

# Introduzione ad Android

CodeWeek. 



**GDG Cosenza**

## Ing. Francesco Florio

- Mobile design and developer dal 2009
- Founder and manager del GDG Cosenza
- Formazione per aziende, corsi universitari e master

## Contatti

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- [www.francescoflorio.info](http://www.francescoflorio.info) (*work in progress*)
- @fr4style
- <https://plus.google.com/u/0/+FrancescoFlorio>
- <https://www.linkedin.com/pub/francesco-florio/21/62/a68>



- Android è il sistema operativo mobile più diffuso al mondo
- Sviluppo gratuito
  - Open-source
  - Accesso gratuito a documentazione, tutorial e guide
  - SDK, IDE e tools sono disponibili gratuitamente per tutti i sistemi operativi desktop (Windows, OSX, Linux)
- Per distribuire le applicazioni su Play Store è richiesta una licenza (costo di circa 35\$ *una tantum*), **ma è facoltativa**.
  - Market alternativi
- Sviluppo basato su linguaggi noti
  - Java & XML
  - C/C++ per lo sviluppo nativo (Android NDK)
- Android è in costante evoluzione

- **Limiti di Android e dello sviluppo mobile**
  - **Risorse limitate**
    - CPU, batteria...
  - **Display limitati**
    - Una sola schermata visibile per volta
  - **Lifecycle delle applicazioni differente dal mondo desktop/server**
    - Stand-by, eventi esterni, background...
  - **Frammentazione**
    - Hardware
    - Software

- **Sito ufficiale dedicato agli sviluppatori**
  - <http://developer.android.com/>
- **Documentazione divisa in tre sezioni**
  - *Design*: imparare come progettare graficamente un'App Android - Material Design
  - *Develop*: Raccoglie la definizione completa delle API disponibili, guide, tutorial, le ultime novità della piattaforma, etc...
  - *Distribute*: Descrive come pubblicare la propria App su Play Store, come ottenere nuovi utenti e mantenerli, come monetizzare, etc...
- **Libri ???**

- **Udacity: corsi online e NanoDegree**  
<https://www.udacity.com/courses/android>
  - Non solo tecnologie Android
  - Numerosi corsi online gratuiti
  - Certificazioni a pagamento
- Esempio:  
<https://www.udacity.com/course/android-development-for-beginners--ud837>

UDACITY Nanodegree Catalog Francesco Florio ▾

## Android Development for Beginners

### How to Make an Android App

★ ★ ★ ★ ★

f G+ t

■ ■ ■ Beginner

📅 **Approx. 4 weeks**

Assumes 6hr/wk (work at your own pace)

Built by **Google**

👤 **Join 87,359 Students**

### Course Summary

To access the free version of this course, click the blue button that says *Access Course Materials*.

Learn the basics of Android and Java programming, and take the first step on your journey to becoming an Android developer!

This course is designed for students who are new to programming, and want to learn how to build Android apps. You don't need any programming experience to take this course. If you've been using a smartphone to surf the web and chat with friends, then you're our perfect target student!

Learning anything new can be tough. We will walk you through the process of making

### Enroll in Course

[Start free trial](#)

- 💰 **\$199-\$179.1/month**  
10% discount after 14-day trial
- 👤 **Best for learners serious**  
about course completion &  
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- 💬 **Stuck? Get help from Coaches**
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👉 **Free**

