Agenda

- About the course:
  - Course Information
  - Group project
- Mobile App. Dev Technologies
- Installation: the framework and tools
- Test drive on emulator and phone
- A tour on VS Code, and Android Studio
- A tour on Git and Git Bash
- Git basics

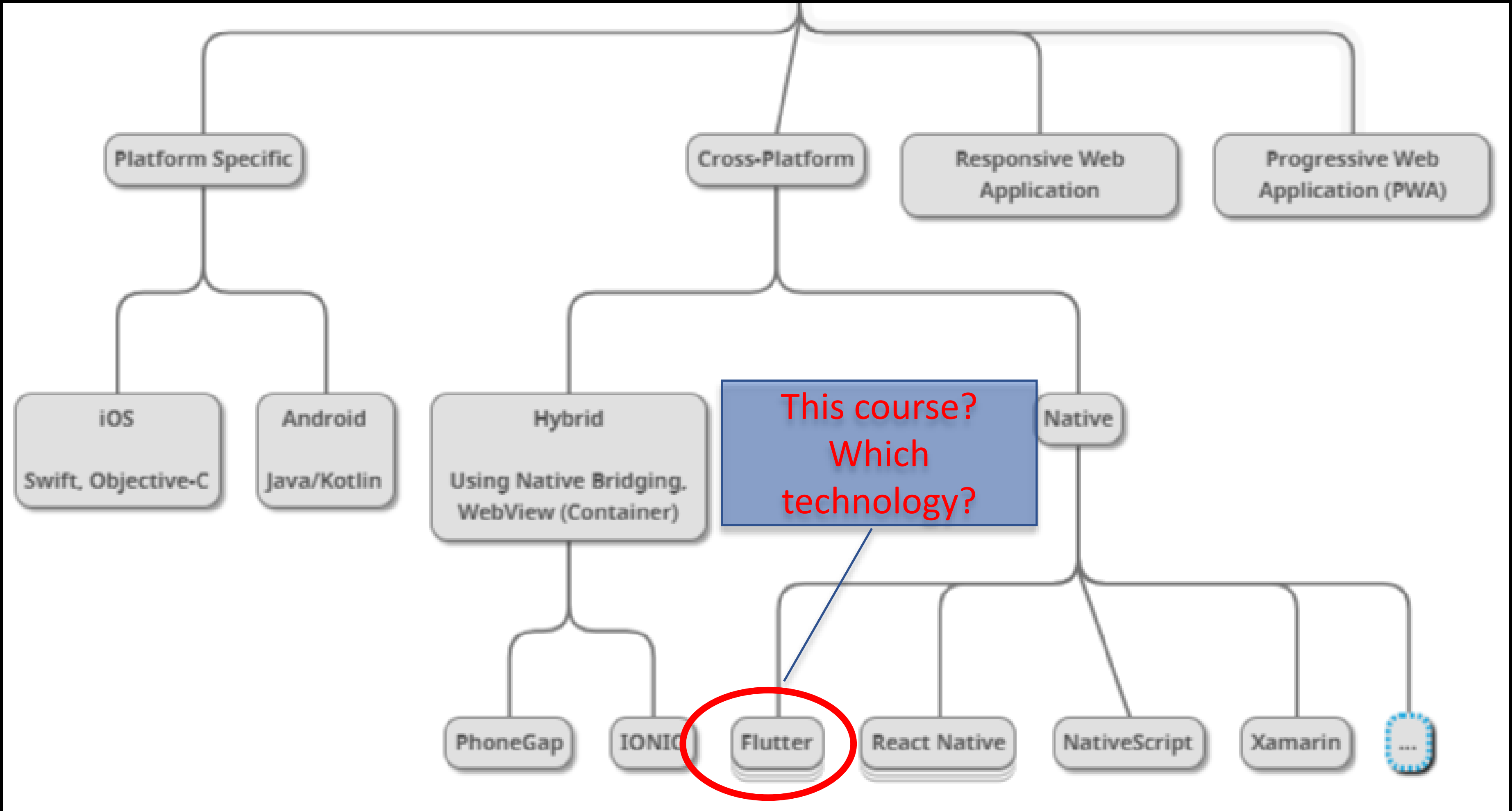
Course Information

Refer to CI for course content and assessment

Group Project

Item	Weightage	Remarks
Group Formation & Project Idea / Topic	-	Till Week 2
Project Proposal and Conceptual Design	5%	A technical Report that includes: Introduction to the project, pplication Architecture & UI Design (Wirefarmes). Due date on Week 4
Prototype 1	8%	**Prototype with hard coded data.** Each project must include these compulsory screens: **Splash Screen, Login and logout, User profile, Settings** besides the **application-specific screens**. Due date on Week 7
Prototype 2	7%	**Prototype with live data.** Due date on Week 11
Final version	15%	Due date on Week 15
Teamworking and leadership	5%	You will fill in Peer and Self Assessment (PSA) form for each deliverable above.
Total	**40%**	

Mobile App Dev. Technologies



This course? Which technology?

So, what is Flutter?

- A UI Framework for building native application
- Cross-platform: Android, iOS, Desktop (Windows, MacOS, Linux), Web
- Made by Google
- Open-source
- Use Dart as the programming language
- More on flutter.dev

Installation (on Windows)

Flutter SDK

Android SDK

VS Code Editor

Installation (on Windows)

Android Studio (optional)

- Only for SDK Manager and AVD Manager (GUI-based)
- Alternatively, install only Android SDK CLI version

Installation (on Windows)

Git

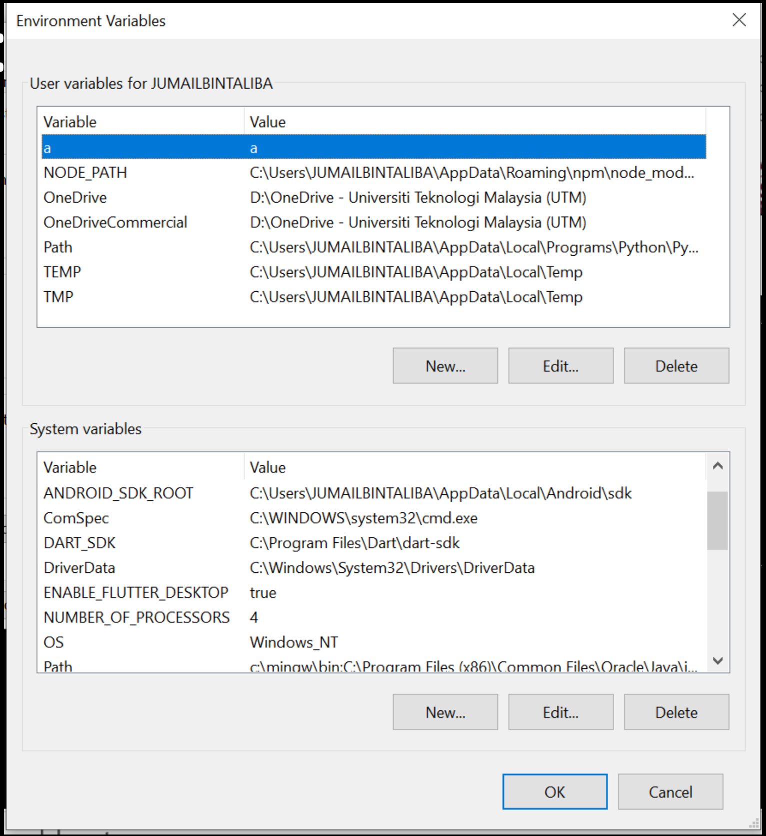
- Versioning Control System (VCS)
- Git bash: for lite Unix-based CLI

