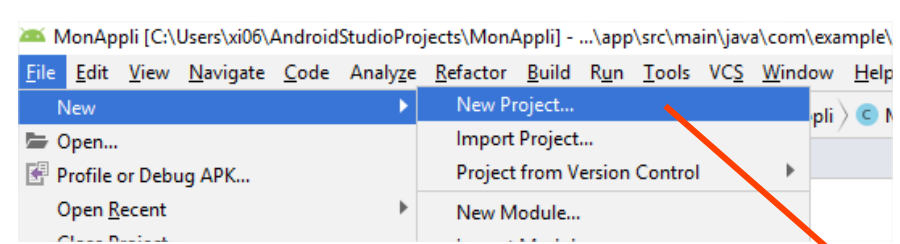


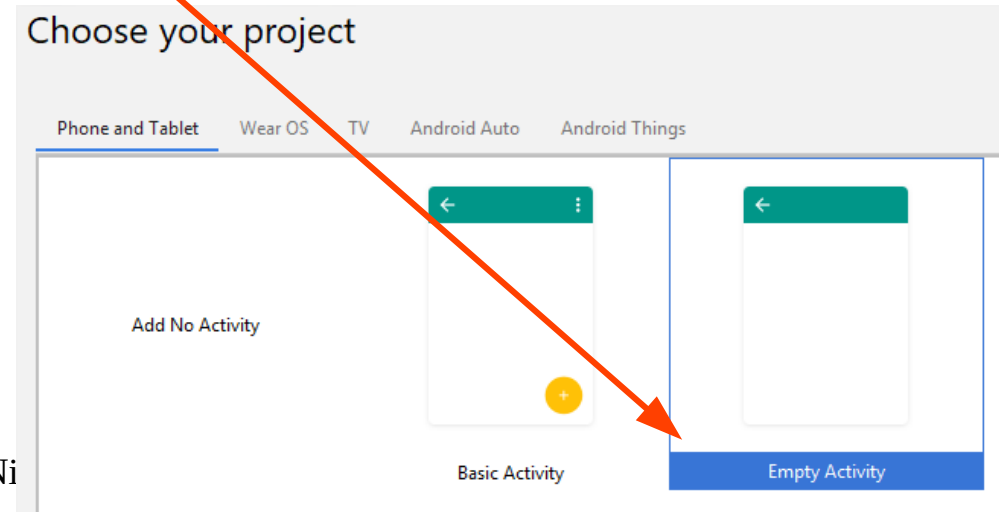


## TD2: Programmer les Objets XML : les Boutons





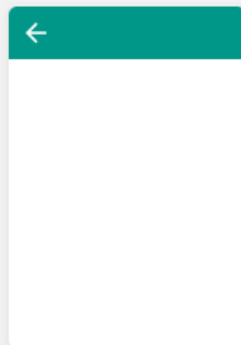
Nous allons vraiment créer notre première application maintenant :



Android Studio - Ni



## Configure your project



Empty Activity

Creates a new empty activity

Name

MonAppli2

Package name

com.example.monappli2

Save location

C:\Users\xi06\AndroidStudioProjects\MonAppli2

Language

Java

Minimum API level

API 19: Android 4.4 (KitKat)