## Android Development for Beginners



DASHBOARD



CLASSROOM



MATERIALS



DISCUSSION



OVERVIEW

Lesson 1A: Building Layouts > Introduction



Previous

Next

### Instructor Notes

No additional notes for this section

### Downloadables

LESSON

Videos



**Intro to iOS  
Nanodegree  
program, Coming  
Soon!**

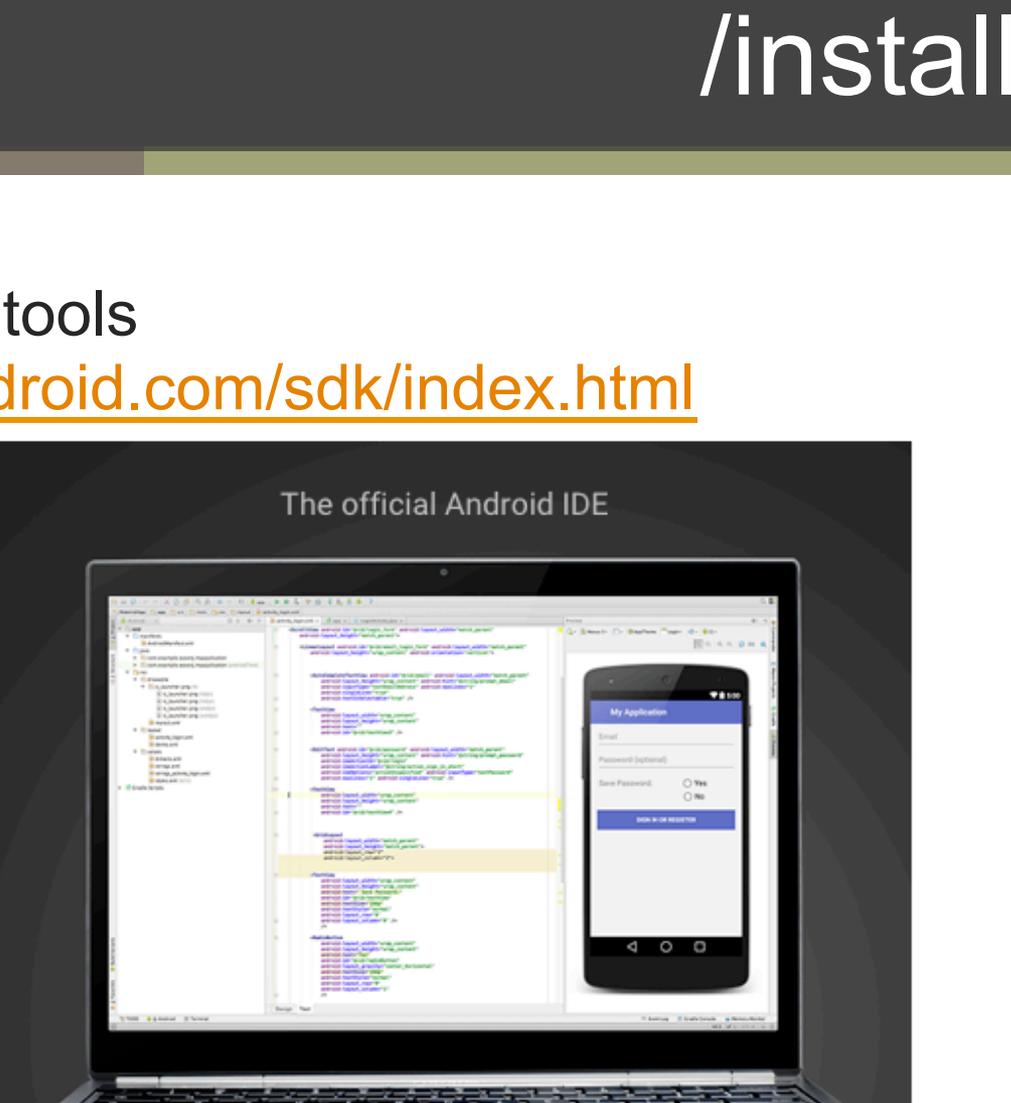
On October 13<sup>th</sup> our brand new Nanodegree program launches! No programming experience? No problem! You'll be building your own apps in no time. Sign up to be notified now!

Notify Me

# /install

- IDE and developing tools

<https://developer.android.com/sdk/index.html>



The official Android IDE

**Android Studio**

- Android Studio IDE
- Android SDK tools
- Android 6.0 (Marshmallow) Platform
- Android 6.0 emulator system image with Google APIs

**DOWNLOAD ANDROID STUDIO FOR MAC**

The image shows a laptop displaying the Android Studio IDE. The interface includes a project explorer on the left, a central code editor with Java code, and a preview window on the right showing a mobile app interface with a login form. The text 'The official Android IDE' is positioned above the laptop screen.

## Device fisico

- **Per sviluppare su Android è consigliato un device fisico**
  - Testing, User Experience
- **Device Certificati da Google**

## Emulatore

- **Android offre i suoi emulatori**
  - Smartphone, Tablet, Wear...
  - Performance non entusiasmanti
- **Genymotion**
  - Emulatore Android realizzato da una startup francese
  - E' presente una versione gratuita
  - 20 device pre-configurati, con la possibilità di crearne di nuovi
  - <https://www.genymotion.com/>
- **Samsung Remote Test Lab**
  - <http://developer.samsung.com/remotetestlab/rtl/AboutRTL.action>

- **Studia costantemente e resta aderente il più possibile alle guide-line Android**
  - Codice scritto 6 mesi fa può avere codice obsoleto
  - Non aderire alle guide-line Android può causare comportamenti inattesi
- **Non reinventare la ruota**
  - Molti dei problemi che si affrontano durante lo sviluppo sono comuni alla maggior parte dei progetti
  - Molto probabilmente qualcuno lo ha risolto prima di noi
  - Utilizzare librerie terze parti se:
    - Sono rilasciate con licenza compatibile con il progetto corrente
    - Sono state progettate e realizzate da fonti attendibili (Square, Facebook...)
    - Sono ben documentate
    - Sono largamente diffuse (saranno disponibili esempi e tutorial oltre alla documentazione ufficiale)
    - Sono mantenute costantemente