Install VS Code Extensions

- Open VS Code and install the extensions:
  - Flutter (Compulsory)
  - Optional extensions such as Better comments, Bracket Pair Colorizer, Colonize, Color Highlight, etc.

Configuration (on Windows)

- Environment variables:
  - ANDROID_HOME
- Path:
  - flutter sdk
  - android sdk



Environment Variables

User variables for JUMAILBINTALIBA

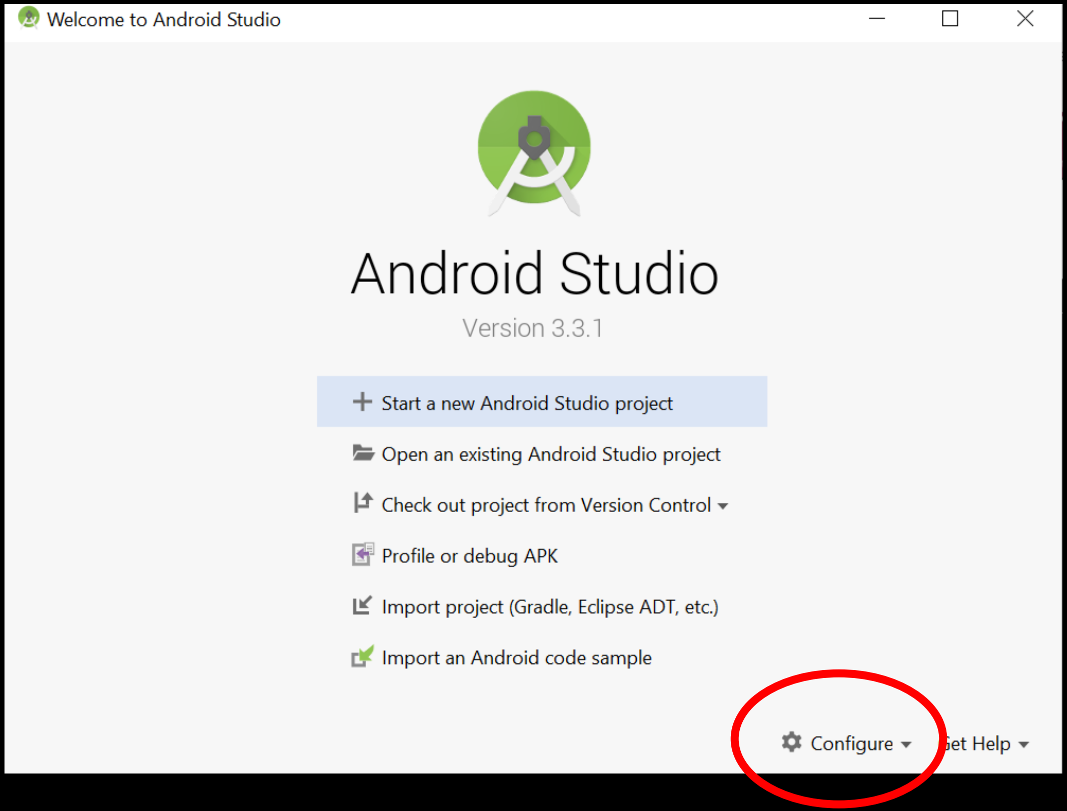
Variable	Value
a	a
NODE_PATH	C:\Users\JUMAILBINTALIBA\AppData\Roaming\npm\node_mod...
OneDrive	D:\OneDrive - Universiti Teknologi Malaysia (UTM)
OneDriveCommercial	D:\OneDrive - Universiti Teknologi Malaysia (UTM)
Path	C:\Users\JUMAILBINTALIBA\AppData\Local\Programs\Python\Py...
TEMP	C:\Users\JUMAILBINTALIBA\AppData\Local\Temp
TMP	C:\Users\JUMAILBINTALIBA\AppData\Local\Temp

System variables

Variable	Value
ANDROID_SDK_ROOT	C:\Users\JUMAILBINTALIBA\AppData\Local\Android\sdk
ComSpec	C:\WINDOWS\system32\cmd.exe
DART_SDK	C:\Program Files\Dart\dart-sdk
DriverData	C:\Windows\System32\Drivers\DriverData
ENABLE_FLUTTER_DESKTOP	true
NUMBER_OF_PROCESSORS	4
OS	Windows_NT
Path	c:\mingw\bin;C:\Program Files (x86)\Common Files\Oracle\Java\j...