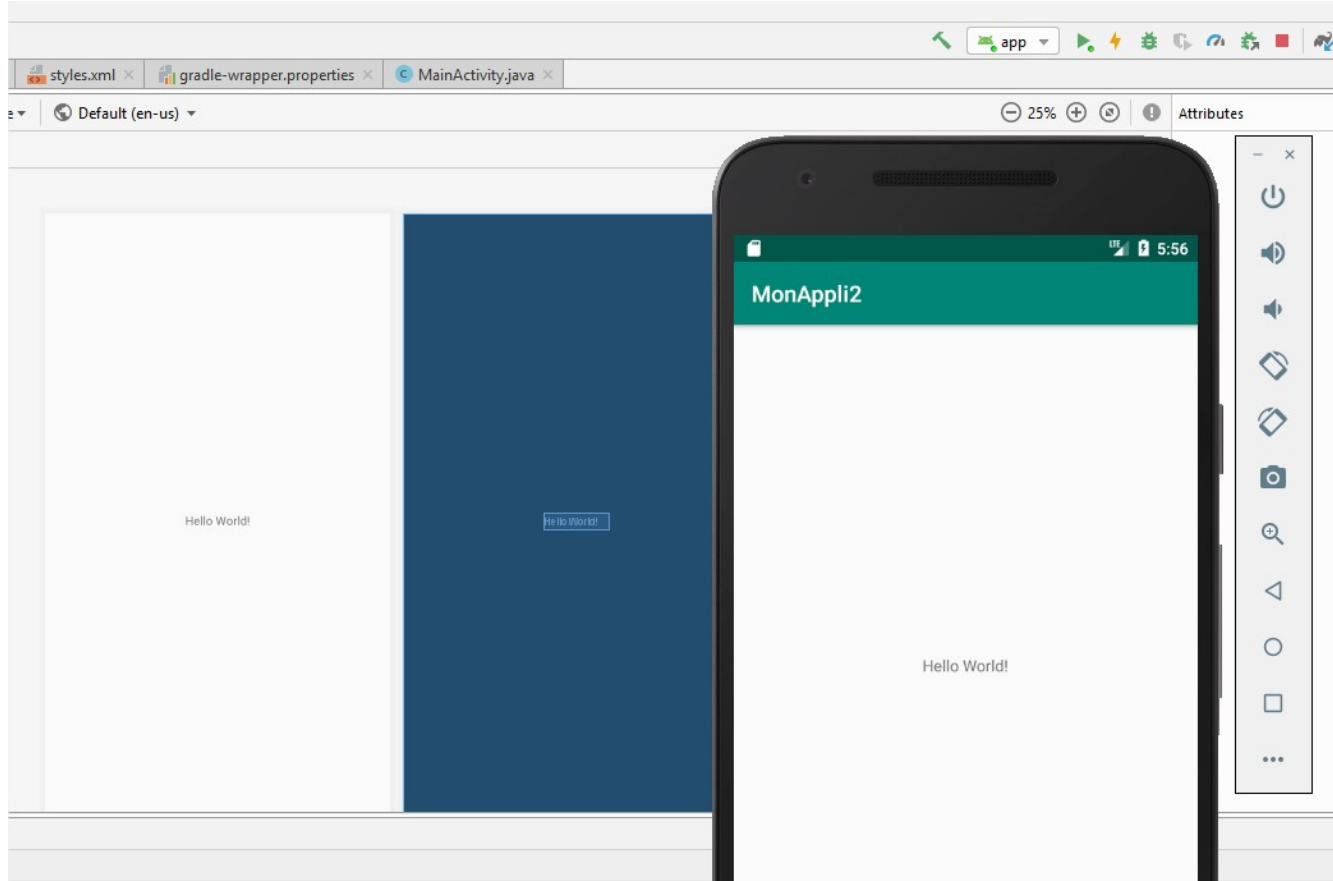
- API 19: Android 4.4 (KitKat)
- API 20: Android 4.4W (KitKat Wear)
- API 21: Android 5.0 (Lollipop)
- API 22: Android 5.1 (Lollipop)
- API 23: Android 6.0 (Marshmallow)
- API 24: Android 7.0 (Nougat)
- API 25: Android 7.1.1 (Nougat)
- API 26: Android 8.0 (Oreo)