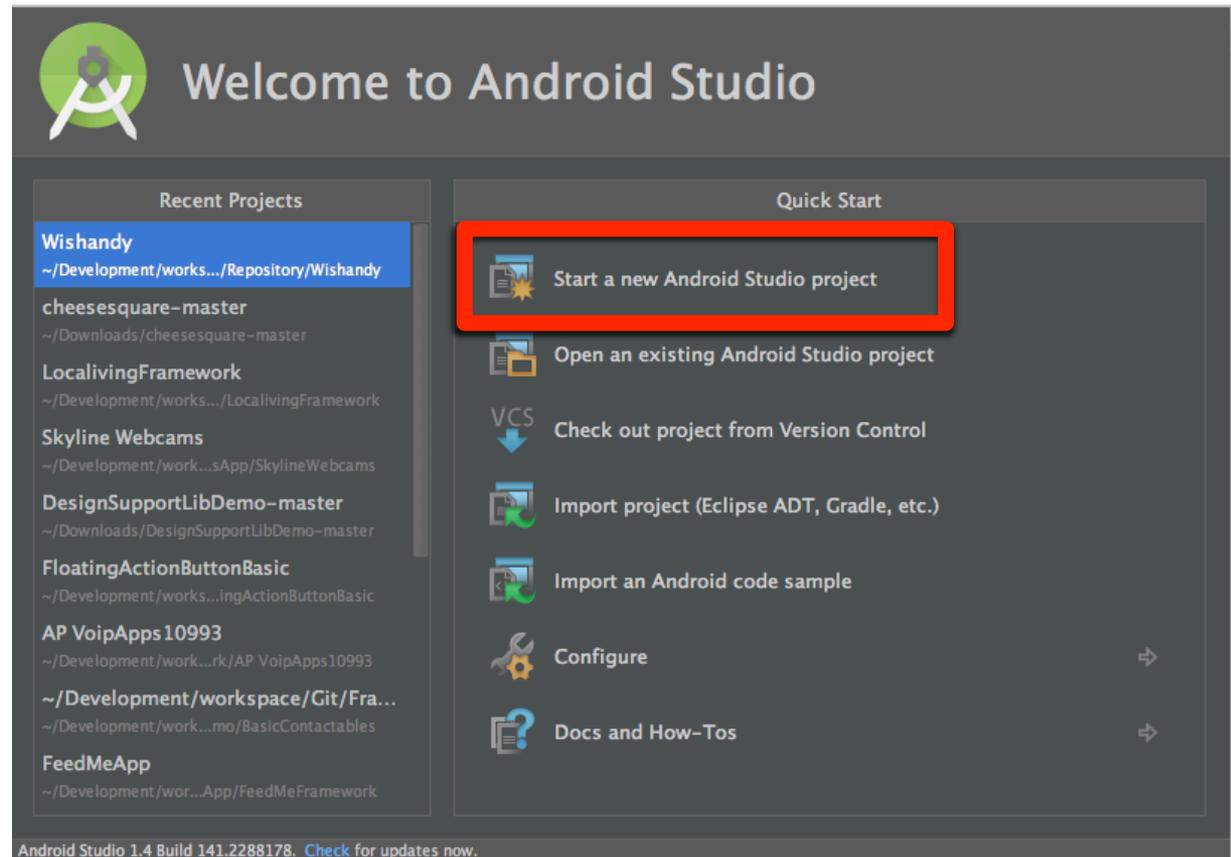
- Gestione immagini:
  - Picasso <https://github.com/square/picasso>
  - Glide <https://github.com/bumptech/glide>
  - Fresco <http://frescolib.org/>
- Consumo API Rest
  - Retrofit <https://github.com/square/retrofit>
  - Robospice <https://github.com/stephanenicolas/robospice>
- Parsing Json
  - Gson <https://code.google.com/p/google-gson/>
- Gestione oggetti Parcelable
  - Parceler <https://github.com/johncarl81/parceler>
- Gestione oggetti POJO (Plain Old Java Object)
  - Lombok <https://projectlombok.org/>
- Gestione eventi asincroni
  - RxJava <https://github.com/ReactiveX/RxJava>
  - RxAndroid <https://github.com/ReactiveX/RxAndroid>
- Uso delle lambda expression su Android
  - Retrolambda <https://github.com/evant/gradle-retrolambda>

# /develop

Lanciare Android Studio

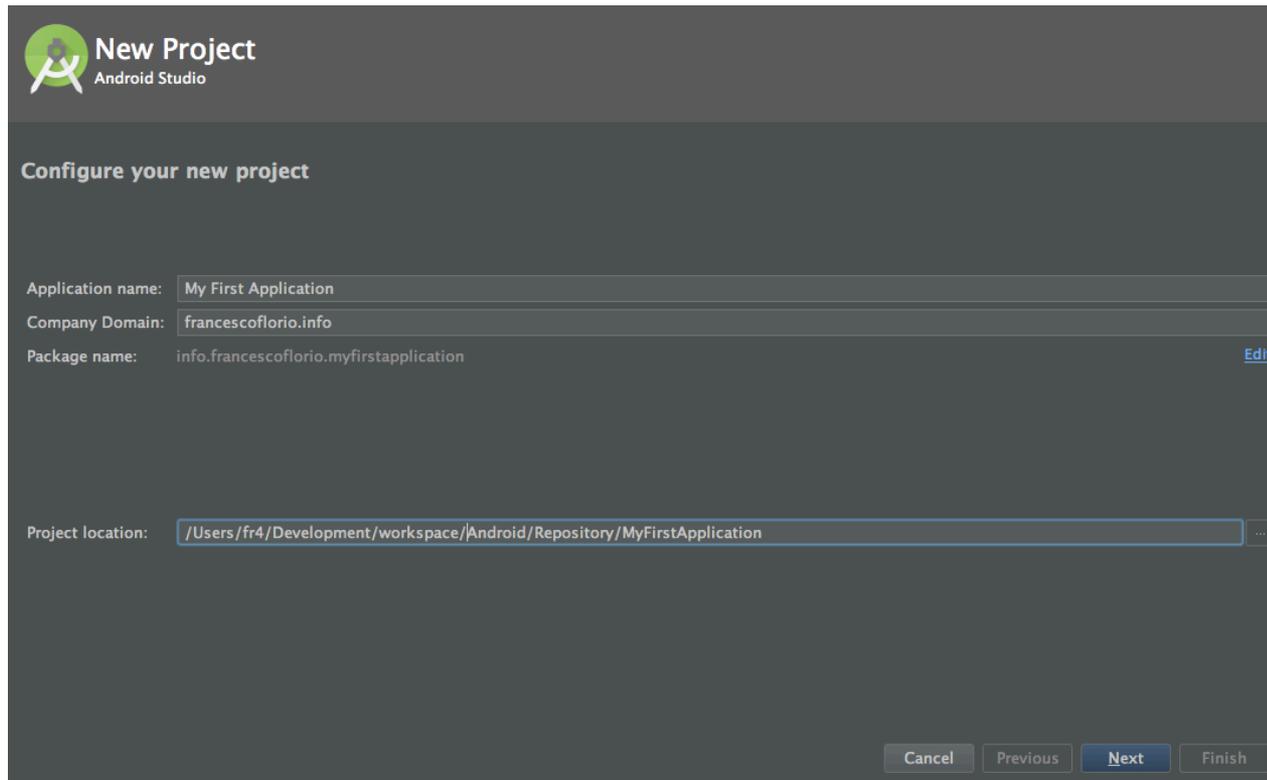
Dal menu *Quick Start* scegliere:

- **Start a new Android Studio project**



# /develop

Riempi i campi e cliccare su Next



**New Project**  
Android Studio

**Configure your new project**

Application name:

Company Domain:

Package name:  [Edit](#)

Project location:  ...