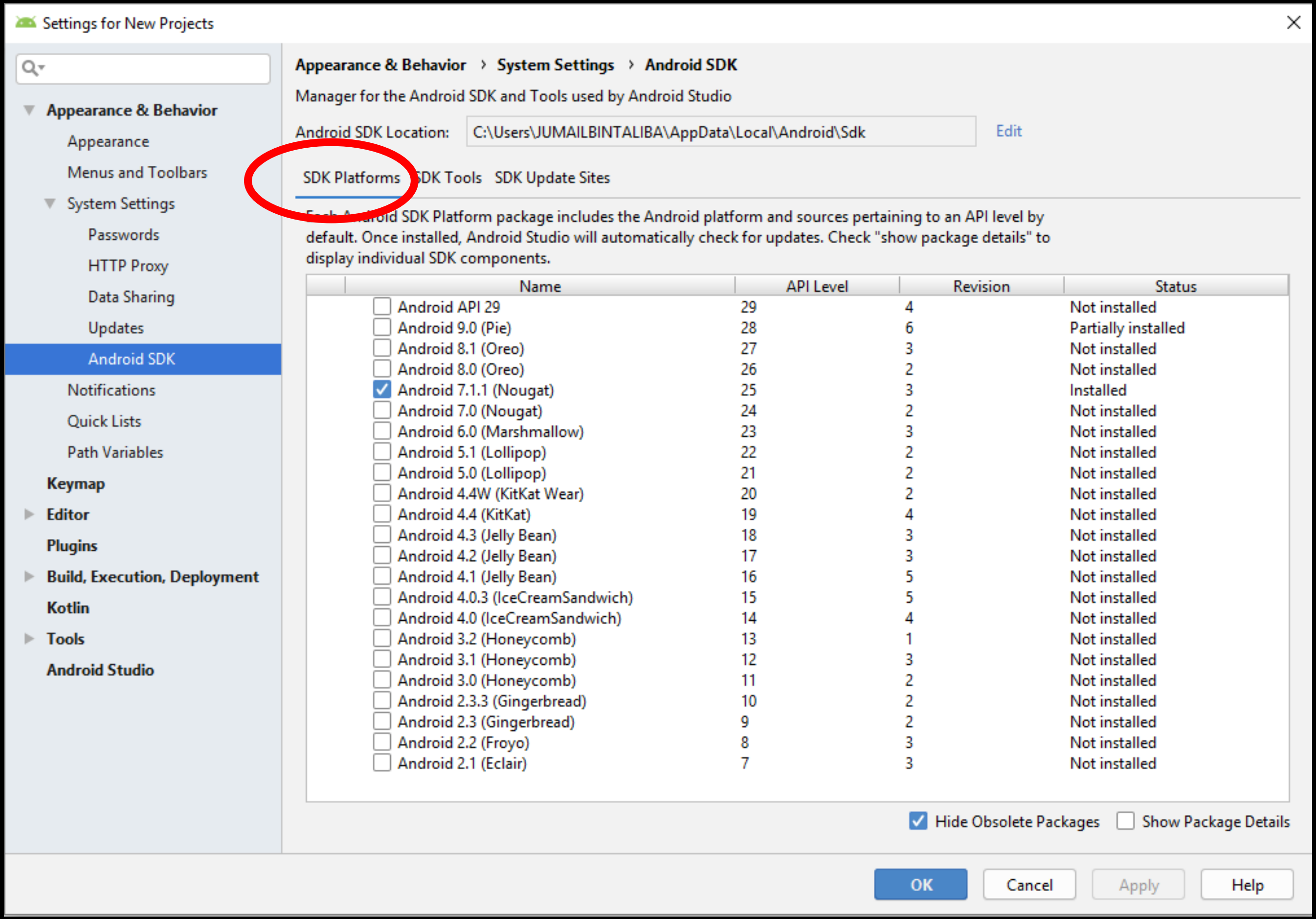
Download A Platform SDK

Use SDK Manager from AS



Welcome to Android Studio
Android Studio
Version 3.3.1
+ Start a new Android Studio project
Open an existing Android Studio project
Check out project from Version Control ▾
Profile or debug APK
Import project (Gradle, Eclipse ADT, etc.)
Import an Android code sample
Configure ▾
Get Help ▾

Download A Platform SDK



Settings for New Projects

- ▼ Appearance & Behavior
  - Appearance
  - Menus and Toolbars
  - ▼ System Settings
    - Passwords
    - HTTP Proxy
    - Data Sharing
    - Updates
    - Android SDK
  - Notifications
  - Quick Lists
  - Path Variables
- Keymap
- ▶ Editor
- Plugins
- ▶ Build, Execution, Deployment
- Kotlin
- ▶ Tools
- Android Studio

Appearance & Behavior › System Settings › Android SDK

Manager for the Android SDK and Tools used by Android Studio

Android SDK Location: C:\Users\JUMAILBINTALIBA\AppData\Local\Android\Sdk Edit

SDK Platforms | SDK Tools | SDK Update Sites

Each Android SDK Platform package includes the Android platform and sources pertaining to an API level by default. Once installed, Android Studio will automatically check for updates. Check "show package details" to display individual SDK components.

Name	API Level	Revision	Status
□ Android API 29	29	4	Not installed
□ Android 9.0 (Pie)	28	6	Partially installed
□ Android 8.1 (Oreo)	27	3	Not installed
□ Android 8.0 (Oreo)	26	2	Not installed
☑ Android 7.1.1 (Nougat)	25	3	Installed
□ Android 7.0 (Nougat)	24	2	Not installed
□ Android 6.0 (Marshmallow)	23	3	Not installed
□ Android 5.1 (Lollipop)	22	2	Not installed
□ Android 5.0 (Lollipop)	21	2	Not installed
□ Android 4.4W (KitKat Wear)	20	2	Not installed
□ Android 4.4 (KitKat)	19	4	Not installed
□ Android 4.3 (Jelly Bean)	18	3	Not installed
□ Android 4.2 (Jelly Bean)	17	3	Not installed
□ Android 4.1 (Jelly Bean)	16	5	Not installed
□ Android 4.0.3 (IceCreamSandwich)	15	5	Not installed
□ Android 4.0 (IceCreamSandwich)	14	4	Not installed
□ Android 3.2 (Honeycomb)	13	1	Not installed
□ Android 3.1 (Honeycomb)	12	3	Not installed
□ Android 3.0 (Honeycomb)	11	2	Not installed
□ Android 2.3.3 (Gingerbread)	10	2	Not installed
□ Android 2.3 (Gingerbread)	9	2	Not installed
□ Android 2.2 (Froyo)	8	3	Not installed
□ Android 2.1 (Eclair)	7	3	Not installed