Previous

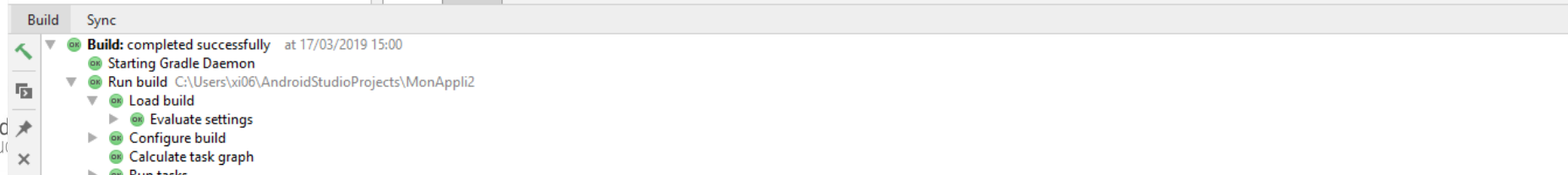
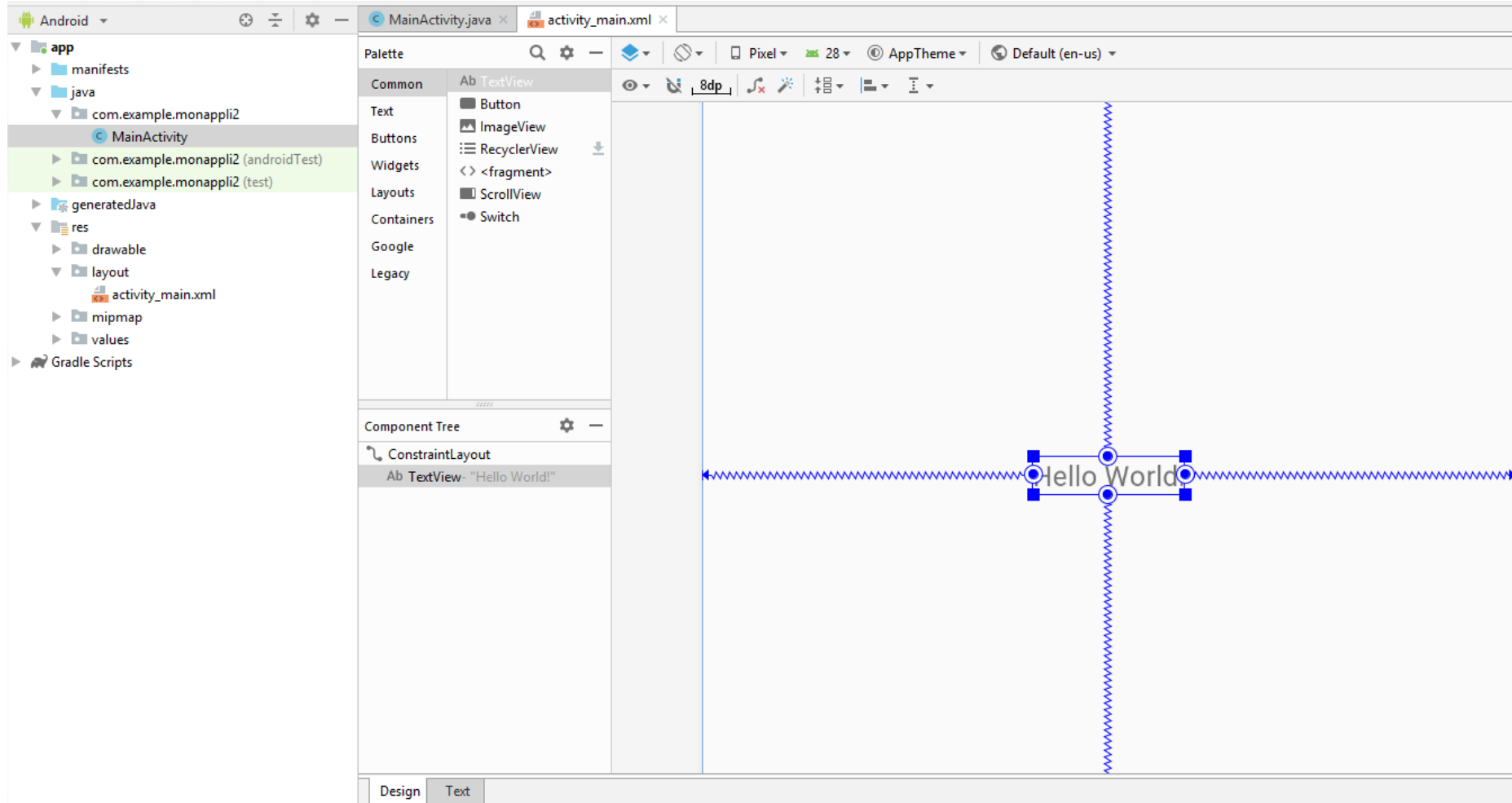
Next