## Scegli il target dell'applicazione e la min SDK

**Target Android Devices**

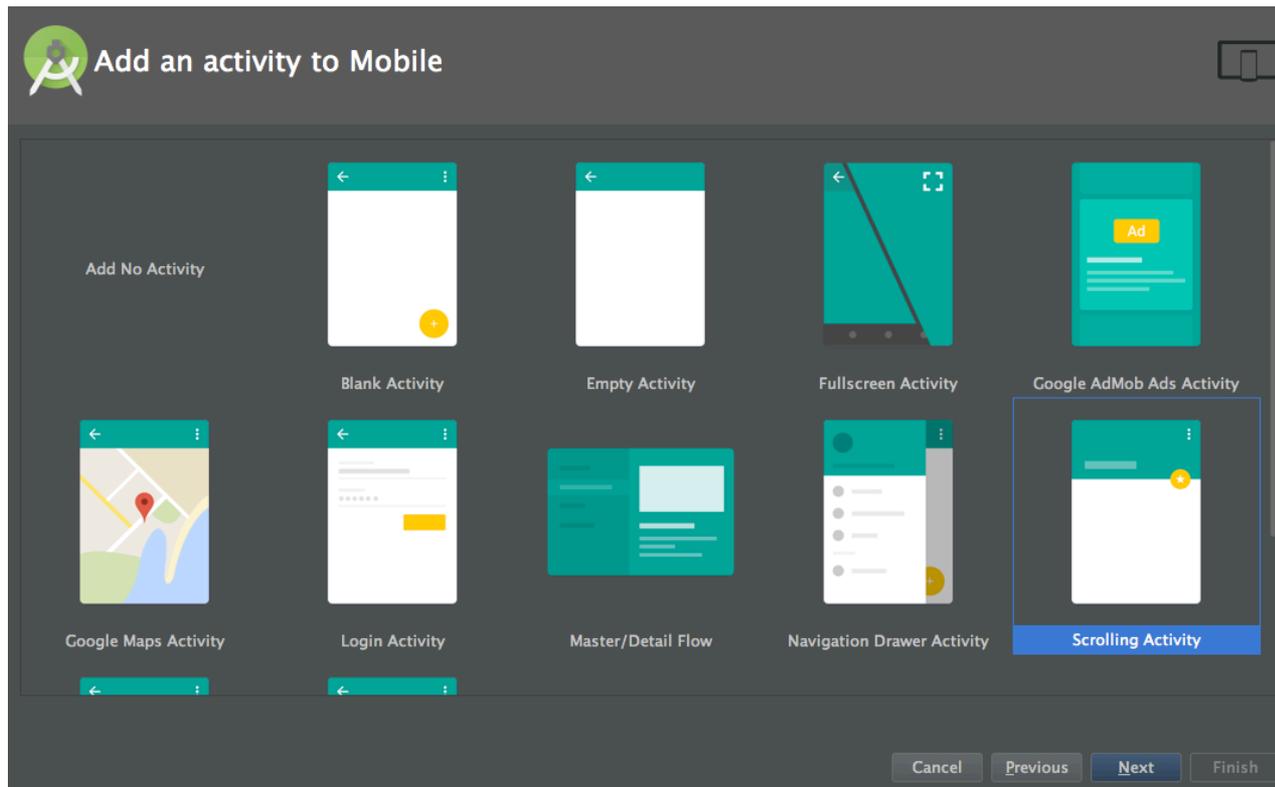
Select the form factors your app will run on

