(Optional) Android emulator setup

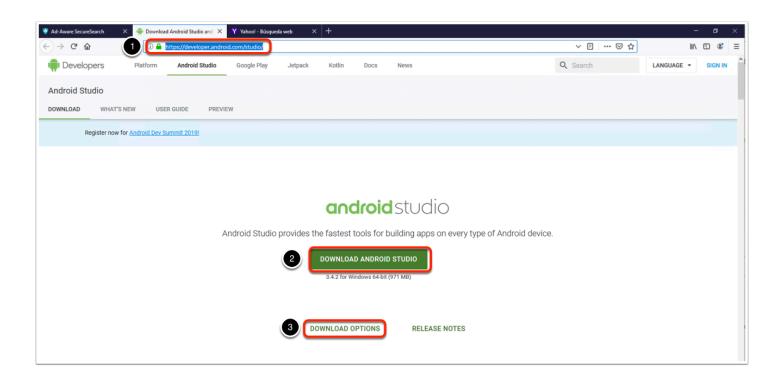
Introduction

If you don't have an android test device and you want to test the Device enrollment, android single sign on, and other android based labs, theres an emulator you can install in your laptop an follow along with the particular lab manual as you would do on a physical device. What follows is the installation instructions for the installation of such software.

If something goes wrong and you want to start again with a fresh device, instructions are included for redeploying the os image.

downloading the installer

- 1. Go to https://developer.android.com/studio/
- 2. in the middle of your screen click on Download Android Studio
- 3. if the correct os version is not displaying click on **download options** and download the correct one

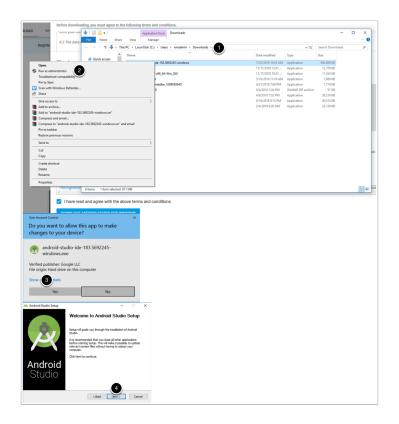


- 1. Check the box next to I have read and agree with the above terms and conditions
- 2. Click on Download android Studio for your platform
- 3. Click on save file when prompted

efore downloading, you must agree to the following term	
accer your conacter, in you withinoid conactif, the informu	uun wii notuc concetcu.
6.2 The data collected is examined in the aggregate to i	improve the SDK and is maintained in accordance with Google's Privacy Policy.
7. Third Party Applications	
data, content, or resources. You understand that all data	a third party or that access data, content or resources provided by a third party, you agree that Google is not responsible for those applications, a, content or resources which you may access through such third party applications are the sole responsibility of the person from which they amage that you may experience as a result of the use or access of any of hore brind party applications, data, content, or resources.
	es presented to you through such a third party application may be protected by intellectual property rights which are owned by the providers (or by out modify, tent, lease, leas, edit, distribute or create derivative works based on these data, content, or resources (either in whole or in part) unless the relevant owners.
7.3 You acknowledge that your use of such third party a Agreement does not affect your legal relationship with t	pplications, data, content, or resources may be subject to separate terms between you and the relevant third party. In that case, the License these third parties.
8. Using Android APIs	
8.1 Google Data APIs	
	u acknowledge that the data may be protected by intellectual property rights which are owned by Google or those parties that provide the data (or e of any such XPI may be subject to additional Terms of Service. You may not modify, rent, lease, loan, self, distribute or create derivative works owed by the relevant Terms of Service.
which, the user has given you permission to do so. If you	oogle, you acknowledge and agree that you shall retrieve data only with the user's explicit consent and only when, and for the limited purposes for u use the Android Recognition Service API, documented at the following URL: https://doveloper.android.com/reference/android/speech acknowledge that the use of the API is subject to the Data Processing Addendum for Products where Google is a Data Processor, which is located
I have read and agree with the above terms an	id conditions
DOWNLOAD ANDROID STUDIO FOR WINDOWS	
ndroid-studio-ide-183.5692245-windows.exe	
ing android-studio-ide-183.5692245-windows.exe	x
have chosen to open:	
android-studio-ide-183.5692245-windows.exe	
which is: Binary File (971 MB)	
which is: Binary File (971 MB) from: https://dl.google.com ald you like to save this file?	