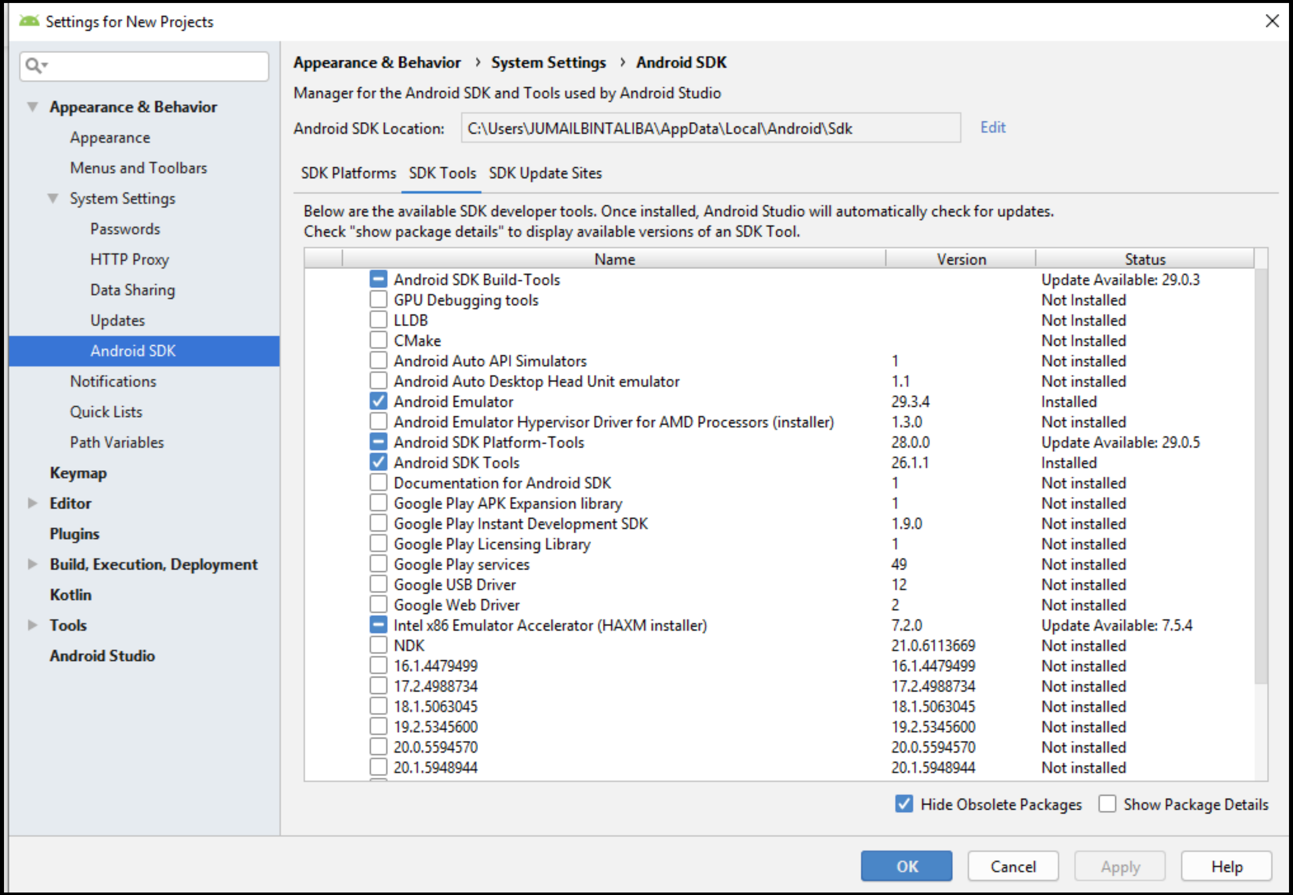
☑ Hide Obsolete Packages □ Show Package Details

Download SDK Tools

Use SDK Manager from AS and install:

- Android SDK Build-Tools
- Android Emulator
- Android SDK Platform-Tools
- USB Drivers
- Intel HAXM (Emulator Accelerator)

Download SDK Tools



Appearance & Behavior › System Settings › Android SDK

Manager for the Android SDK and Tools used by Android Studio

Android SDK Location: C:\Users\JUMAILBINTALIBA\AppData\Local\Android\Sdk

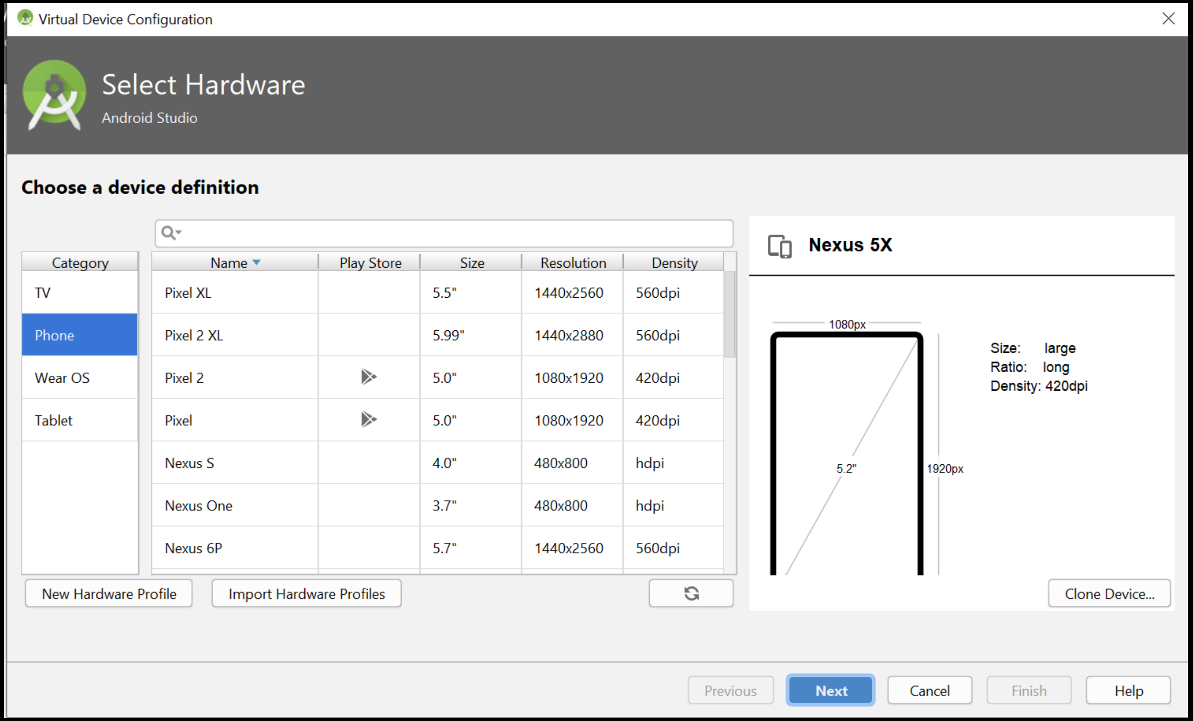
Below are the available SDK developer tools. Once installed, Android Studio will automatically check for updates.
Check "show package details" to display available versions of an SDK Tool.