Different platforms may require separate SDKs

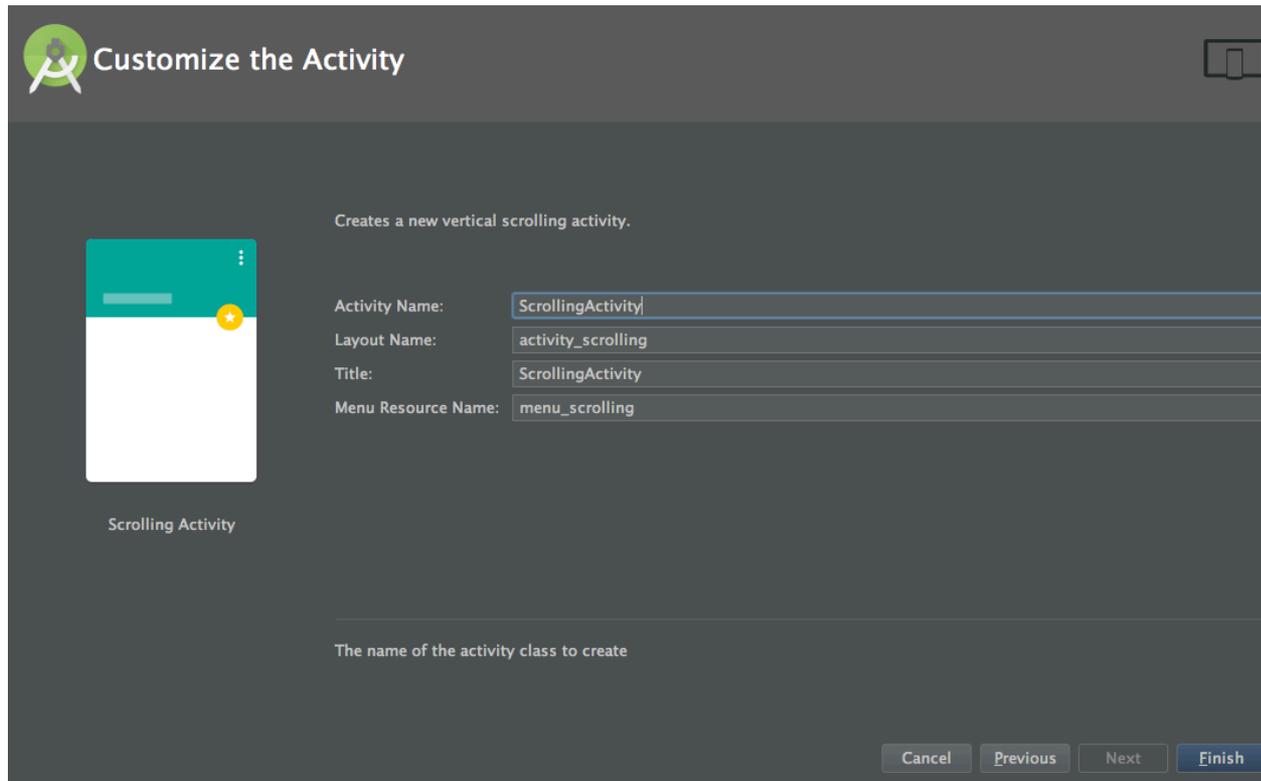
- Phone and Tablet
  - Minimum SDK: API 16: Android 4.1 (Jelly Bean)
  - Lower API levels target more devices, but have fewer features available. By targeting API 16 and later, your app will run on approximately 88,7% of the devices that are active on the Google Play Store.  
[Help me choose](#)
- Wear
  - Minimum SDK: API 21: Android 5.0 (Lollipop)
- TV
  - Minimum SDK: API 21: Android 5.0 (Lollipop)
- Android Auto
- Glass (Not Installed) [Download](#)
  - Minimum SDK: [Empty]

