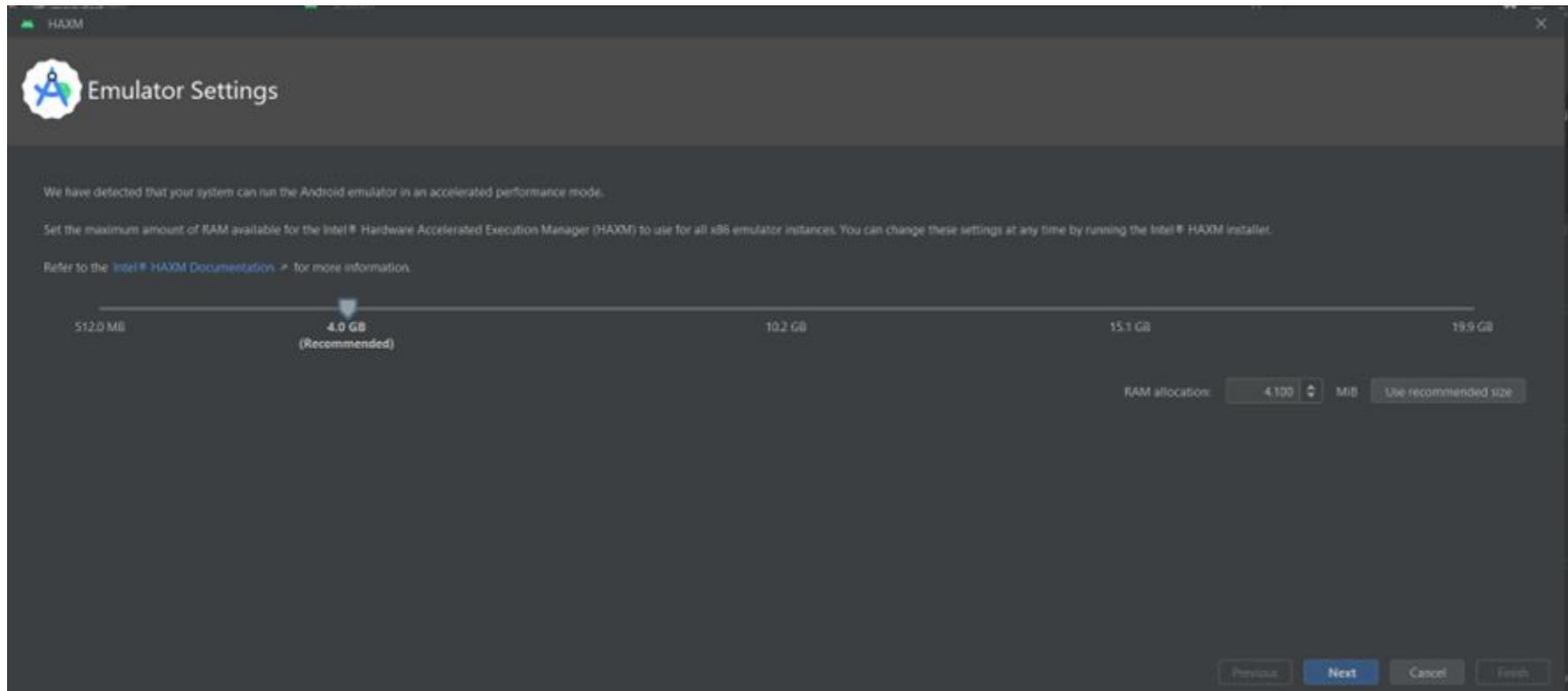
# Instalação do SDK Android

## 2º Instalar o SDK



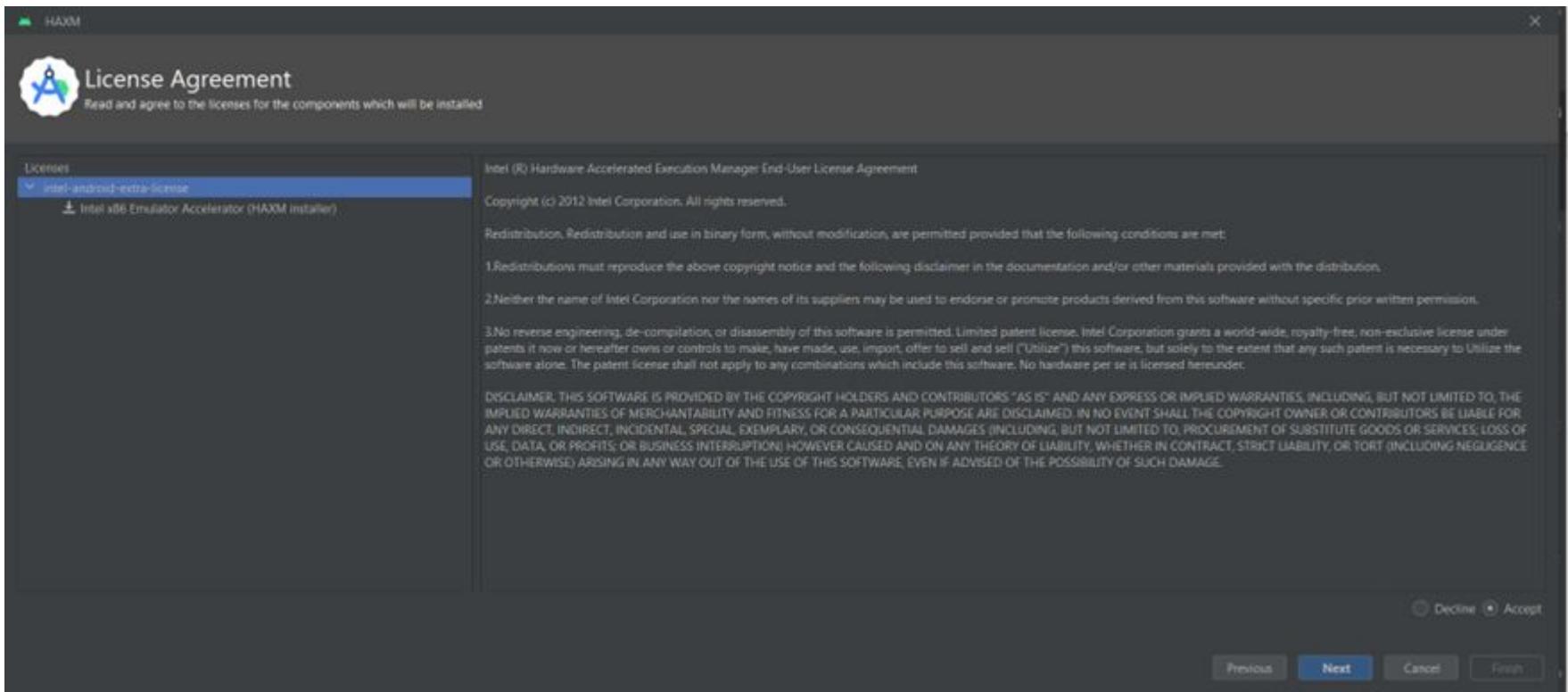