Name	Version	Status
⊟ Android SDK Build-Tools		Update Available: 29.0.3
☐ GPU Debugging tools		Not Installed
☐ LLDB		Not Installed
☐ CMake		Not Installed
☐ Android Auto API Simulators	1	Not installed
☐ Android Auto Desktop Head Unit emulator	1.1	Not installed
☑ Android Emulator	29.3.4	Installed
☐ Android Emulator Hypervisor Driver for AMD Processors (installer)	1.3.0	Not installed
⊟ Android SDK Platform-Tools	28.0.0	Update Available: 29.0.5
☑ Android SDK Tools	26.1.1	Installed
☐ Documentation for Android SDK	1	Not installed
☐ Google Play APK Expansion library	1	Not installed
☐ Google Play Instant Development SDK	1.9.0	Not installed
☐ Google Play Licensing Library	1	Not installed
☐ Google Play services	49	Not installed
☐ Google USB Driver	12	Not installed
☐ Google Web Driver	2	Not installed
⊟ Intel x86 Emulator Accelerator (HAXM installer)	7.2.0	Update Available: 7.5.4
☐ NDK	21.0.6113669	Not installed
☐ 16.1.4479499	16.1.4479499	Not installed
☐ 17.2.4988734	17.2.4988734	Not installed
☐ 18.1.5063045	18.1.5063045	Not installed
☐ 19.2.5345600	19.2.5345600	Not installed
☐ 20.0.5594570	20.0.5594570	Not installed
☐ 20.1.5948944	20.1.5948944	Not installed

☑ Hide Obsolete Packages ☐ Show Package Details

Create Emulator

- Download a system image
- Create a Virtual Device and Install the image on the emulator
- You can do this with AVD Manager from AS



Virtual Device Configuration

Select Hardware

Android Studio

Choose a device definition

Category
TV
Phone
Wear OS
Tablet

Name ▾	Play Store	Size	Resolution	Density
Pixel XL		5.5"	1440x2560	560dpi
Pixel 2 XL		5.99"	1440x2880	560dpi
Pixel 2	▶	5.0"	1080x1920	420dpi
Pixel	▶	5.0"	1080x1920	420dpi
Nexus S		4.0"	480x800	hdpi
Nexus One		3.7"	480x800	hdpi
Nexus 6P		5.7"	1440x2560	560dpi

Nexus 5X

Size: large
Ratio: long
Density: 420dpi

Installation (on Mac)

https://flutter.dev/docs/get-started/install/macos

My Installation Script

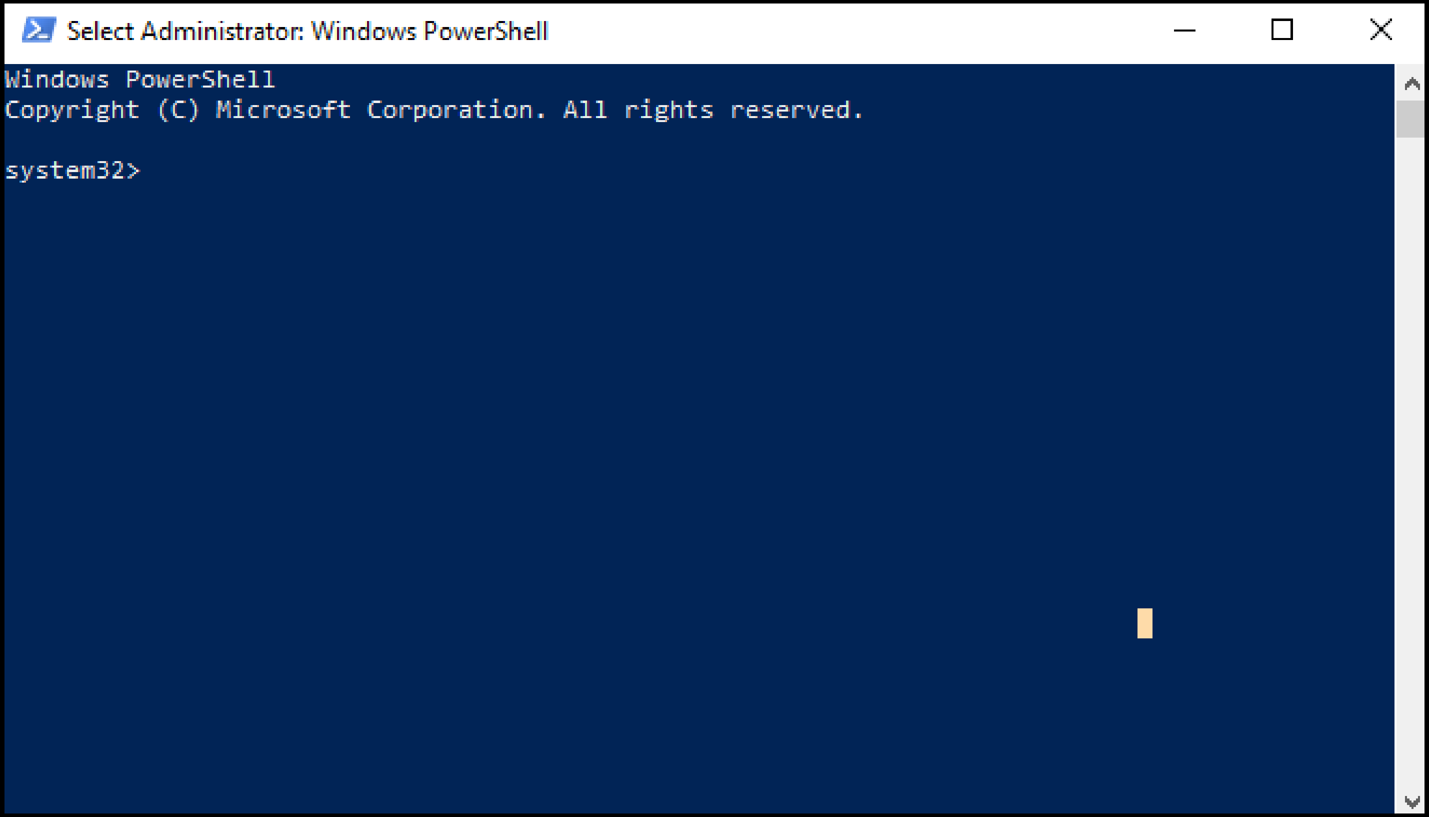
- Only for Windows 10

- Tested only on certain labs in SC

- You may try it out on your machine. If it does not work, use the step-by-step installation from flutter.dev