Windows installation

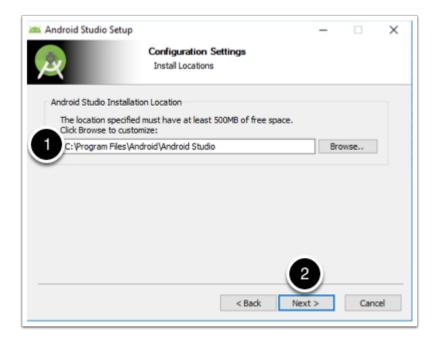
- 1. go to your downloads folder
- 2. right click on your recently downloaded file and click on run as and administrator
- 3. click on yes to allow the installer to make changes to your machine
- 4. Click next on the welcome to android studio setup window



Make sure both Android studio and android virtual device are selected and click next

🚈 Android Studio Setup		- 🗆 X
\sim	Choose Components Choose which features of Android	Studio you want to install.
Check the components yo install. Click Next to contin	u want to install and uncheck the com ue.	ponents you don't want to
Select components	Control Contr	Description Position your mouse over a component to see its description.
Space required: 2.6GB		8
	< Back	Next > Cancel

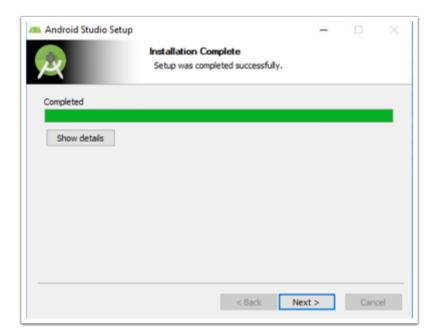
Select your installation location and click **next**



choose your start menu shortcut configuration and click install

	Choose Start Menu	Folder		
Sec.	Choose a Start Menu		old Chudio a	bacto de
9	Choose a Start Menu	Torder for the Andr	010 510010 5	shortcuts.
Select the Start Menu folde	er in which you would like	to create the prod	ram's short	tcuts. You
can also enter a name to o		to create the prog		
Android Studio				
Accessibility				^
Accessories				
Administrative Tools	here .			
AMD Catalyst Control Cen ASUS	ter			
Bandicut				
Digiarty				
HandBrake				
Tunes				
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on the installation complete window click **next**

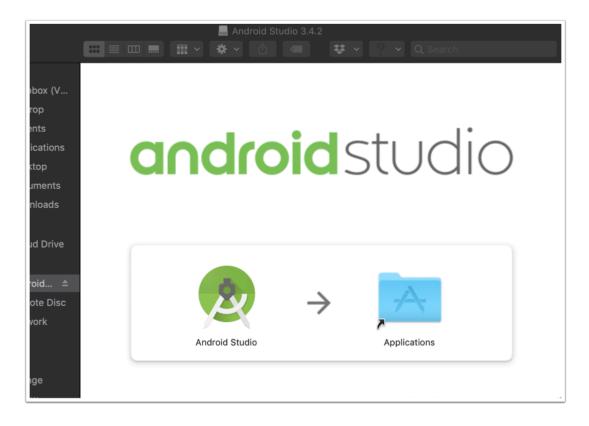


In the completing Android Studio Setup window check the **Start Android Studio** checkbox and click **finish**



Mac os installation

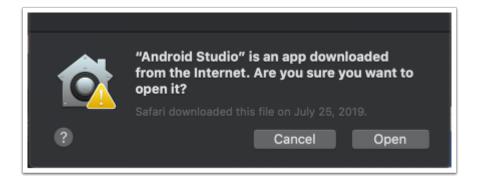
mount and open your downloaded dmg image. Drag the **Android studio** icon into the **Applications** folder.



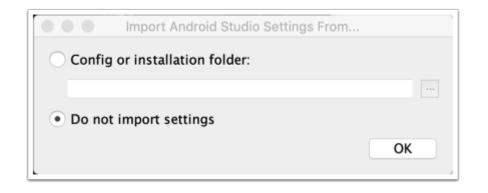
From your applications folder double click your Android Studio icon