# Instalação do SDK Android

## 3º Instalar o Emulador



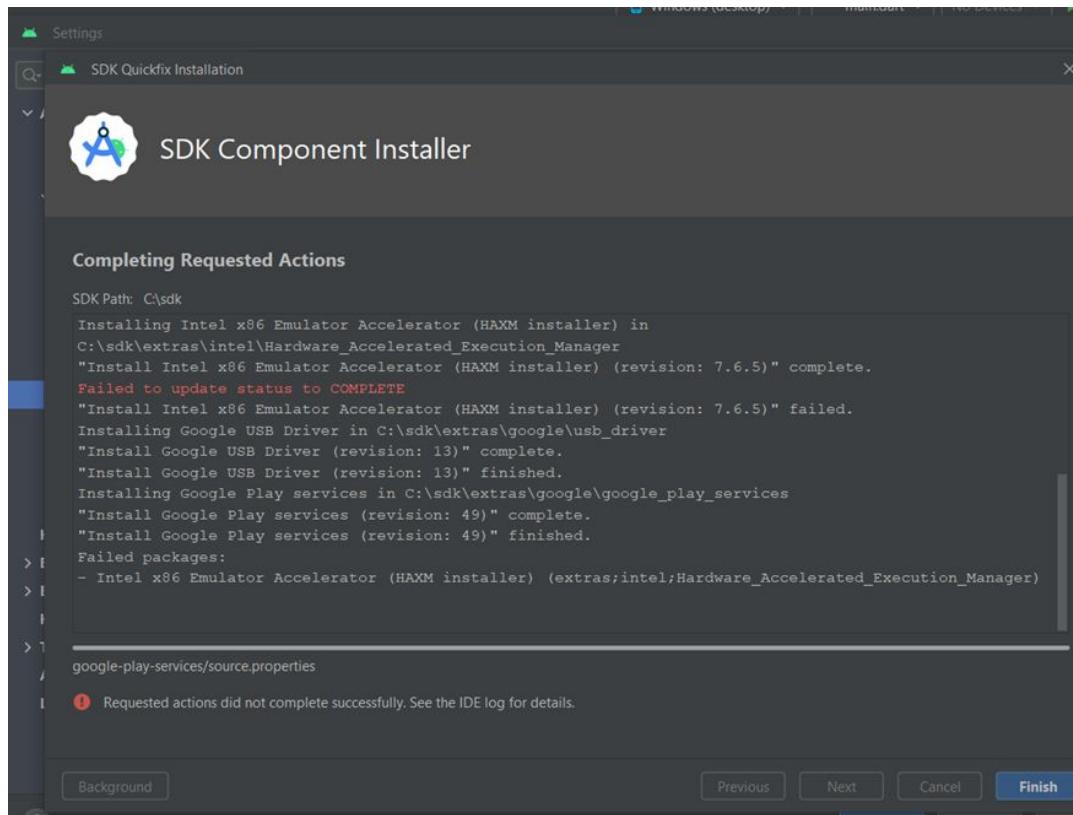
# Instalação do SDK