My Installation Script

Open Windows PowerShell (as Admin). Right-click on the Windows Start Menu

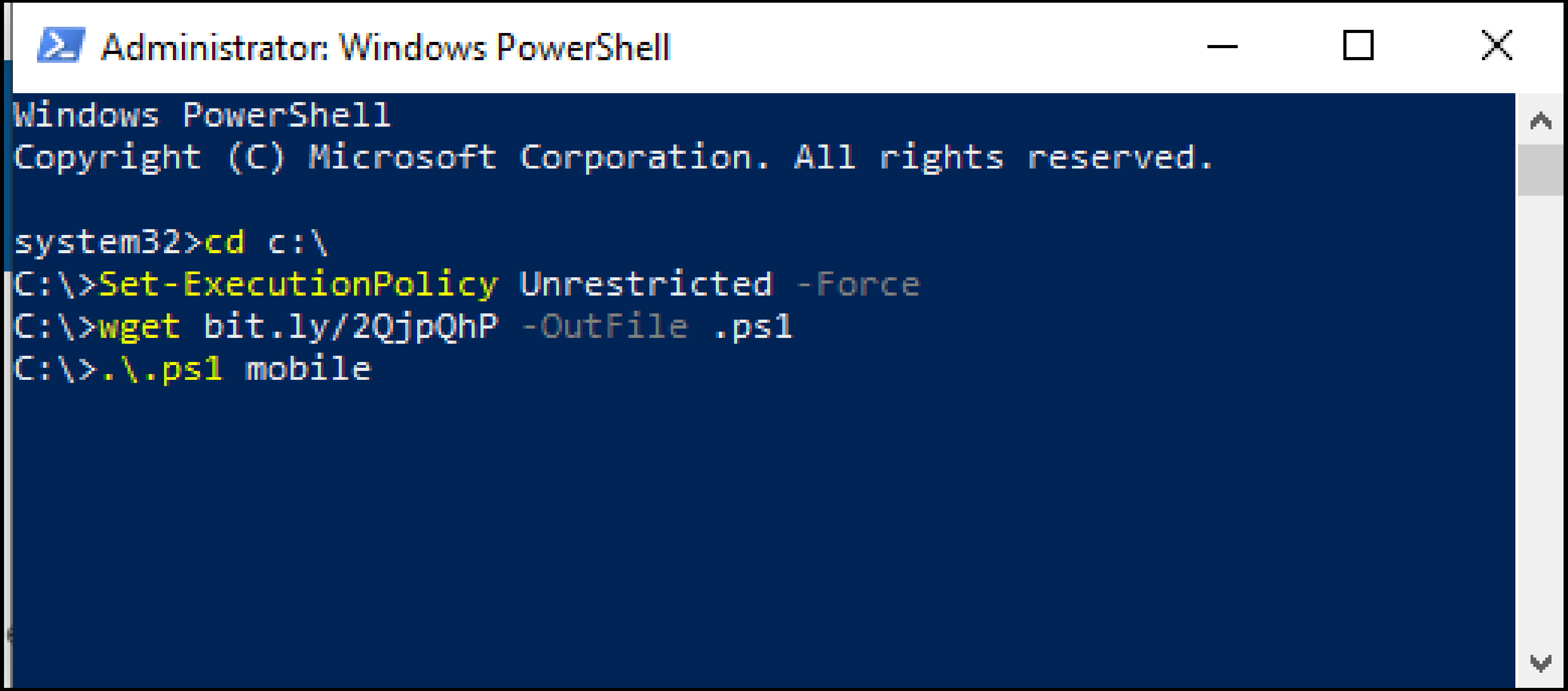


```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

system32>
```

My Installation Script

Type the following commands :



```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

system32>cd c:\
C:\>Set-ExecutionPolicy Unrestricted -Force
C:\>wget bit.ly/2QjpQhP -OutFile .ps1
C:\>.\.ps1 mobile
```

A Tour on VS Code

- Command Pallete: Ctrl Shift P
- Copy code: Shift Alt Arrow (up or down)
- Move code: Alt Arrow (up or down)
- Comment: Ctrl /
- Split Code Editor: Ctrl Alt Left / Right

Test the Installation

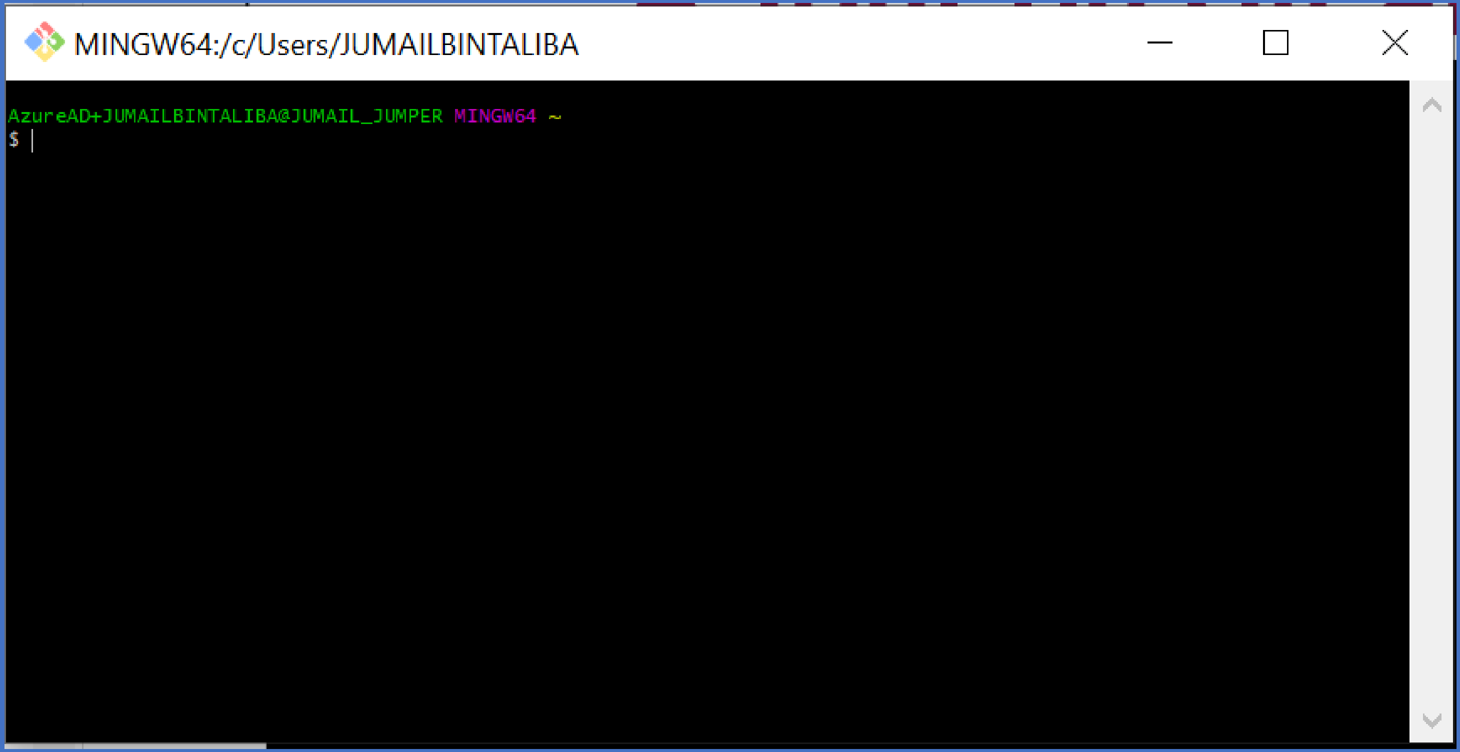
- Open VS Code
- Go to Command Pallete.. Ctrl Shift P
- Type: flutter New Project
- Run / Start an emulator (from VS Code) or (from AS Avd Manager)
- Run your first flutter program. Press F5