Click on **Open** if you get a security prompt



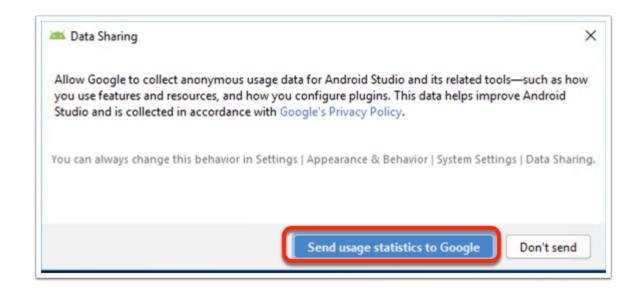
in the Import android Studio settings From.. window select **Do not import settings** and click **ok**



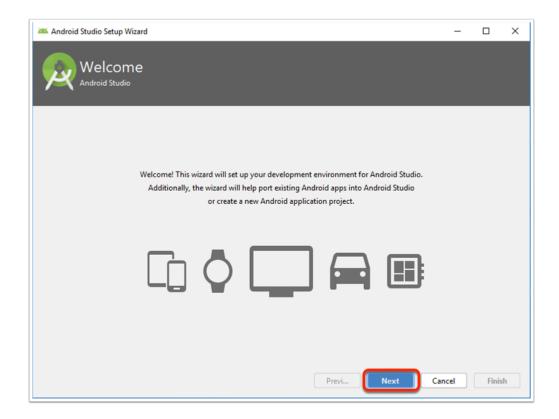
on the Android Setup Wizard, in the Welcome window click **Next.** From this point on you can follow the initial configuration steps, plese ignore anything regarding the HAXM plugin as this has been already installed for you in the initial installation process.

Initial configuration

in the Data Sharing window click on Send usage statistics to Google

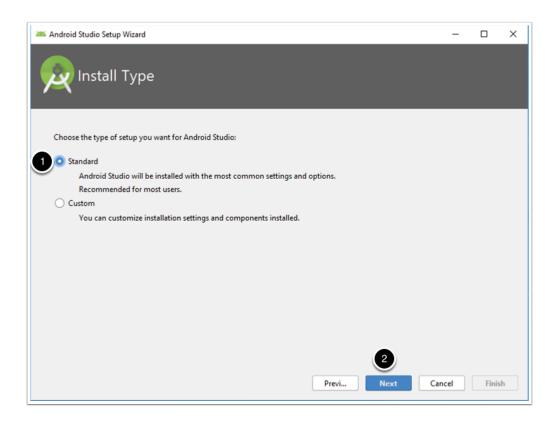


In the android Studio setup wizard, in the Welcome window click Next



In the Android Studio Setup Wizard in the install type window

- 1. Make sure **Standard** setup radio button is selected
- 2. Click Next



Choose your preffered UI theme and click Next

🚈 Android Studio Setup Wizard	- 🗆 X
Select UI Theme	
O Darcula module) 🔄 src) 🕝 HelloWorld)	Light module \ □ src \ C HelloWorld \
	C HelloWorld.java ×
<pre>import javax.swing.*; import java.awt.*; public class HelloWorld { public HelloWorld() {</pre>	<pre>pimport javax.swing.*; import java.awt.*; public class HelloWorld { public HelloWorld () {</pre>
JFrame frame = new JFrame("Hello wor JLabel label = new JLabel(); label.setFont(new Font("Serif", Font label. frame.	JFrame frame = new JFrame("Hello wor JLabel label = new JLabel(); label.setFont(new Font("Serif", Font label frame
frame. frame. frame. frame. frame. frame.	frame. frame. frame. frame. frame. V Line 6 in HelloWorld.HelloV
	Previ Next Cancel Finish

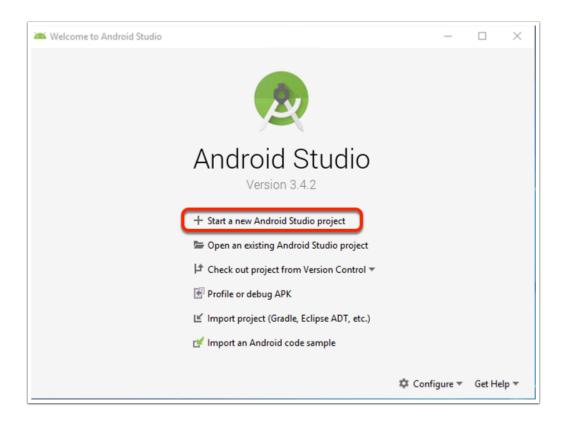
On the verify Settings window click Finish