Android

## 4º Concordar com a licença



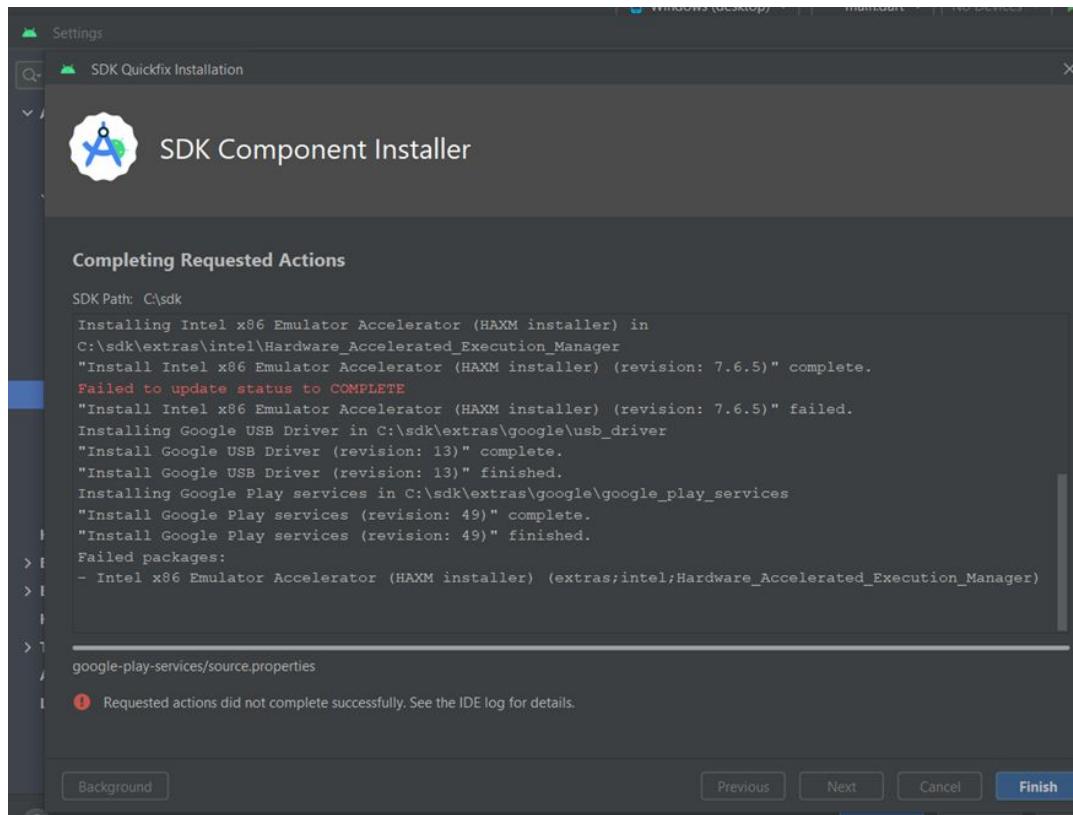
# Instalação do SDK Android

## 5º Instalação