Test the Installation

- Next, to test running on a real device
- Configure your phone to “Developer Mode”

  https://developer.android.com/studio/debug/dev-options
- Connect your phone to the PC
- Choose your phone on VS Code
- Run your flutter project. Press F5

A Tour on Git and Git Bash



```
AzureAD+JUMAILBINTALIBA@JUMAIL_JUMPER MINGW64 ~
$ |
```

Common Unix Commands

Move to a directory and check out the content

```
$ cd c:/
$ ls
```

Create a new directory

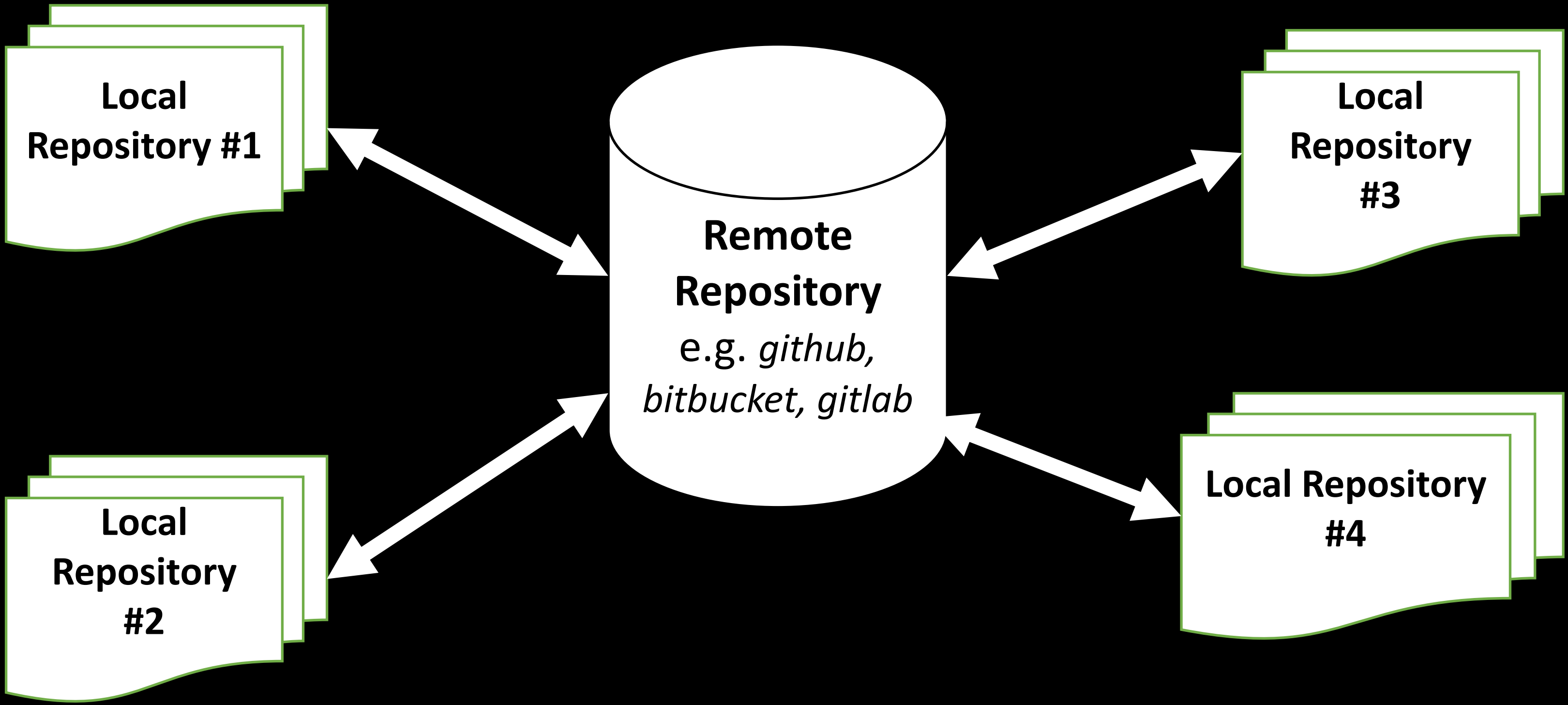
```
$ mkdir c:/code
$ mkdir c:/code/flutter
$ cd c:/code/flutter
```

Create a new file

```
$ touch readme.txt
```

What is GIT ?