Android Studio Setup Wizard					-	-		>
Verify Settings								
If you want to review or change any of your installat Current Settings:	ion settings, clic	k Previou	i.					
SDK Folder:					 		-	7
C:\Users\vmadmin\AppData\Local\Android\Sdk								
Total Download Size: 613 MB								
SDK Components to Download:								
Android Emulator	336 MB							
Android SDK Build-Tools 29.0.1	38.3 MB							
Android SDK Platform 29	74.5 MB							
Android SDK Platform-Tools	11 MB							
Android SDK Tools	149 MB							
Intel x86 Emulator Accelerator (HAXM installer)	2.63 MB							
SDK Patch Applier v4	1.74 MB							
SOK Paten Applier 94	1.74 IVID							
			Previous	Next	Cancel	1	Finis	sh

In the Downloading Components window click Finish

Android Studio Setup Wizard	-		×
Downloading Components			
Installing Intel x86 Emulator Accelerator (HAXM installer) in C:\Users\vmadmin\AppData\Local\Android\Sdk\extras\intel\Hardware Accelerated Execution	n Manag	er	
"Install Intel x86 Emulator Accelerator (HAXM installer) (revision: 7.5.2)" complete.	-		
"Install Intel x86 Emulator Accelerator (HAXM installer) (revision: 7.5.2)" finished.			
Preparing "Install Android SDK Platform 29 (revision: 1)".			
Downloading https://dl.google.com/android/repository/platform-29_r01.zip			
"Install Android SDK Platform 29 (revision: 1)" ready.			
Installing Android SDK Platform 29 in C:\Users\vmadmin\AppData\Local\Android\Sdk\platfo -29	orms\an	droid	
"Install Android SDK Platform 29 (revision: 1)" complete.			
"Install Android SDK Platform 29 (revision: 1)" finished.			
Parsing C:\Users\vmadmin\AppData\Local\Android\Sdk\build-tools\29.0.1\package.xml			
Parsing C:\Users\vmadmin\AppData\Local\Android\Sdk\emulator\package.xml			
Parsing C:\Users\vmadmin\AppData\Local\Android\Sdk\extras\intel			
\Hardware_Accelerated_Execution_Manager\package.xml			
Parsing C:\Users\vmadmin\AppData\Local\Android\Sdk\patcher\v4\package.xml			
Parsing C:\Users\vmadmin\AppData\Local\Android\Sdk\platform-tools\package.xml Parsing C:\Users\vmadmin\AppData\Local\Android\Sdk\platforms\android-29\package.xml			
Parsing C:\Users\vmadmin\AppData\Local\Android\Sdk\tools\package.xml Parsing C:\Users\vmadmin\AppData\Local\Android\Sdk\tools\package.xml			
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		_	
Previous Next Car	ncel	Finis	sh

In the Welcome to android studio window click on start a new android project



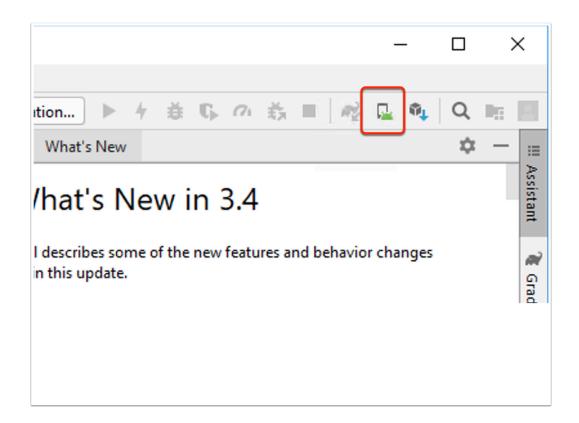
In the choose your project window, choose add no activity and click Next

Create New Project			>
Choose your project			
Phone and Tablet Wear OS TV	/ Android Auto Android Thin	gs	
1 Add No Activity	 € : 	¢	¢ :
	Basic Activity	Empty Activity	Bottom Navigation Activity
* E			¢ :
Fullscreen Activity	Master/Detail Flow	Navigation Drawer Activity	Google Maps Activity
Empty Activity Creates a new empty activity			2
		Previous	Next Cancel Finish

In the configure your project window leave the default settings and click Finish

🗯 Create New Project		×
Configure your project		
	Name	
	My Application	
	Package name	
	com.example.myapplication	
	Save location	
	C:\Users\vmadmin\AndroidStudioProjects\MyApplication	
	Language	
	Kotlin 💌	
	Minimum API level API 15: Android 4.0.3 (IceCreamSandwich)	
	O Your app will run on approximately 100% of devices.	
	Help me choose This project will support instant apps	
	✓ Use androidx.* artifacts	
	Previous Next Cancel Fin	nish

Click on the AVD Manager icon on the toolbar



Click on Create Virtual Device

🚈 Android Virtual Device Manager	-	×
Your Virtual Devices		
Virtual devices allow you to test your application without having to own the physical devices.		
+ Create Virtual Device		
To prioritize which devices to test your application on, visit the Android Dashboards, where you can get up-to-date information on which devices are active in the Android and Google Play ecosystem.		