do Emulador



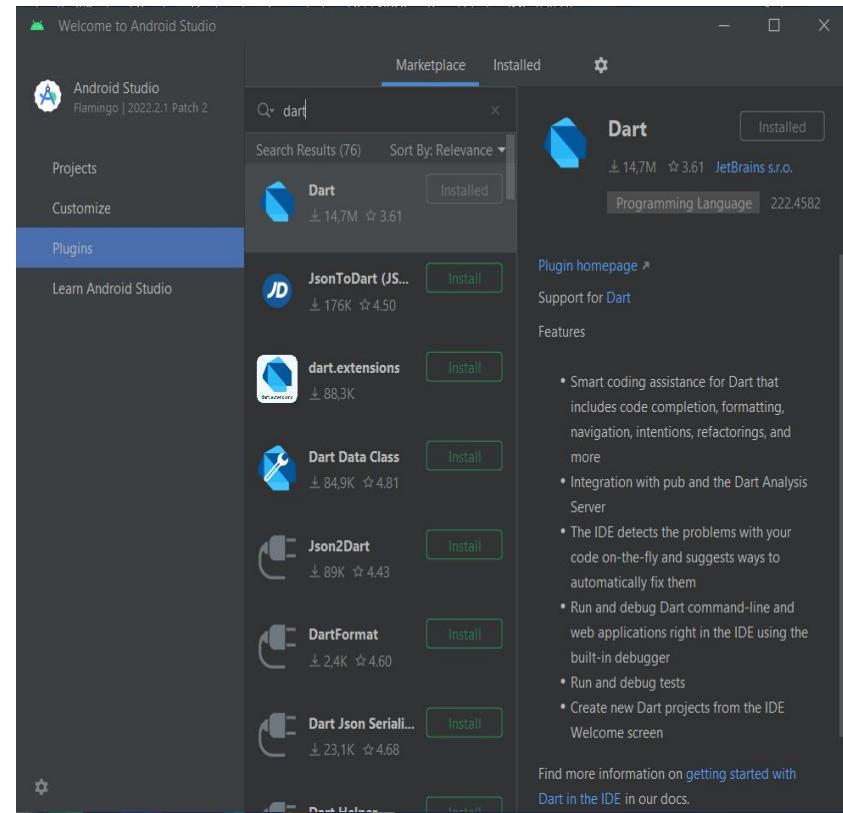
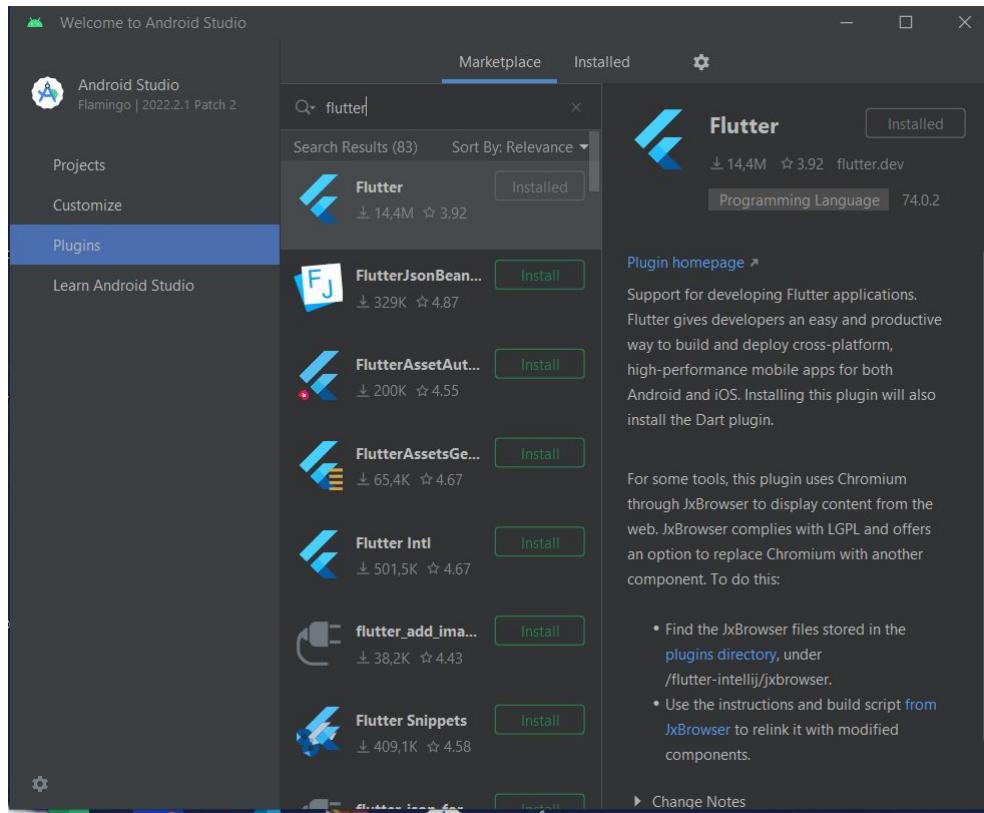
# Instalação do SDK Android