Cancel Previous **Next** Finish

Scegli il template di partenza, ad esempio *Scrolling Activity*

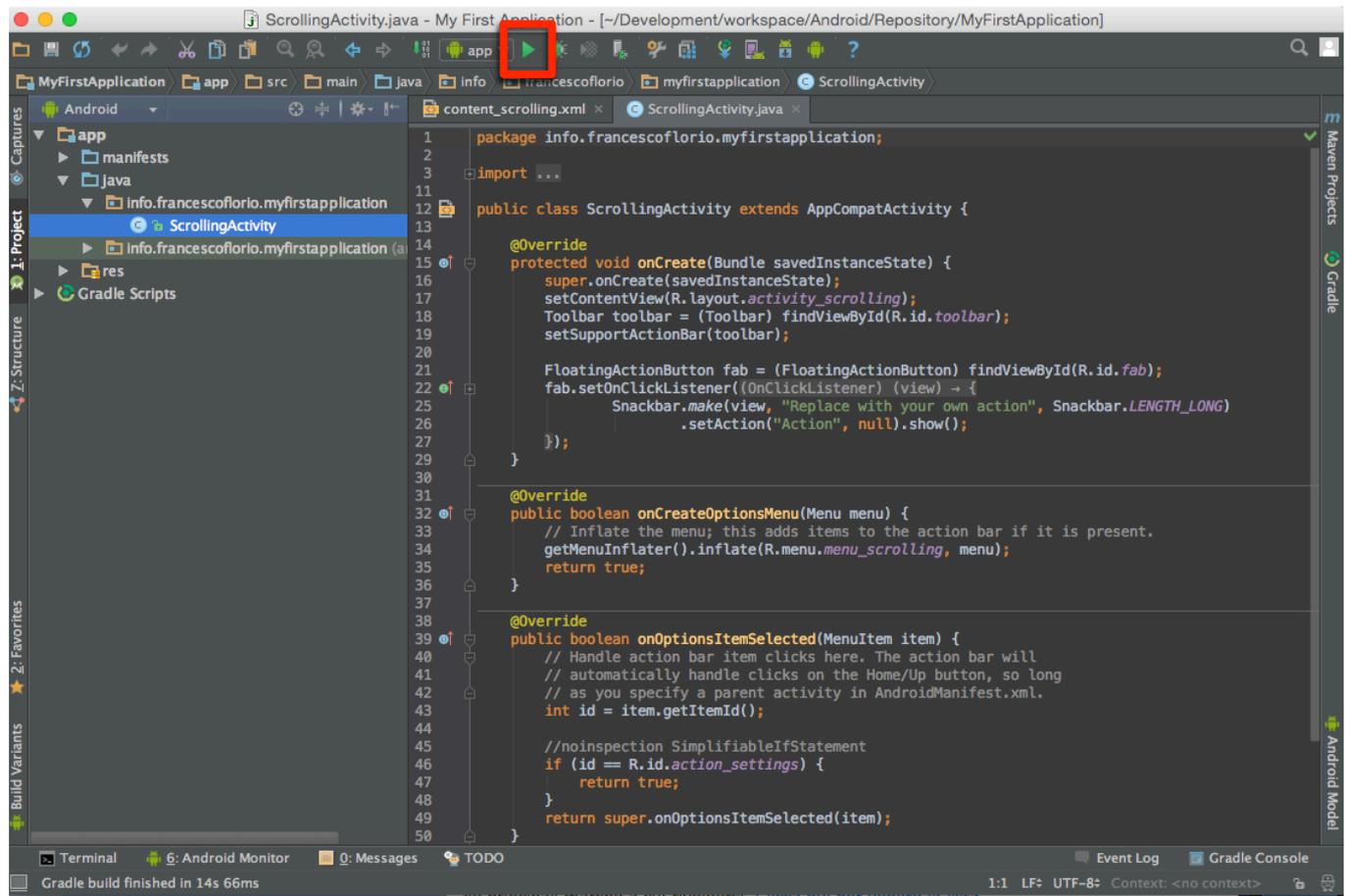


Inserisci gli ultimi dati e clicca sul pulsante Finish



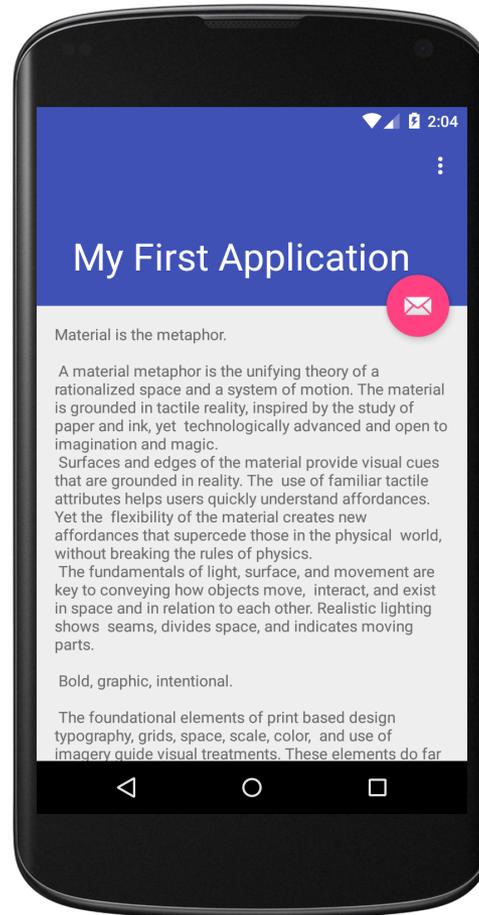
# /develop

Esegui l'applicazione, cliccando sul pulsante Play nella toolbar



The screenshot shows an IDE window titled "ScrollingActivity.java - My First Application". The toolbar at the top contains several icons, with the Play button (a green triangle) highlighted by a red square. The main editor area displays the Java code for the ScrollingActivity class, which extends AppCompatActivity. The code includes imports, package declarations, and three overridden methods: onCreate, onCreateOptionsMenu, and onOptionsItemSelected. The onCreate method sets up the toolbar and a FloatingActionButton. The onCreateOptionsMenu method inflates a menu. The onOptionsItemSelected method handles clicks on menu items, specifically checking for an action\_settings item. The IDE interface also shows a project structure on the left, a terminal at the bottom, and a status bar indicating the Gradle build is finished.

```
1 package info.francescoflorio.myfirstapplication;
2
3 import ...
11
12 public class ScrollingActivity extends AppCompatActivity {
13
14     @Override
15     protected void onCreate(Bundle savedInstanceState) {
16         super.onCreate(savedInstanceState);
17         setContentView(R.layout.activity_scrolling);
18         Toolbar toolbar = (Toolbar) findViewById(R.id.toolbar);
19         setSupportActionBar(toolbar);
20
21         FloatingActionButton fab = (FloatingActionButton) findViewById(R.id.fab);
22         fab.setOnClickListener((OnClickListener) (view) -> {
23             Snackbar.make(view, "Replace with your own action", Snackbar.LENGTH_LONG)
24                 .setAction("Action", null).show();
25         });
26     }
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30
31     @Override
32     public boolean onCreateOptionsMenu(Menu menu) {
33         // Inflate the menu; this adds items to the action bar if it is present.
34         getMenuInflater().inflate(R.menu.menu_scrolling, menu);
35         return true;
36     }
37
38
39     @Override
40     public boolean onOptionsItemSelected(MenuItem item) {
41         // Handle action bar item clicks here. The action bar will
42         // automatically handle clicks on the Home/Up button, so long
43         // as you specify a parent activity in AndroidManifest.xml.
44         int id = item.getItemId();
45
46         //noinspection SimplifiableIfStatement
47         if (id == R.id.action_settings) {
48             return true;
49         }
50         return super.onOptionsItemSelected(item);
51     }
52 }
```