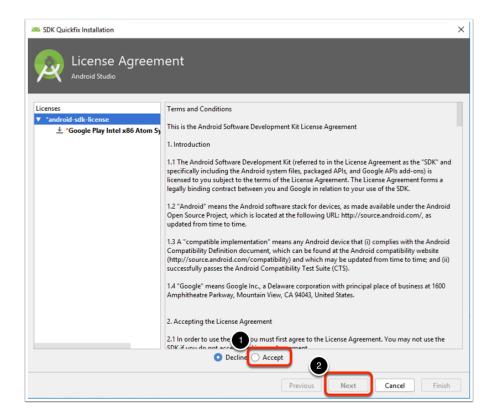
Select the Pixel 2 Image marked with Play Store access and click Next

ategory						Pixel 2
ategoly	Name 🔻	Play Store	Size	Resolution	Density	
	Pixel XL		5.5"	1440x2560	560dpi	
ne	Pixel 3 XL		6.3"	1440x2960	560dpi	Size: large
r OS	Pixel 3		5.46"	1080x2160	440dpi	Ratio: long Density: 420dpi
et	Pixel 2 XL		5.99"	1440x2880	560dpi	
	Pixel 2	►	5.0"	1080x1920	420dpi	5.0" 1920px
	Pixel	⊳	5.0"	1080x1920	420dpi	
	Nexus S		4.0"	480x800	hdpi	
	Nexus One		3.7"	480x800	hdpi	
	Nexus 6P		5.7"	1440x2560	560dpi	
					G	Clone Device
	Pixel Nexus S Nexus One		5.0" 4.0" 3.7"	1080x1920 480x800 480x800	420dpi hdpi hdpi	

in the release name column click Download next to ${\bf Q}$

Curtana In					
System In	nage				
Android Studio					
lect a system image					
commended x86 Images C	Other Images			Q	
Release Name	API Level 🔻	ABI	Target	1	
Q Download	29	x86	Android 9. + (Google Play)		API Level
Pie Download	28	x86	Android 9.0 (Google Play)		29
Oreo Download	27	x86	Android 8.1 (Google Play)		
Oreo Download	26	x86	Android 8.0 (Google Play)		Android
Nougat Download	25	x86	Android 7.1.1 (Google Play)		9.+
Nougat Download	24	x86	Android 7.0 (Google Play)		Google Inc.
				1	System Image
					x86
				Recommendation	
				HAXM is not installed	L.
				Install Haxm	
				We recommend these of device is compatible wi	Google Play images because this th Google Play.
				Questions on API level?	
A system image must be sele	ected to continue.				
A system image must be see	ected to continue.				

In the license agreement window select the radio button next to I agree and click Next



In the Installing Requested Components window Click **Next** when the progress bar shows DONE

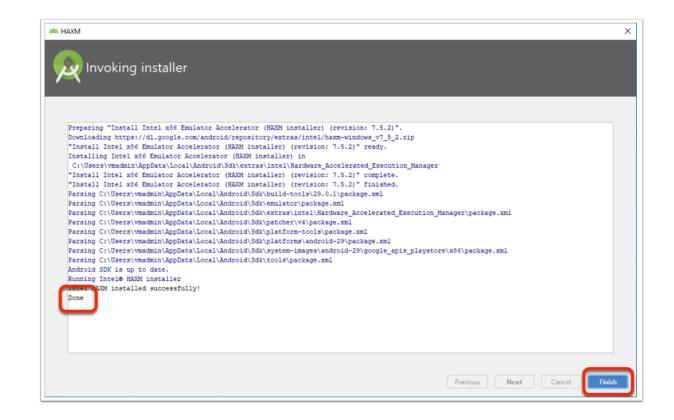
SDK Quickfix Installation	×
Component Installer	
Installing Requested Components	
SDK Path: C:\Users\vmadmin\AppData\Local\Android\Sdk	
Packages to install: - Google Play Intel x86 Atom System Image (system-images;android-29;google_apis_playstore;x86) Preparing "Install Google Play Intel x86 Atom System Image (revision: 5)". Downloading https://dl.google.com/android/repository/sys-img/google_apis_playstore/x86-29_r05-windows.zip "Install Google Play Intel x86 Atom System Image (revision: 5)" ready. Installing Google Play Intel x86 Atom System Image in C:UBers\vmadmin\AppDtatLocal\Android\Sdk\system-images\android-29\google_apis_playstore\x86 "Install Google Play Intel x86 Atom System Image (revision: 5)" complete. "Install Google Play Intel x86 Atom System Image (revision: 5)" finished.	
Done	_
Previous Next Cancel Finish	