## 5º Instalação do Emulador



# Instalação do SDK Android

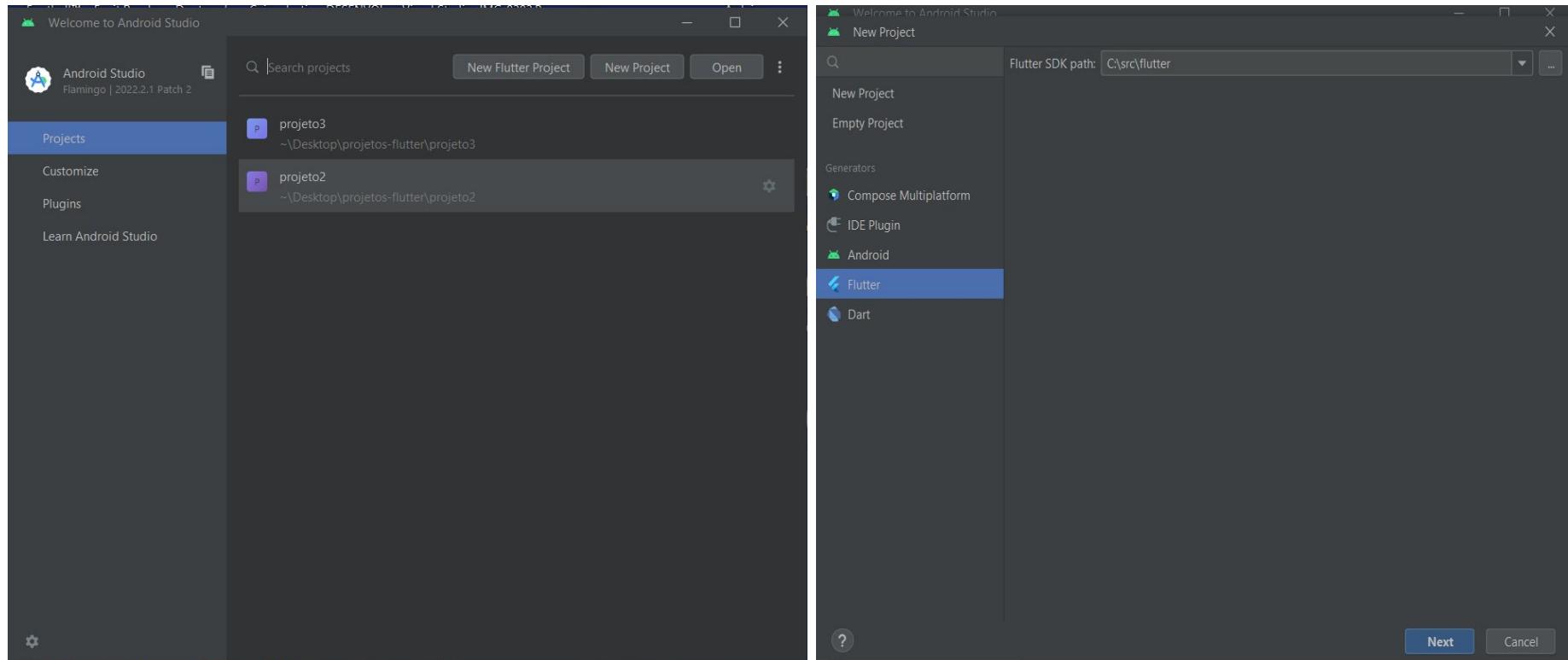
## 6º Instalação dos plugins Flutter e Dart



Find more information on [getting started with Dart in the IDE](#) in our docs.