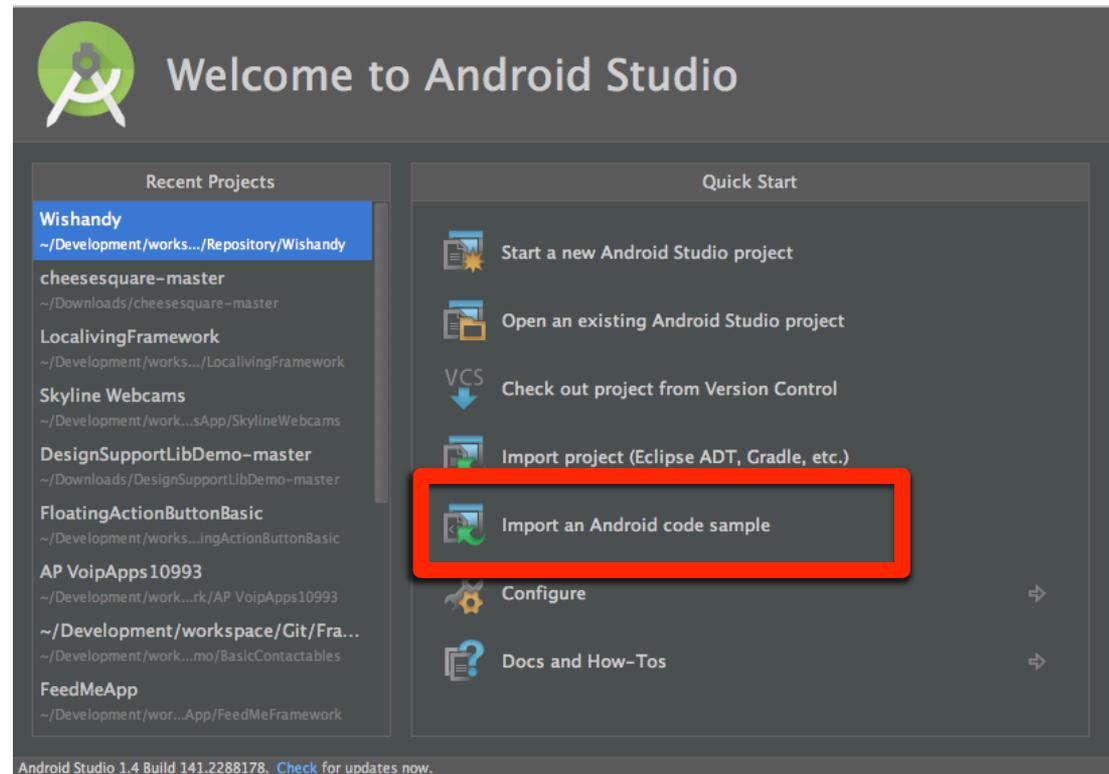


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Dal menu Quick Start

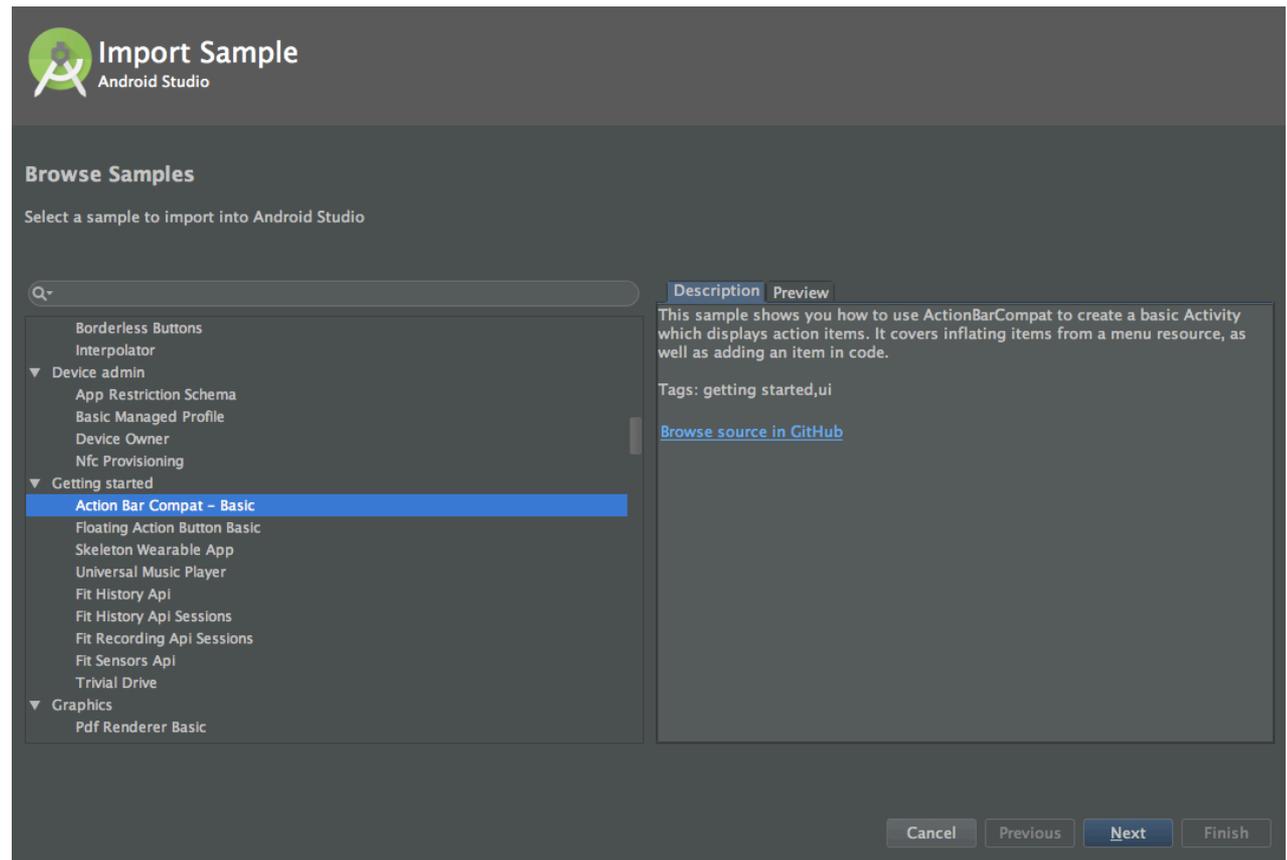
- *Import an Android code sample*

**This task required internet connection!**



# /develop

Scegli un esempio e  
clicca sul pulsante  
*Next*



# /develop

Segli dove salvare il progetto e clicca su Finish. Il codice sarà scaricato automaticamente dal repository remoto al file system locale e caricato automaticamente in Android Studio.