In the Select a system image window click on Install Haxm

System In	nage				
lect a system image)ther Images	1		Q	
Release Name Q	API Level 🔻 29	ABI x86	Target Android 9.+ (Google Play)		
Pie	28	x86	Android 9.0 (Google Play)		API Level
Oreo Download	27	x86	Android 8.1 (Google Play)		29
Oreo Download	26	x86	Android 8.0 (Google Play)		Android
Nougat Download	25	x86	Android 7.1.1 (Google Play)		9.+
Nougat Download	24	x86	Android 7.0 (Google Play)		Google Inc.
					System Image
					x86
				Recommendation – HAXM is not installe Install Haxm	d.
				We recommend these device is compatible w	Google Play images because this ith Google Play.
				Questions on API level	?
A system image must be sele	ected to continue.				
				revious Next	Cancel Finish He

Click **Yes** to allow windows command processor to make changes to your device

User Account Control × Do you want to allow this app to make changes to your device?							
Windows Command Processor							
Verified publisher: Microsoft Windows Show more details							
Yes	No						



Back in the Select a system image window Select Q and click Next

Virtual Device Configuration				
System Im	lage			
	_		_	
elect a system image				
ecommended x86 Images O Release Name	API Level 🔻	ABI		Q
Q Release Name	29	x86	Target Android 9.+ (Google Play)	
Pie	28	x86	Android 9.0 (Google Play)	API Level
Oreo Download	27	x86	Android 8.1 (Google Play)	29
Oreo Download	26	x86	Android 8.0 (Google Play)	Android
Nougat Download	25	x86	Android 7.1.1 (Google Play)	9.+
Nougat Download	24	x86	Android 7.0 (Google Play)	Google Inc.
				System Image
				x86
				We recommend these Google Play images because this device is compatible with Google Play.
				Questions on API level?
			G	See the API level distribution chart
			Prev	ious Next Cancel Finish Help

In the emulator settings window, Use the recommended memory settings and click Next

НАХМ							
Emulator Setting	c						
	5						
				_	_		
We have detected that your system can re	un the Android emulator in an acco	elerated performance mode.					
Set the maximum amount of RAM availal time by running the Intel® HAXM installe		rated Execution Manager (HAXN	/) to use for all x86 em	ulator instances. \	You can cha	ange these settings at any	
Refer to the Intel® HAXM Documentatio							
-	n for more information.						
2.0 GB (Recommended)	7.9 GB	15.2 GB		22.6 GB	29.9 GB		
(neconnenaca)							
			RAM allocation:	2,048	MiB	Use recommended size	
				Previous	Next	Cancel Finish	

Give a name to your virtual device and click Finish

Virtual Device Configurat	tion			×
Android Android Studio Verify Configuratio				
AVD Name Pixel 2 API 29			AVD Name	
Pixel 2	5.0 1080x1920 xxhdpi	Change	The name of this AVD.	
🎬 Q	Android 9.+ x86	Change		
Startup orientation	ortrait Landscape			
Emulated Performance	Graphics: Automatic 💌			
Device Frame 🗹 Enable I	Device Frame			
Show Advanced Settings	1			
			Previous Next Cancel	Finish Help

In your Android virtual device Manager window, in the actions column click on the "**Play**" icon to start the emulator

Andro	id Virtual Device	Manager							-		\times
Your Virtual Devices											
Туре	Name	Play Store	Resolution	API	Target	CPU/ABI	Size on Disk		Action	s	
Co	Pixel 2 liv	⊳	1080 × 19	29	Android 9	x86	513 MB		►	1	-
+ c	reate Virtual Dev	/ice						G		?	

Your emulator is ready to use, if you need to restart your device you can hold the power icon to see the power options.