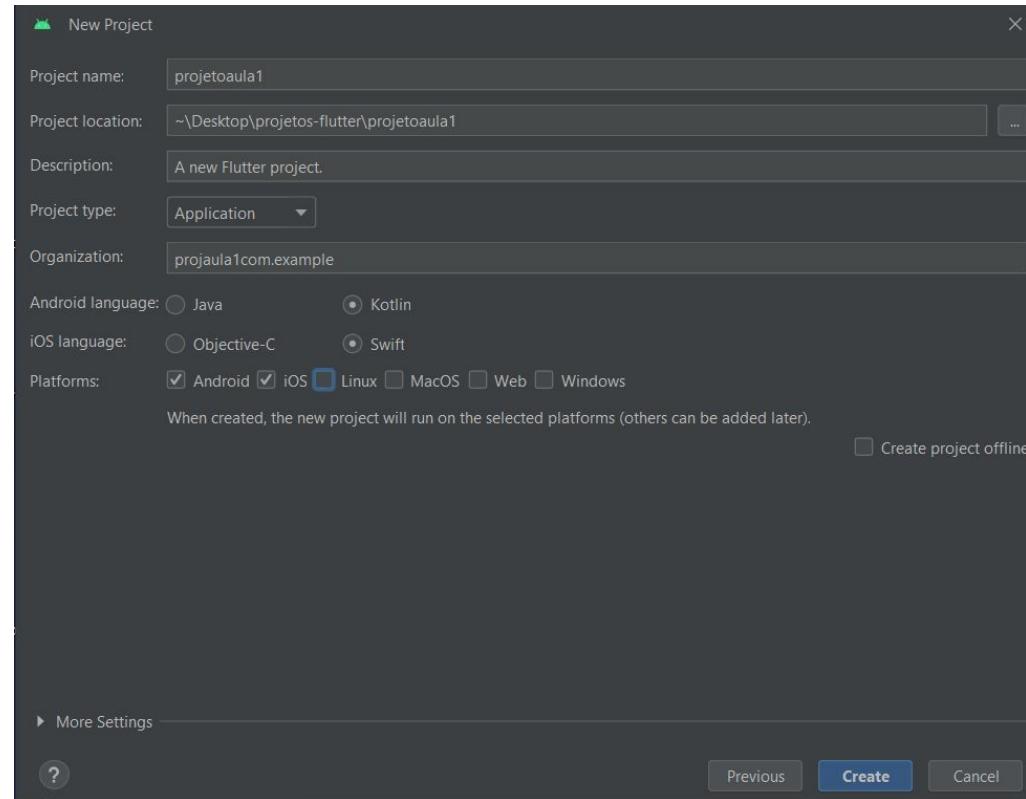
# Instalação do SDK Android

7º Criando um projeto Flutter no Android Studio  
Clicar em New Flutter Project



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```
import 'package:flutter/material.dart';

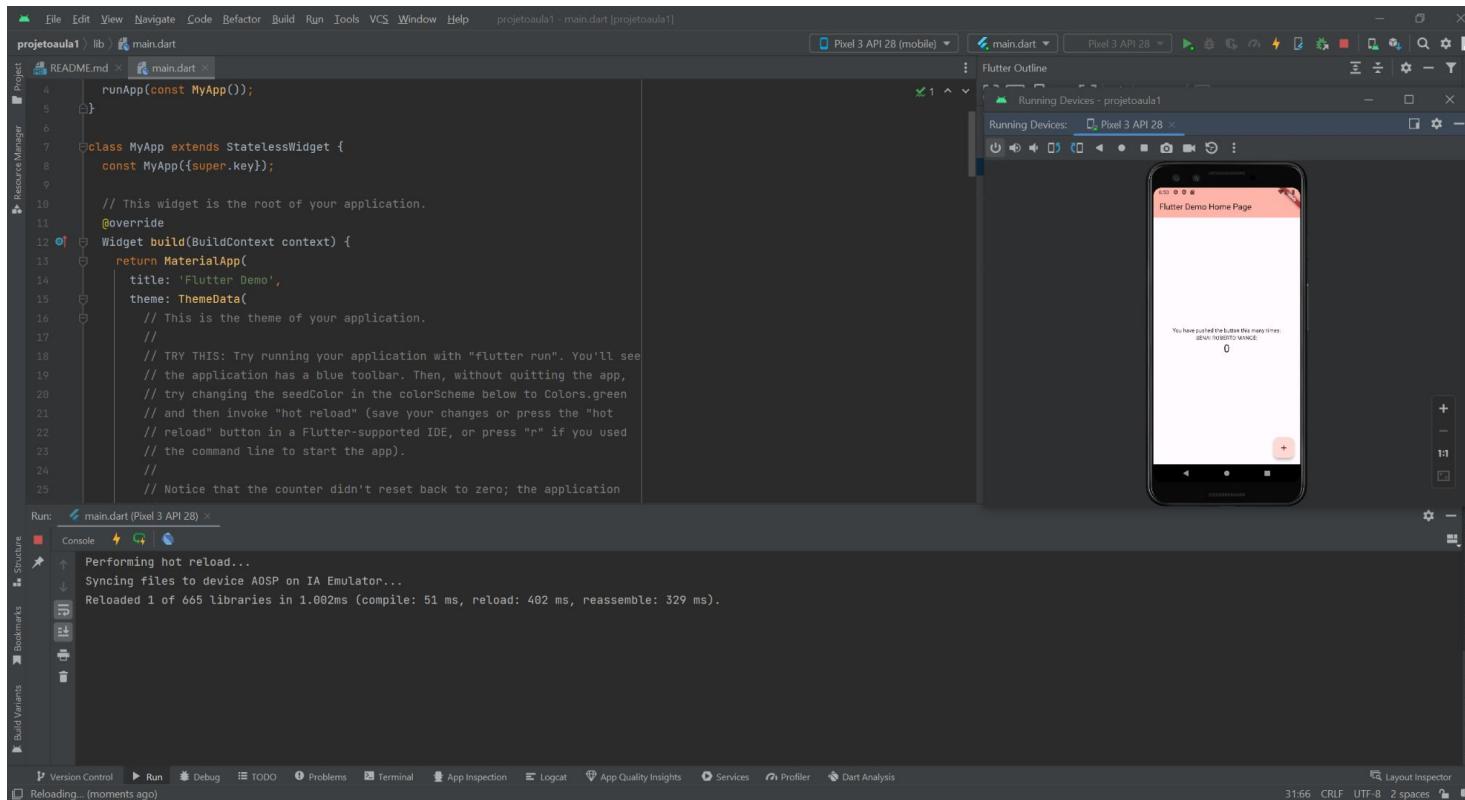
void main() {
  runApp(const MyApp());
}