Cancel

Finish



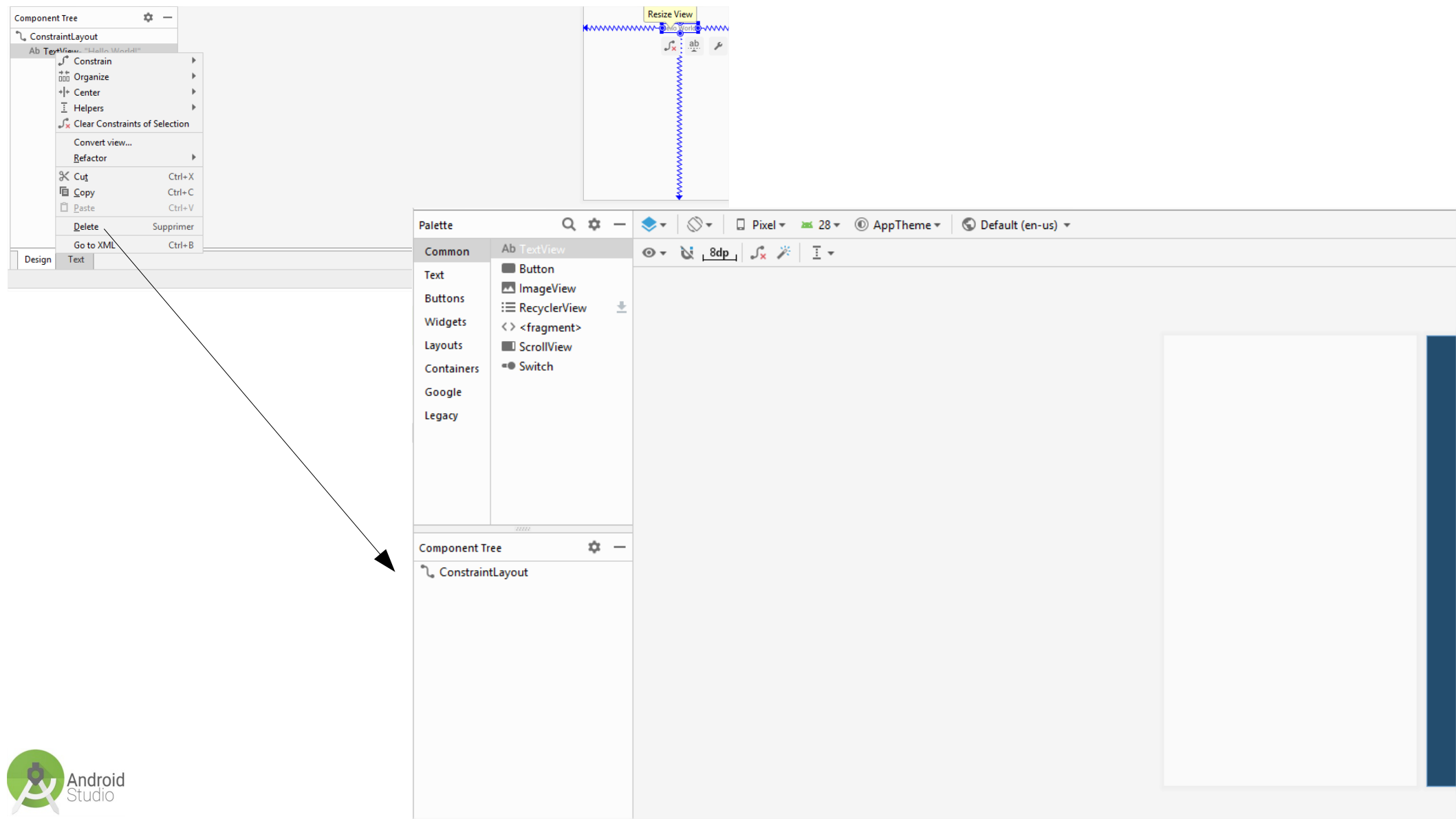
Lancer la machine virtuelle :