## Sample Setup

Provide information about your project

Application name:

GitHub URL:

Project location:  ...

## Crea un repository remoto per i tuoi progetti

- Version control system (esempio git, svn, mercurial)
  - Aiutano lo sviluppo in team (i.e. merge di codice)
  - Il codice è protetto da danni accidentali
  - Aiuta gli sviluppatori a controllare l'incremento del codice, consentendo di tornare alle versioni precedenti (se necessario)
- Android Studio contiene al suo interno un client GIT
- GitHub offre repository pubblici gratuiti  
<https://github.com/>
- Bitbucket offre repository pubblici e privati gratuiti  
<https://www.bitbucket.org>

# /develop

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1 package info.francescoflorio.myfirstapplication;
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3 import ...
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5 public class ScrollingActivity extends AppCompatActivity {
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37            return true;
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## Android Build System (adb)

- Toolkit usato per compilare, testare, eseguire ed impacchettare l'App
- Precedentemente basato su ANT, oggi consiste in un'estensione Gradle per Android
- I file di build sono chiamati **build.gradle**
  - Uno per l'applicazione e uno per ogni modulo
  - File di testo scritto in sintassi Groovy
  - Si occupa di definire le caratteristiche dell'App e le dipendenze, con la possibilità di inserire logica di build customizzata

## Referenze

<http://developer.android.com/tools/building/plugin-for-gradle.html>

<http://www.gradle.org/>

<http://groovy.codehaus.org/>

# /gradle

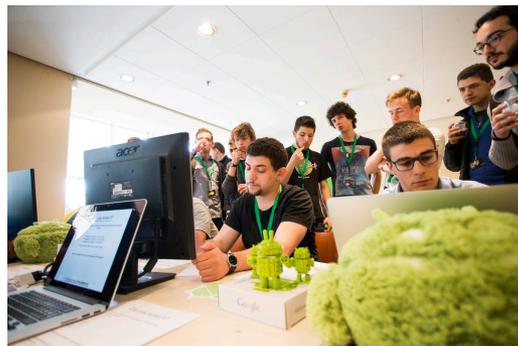
```
app x
1  apply plugin: 'com.android.application'
2
3  android {
4      compileSdkVersion 23
5      buildToolsVersion "23.0.1"
6
7      defaultConfig {
8          applicationId "info.francescoflorio.myfirstapplication"
9          minSdkVersion 16
10         targetSdkVersion 23
11         versionCode 1
12         versionName "1.0"
13     }
14     buildTypes {
15         release {
16             minifyEnabled false
17             proguardFiles getDefaultProguardFile('proguard-android.txt'), 'proguard-rules.pro'
18         }
19     }
20 }
21
22 dependencies {
23     compile fileTree(dir: 'libs', include: ['*.jar'])
24     testCompile 'junit:junit:4.12'
25     compile 'com.android.support:appcompat-v7:23.0.1'
26     compile 'com.android.support:design:23.0.1'
27 }
28
```

# /androidmanifest

```
AndroidManifest.xml x
1 <?xml version="1.0" encoding="utf-8"?>
2 <manifest xmlns:android="http://schemas.android.com/apk/res/android"
3     package="info.francescoflorio.myfirstapplication" >
4
5     <uses-permission android:name="android.permission.INTERNET" />
6
7     <application
8         android:allowBackup="true"
9         android:icon="@mipmap/ic_launcher"
10        android:label="My First Application"
11        android:supportsRtl="true"
12        android:theme="@style/AppTheme" >
13
14        <activity
15            android:name=".ScrollingActivity"
16            android:label="My First Application"
17            android:theme="@style/AppTheme.NoActionBar" >
18            <intent-filter>
19                <action android:name="android.intent.action.MAIN" />
20                <category android:name="android.intent.category.LAUNCHER" />
21            </intent-filter>
22        </activity>
23
24    </application>
25
26 </manifest>
27
```

## Cos'è un GDG

- I GDG sono network di sviluppatori interessati alle tecnologie di Google
- Rete mondiale presente in 114 nazioni, 682 gruppi e conta 2.968 eventi negli ultimi sei mesi
- Senza fini di lucro e in partnership con Google



## II GDG Cosenza

- Aperto a tutti ma orientato agli sviluppatori
- Concentrato sullo sviluppo Android nativo
- Connesso al network internazionale dei GDG ma indipendente nelle scelte organizzative
- Orientato alla condivisione della conoscenza
- Online e “offline”
- Gratuito
- Divertente ;)

## Segui il GDG Cosenza

- **Online:**
  - Sito web ufficiale:
    - <http://www.gdgcosenza.it/>
  - Pagina ufficiale di Facebook:
    - <https://www.facebook.com/gdgcosenza>
  - Account ufficiale Twitter:
    - <https://twitter.com/gdgcosenza>
  - Pagina ufficiale G+:
    - <https://plus.google.com/+Gdgcosenza>
  - Community G+:
    - <https://plus.google.com/communities/114602432029504710573>
  - Directory Google Developers Group
    - <https://developers.google.com/groups/directory>
- **Eventi:**
  - TAG Cosenza
  - Pub & pizzerie
  - Unical

## Progetti attivi

- Incontri mensili
- Blog GDG Cosenza con articoli tecnici dei nostri membri
- Utilizzo delle pagine Facebook e Google+ per condividere contenuti interessanti e utili alla community
- Elenco aggiornato degli sviluppatori Android
- Community di beta tester

/help

# Q&A