class MyApp extends StatelessWidget {
  const MyApp({super.key});

  // This widget is the root of your application.
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Flutter Demo',
      theme: ThemeData(
        // This is the theme of your application.
        //
        // TRY THIS: Try running your application with "flutter run". You'll see
        // the application has a blue toolbar. Then, without quitting the app,
        // try changing the seedColor in the colorScheme below to Colors.green
        // and then invoke "hot reload" (save your changes or press the "hot
        // reload" button in a Flutter-supported IDE, or press "r" if you used
        // the command line to start the app).
        //
        // Notice that the counter didn't reset back to zero; the application
        // state is not lost during the reload. To reset the state, use hot
        // restart instead.
        //
        // This works for code too, not just values: Most code changes can be
        // tested with just a hot reload.
        colorScheme: ColorScheme.fromSeed(seedColor: Colors.deepPurple),
        useMaterial3: true,
      ), // ThemeData
      home: const MyHomePage(title: 'Flutter Demo Home Page'),
    ); // MaterialApp
}
```

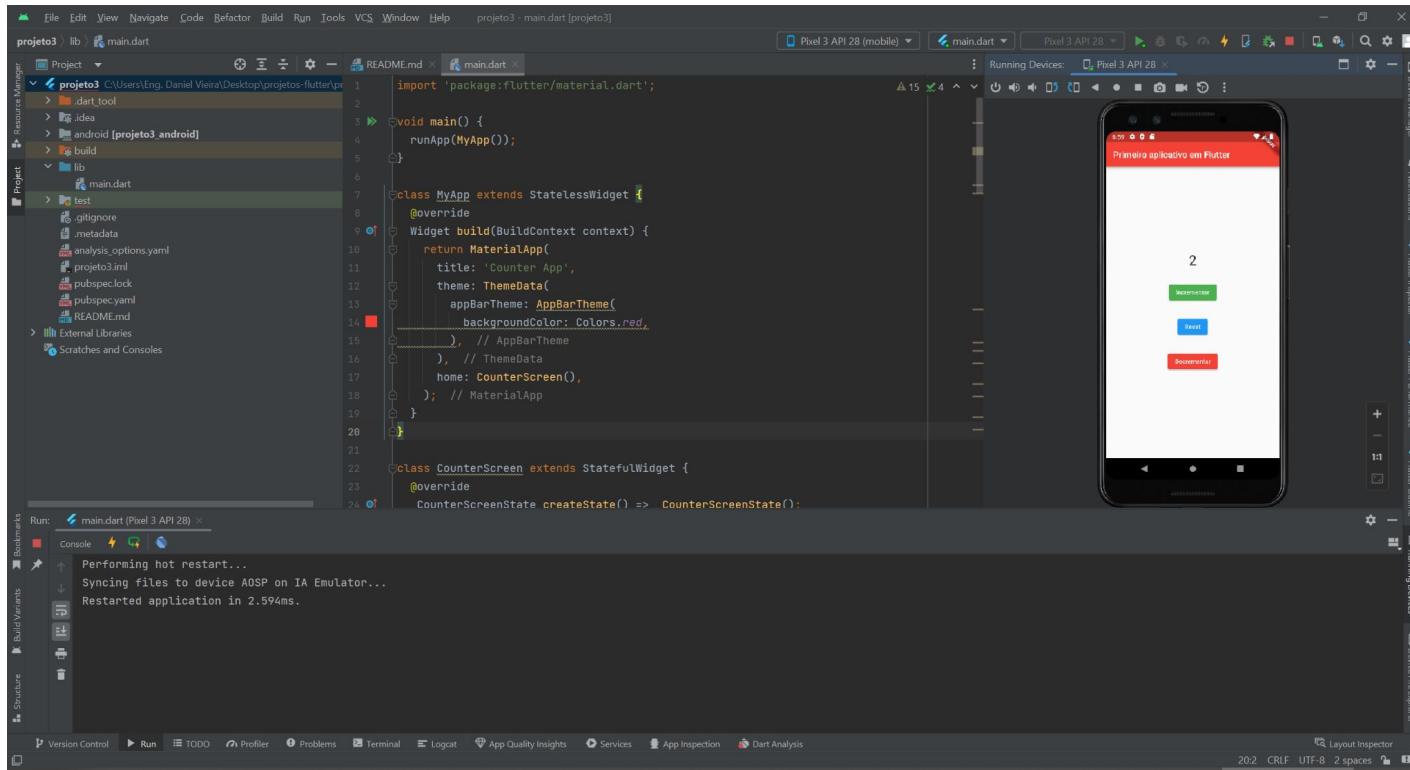
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# Instalação do SDK Android

## 7º Criando um projeto Flutter no Android Studio Clicar em New Flutter Project



# Código Flutter