The screenshot displays the Android Studio interface. On the left, the Project view shows the file structure of an Android application, with `activity_main.xml` selected under the `layout` directory. The central editor shows the XML code for `activity_main.xml`, which defines a `ConstraintLayout` containing a `TextView` widget. The `TextView` is configured with `android:text="Hello World!"` and is centered in the layout using constraints: `app:layout_constraintBottom_toBottomOf="parent"`, `app:layout_constraintLeft_toLeftOf="parent"`, `app:layout_constraintRight_toRightOf="parent"`, and `app:layout_constraintTop_toTopOf="parent"`. The right-hand side of the interface shows a visual preview of the `TextView` widget, which displays the text "Hello World" centered on a white background. The preview includes a toolbar with various editing tools and a palette on the left.

```
1 <?xml version="1.0" encoding="utf-8" ?>
2 <android.support.constraint.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
3     xmlns:app="http://schemas.android.com/apk/res-auto"
4     xmlns:tools="http://schemas.android.com/tools"
5     android:layout_width="match_parent"
6     android:layout_height="match_parent"
7     tools:context=".MainActivity">
8
9     <TextView
10         android:layout_width="wrap_content"
11         android:layout_height="wrap_content"
12         android:text="Hello World!"
13         app:layout_constraintBottom_toBottomOf="parent"
14         app:layout_constraintLeft_toLeftOf="parent"
15         app:layout_constraintRight_toRightOf="parent"
16         app:layout_constraintTop_toTopOf="parent" />
17
18 </android.support.constraint.ConstraintLayout>
```





Palette

Common

- Ab TextView
- Button
- ImageView
- RecyclerView
- <> <fragment>
- ScrollView
- Switch