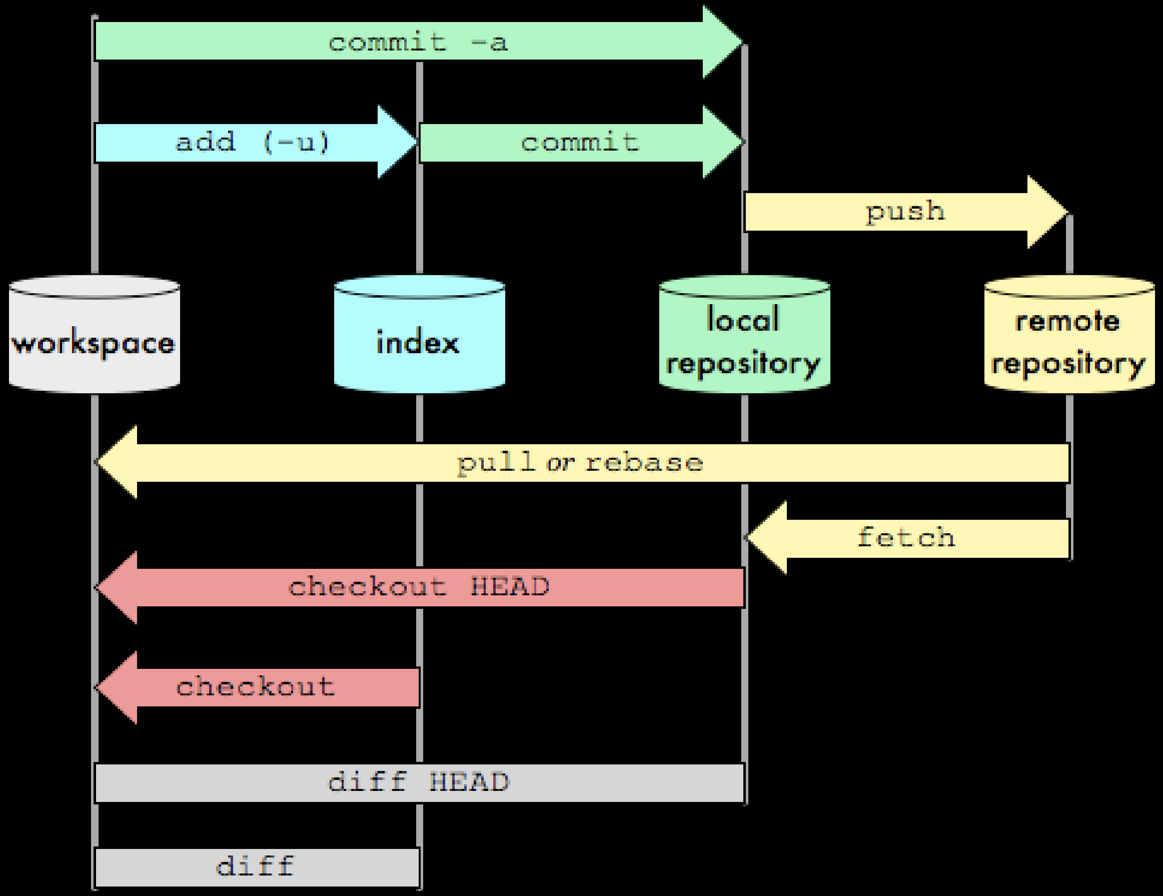
- A distributed Versioning Control System (VCS)



- Git provides a collection of tools to manage versioning of your project

What is GIT ?

- From a local repo’s perspective



Example Use Case: Following My Tutorials (1)

Clone the starter project .

```
$  git clone http://github.com/jumail-utm/flutter_logo.git   flutter_logo
```

This command will download my repo on github to your local machine

Example: Following My Tutorials (2)

See what’s inside the repo

```
$ cd flutter_logo
$ git log
$ git log --oneline
```

git log will show a list of commits have been done on the repo

Open and run the program in vs code

```
$ code .
```

Example: Following My Tutorials (3)

Checking out snapshot

```
$ git log --oneline
$ git checkout <commit_hash>
$ git checkout master
```

Modifying for your own work in a new branch

```
$ git checkout <commit_hash> -b my_branch
```

Example: Following My Tutorials (4)

Create a readme.txt file.

```
$ touch readme.txt
$ code readme.txt
```

Check your repo’s status

```
$ git status
```

Set the newly created readme.txt file so that it is traceable

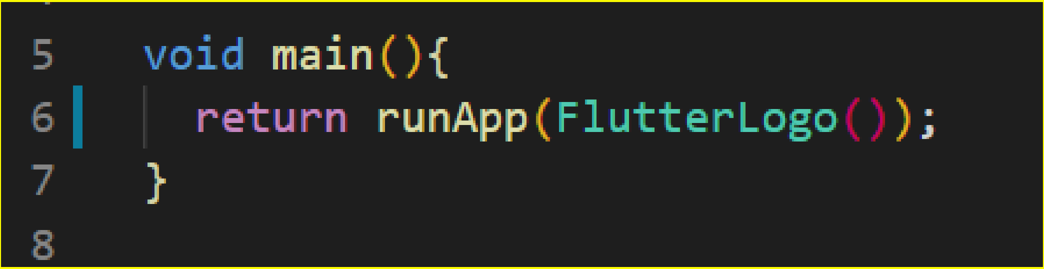
```
$ git add readme.txt
```

Example: Following My Tutorials (5)

Commit your update to your local repo

```
$ git commit –a –m “Update 1: Add a readme.txt”
```

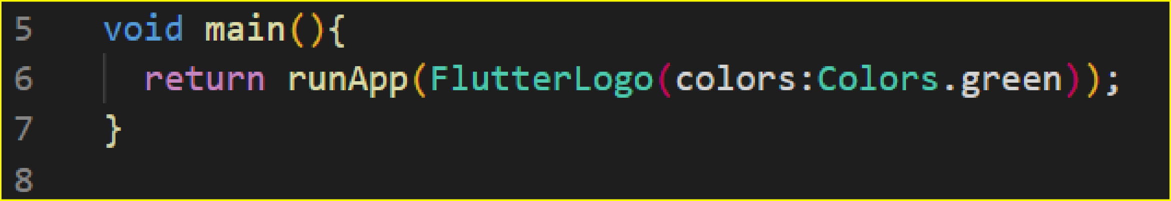
Continue other tasks and perform a commit for each task, e.g.



```
void main(){
  return runApp(FlutterLogo());
}

```

```
$ git commit –a –m “Task 1: Add a flutter logo”
```



```
void main(){
  return runApp(FlutterLogo(colors:Colors.green));
}

```

```
$ git commit –a –m “Task 2: Change color”
```

Example: Following My Tutorials (6)

List all branches

```
$ git branch -a
```

Go back to master branch

```
$ git checkout master
```

Creating Your own Repository

Create a starter project using the flutter template project

```
$ cd c:/code/flutter
$ flutter create flutter_counter
$ cd flutter_counter
```

Create a repo for this project

```
$ git init
$ git status
$ git add .
$ git status
$ git commit –a –m “My first commit”
```

Uploading to Remote Repo

- Login to github.com with your own account
- Create a new public repository on github.com, named flutter_counter
- Back to your git bash (command line)

```
$ git remote add origin https://github/your-username/flutter_counter.git
```

```
$ git push –u origin master
```

Sharing Offline

To share a git repo without going through a remote repo, use bundle.

To create a bundle (e.g., in user1’s PC):

```
user1$ git bundle build/flutter_counter.git HEAD master
```

Then share the bundle file by any mean, e.g. copying it to a pen-drive. The file should be inside the build directory

In another pc (e.g. user2’s) copy the the bundle file and create a clone from it

```
user2$ git clone flutter_counter.git  flutter_counter
```

Git Resources

https://app.pluralsight.com/course-player?clipId=139ae6dd-af56-45a5-aa4f-9924129ef340

https://www.tutorialspoint.com/git