```
import 'package:flutter/material.dart';

void main() {
  runApp(MyApp());
}

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Counter App',
      theme: ThemeData(
        appBarTheme: AppBarTheme(
          backgroundColor: Colors.red,
        ),
        ),
      home: CounterScreen(),
    );
  }
}
```

# Código Flutter

```
class CounterScreen extends StatefulWidget {  
  @override  
  _CounterScreenState createState() => _CounterScreenState();  
  
}  
  
class _CounterScreenState extends State<CounterScreen> {  
  int _counter = 0;  
  
  void _incrementCounter() {  
    setState(() {  
      _counter++;  
    });  
  }  
}
```

# Código Flutter

```
void _resetCounter() {  
    setState(() {  
        _counter = 0;  
    });  
}  
void _decrementCounter() {  
    setState(() {  
        _counter = _counter -1;  
    });  
}
```

# Código Flutter

```
@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      title: Text('Primeiro aplicativo em Flutter'),
    ),
    body: Center(
      child: Column(
        mainAxisAlignment: MainAxisAlignment.center,
        children: [
          Text(
            '$_counter',
            style: TextStyle(fontSize: 30),
          ),
          SizedBox(height: 30),
          ElevatedButton(
            onPressed: _incrementCounter,
            child: Text('Incrementar'),
            style: ButtonStyle(
              backgroundColor: MaterialStateProperty.all<Color>(Colors.green),
            ),
          ),
        ],
      ),
    ),
  );
}
```

# Código Flutter

```
@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      title: Text('Primeiro aplicativo em Flutter'),
    ),
    body: Center(
      child: Column(
        mainAxisAlignment: MainAxisAlignment.center,
        children: [
          Text(
            '$_counter',
            style: TextStyle(fontSize: 30),
          ),
          SizedBox(height: 30),
          ElevatedButton(
            onPressed: _incrementCounter,
            child: Text('Incrementar'),
            style: ButtonStyle(
              backgroundColor: MaterialStateProperty.all<Color>(Colors.green),
            ),
          ),
        ],
      ),
    ),
  );
}
```

# Código Flutter

```
SizedBox(height: 30),  
    ElevatedButton(  
        onPressed: _resetCounter,  
        child: Text('Reset'),  
        style: ButtonStyle(  
            backgroundColor: MaterialStateProperty.all<Color>(Colors.blue),  
        ),  
    ),
```

# Código Flutter

```
SizedBox(height: 30),  
    ElevatedButton(  
        onPressed: _decrementCounter,  
        child: Text('Decrementar'),  
        style: ButtonStyle(  
            backgroundColor: MaterialStateProperty.all<Color>(Colors.red),  
        ),  
    ),  
,  
],  
,  
,  
);  
}  
}
```

# Obrigado!

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