Text

Buttons

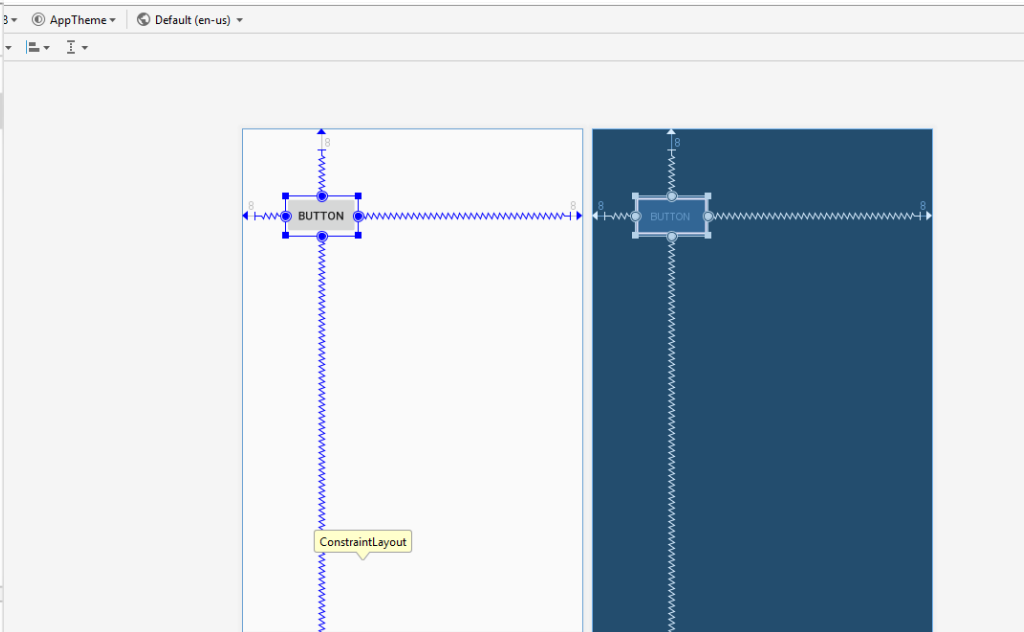
Widgets

Layouts

Containers

Google

Legacy



Component Tree

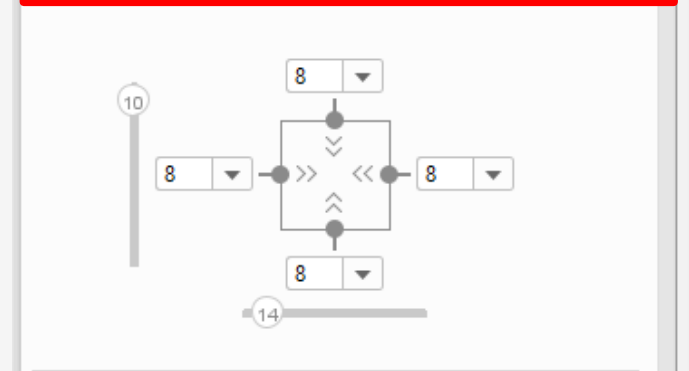
- ConstraintLayout
  - button1 - "Button" ⚠

Attributes

ID

layout\_width

layout\_height



▼ Button

style

onClick

background

▼ TextView

text

text

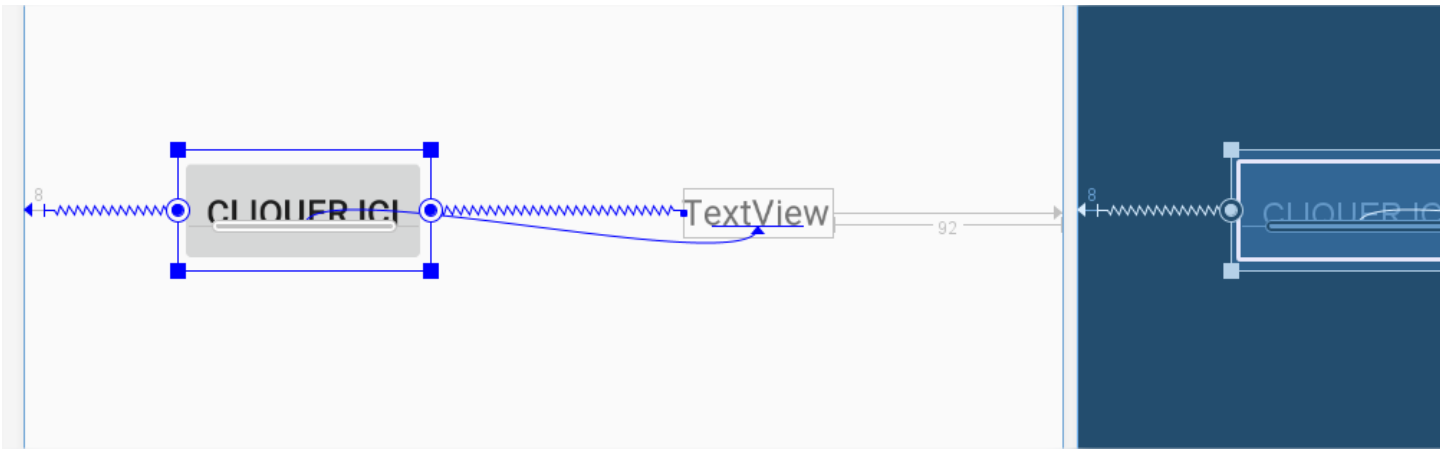
contentDescription

textAppearance

▼ Favorite Attributes

visibility





Attributes

ID	<input type="text" value="txtView1"/>
layout_width	<input type="text" value="wrap_content"/>
layout_height	<input type="text" value="wrap_content"/>

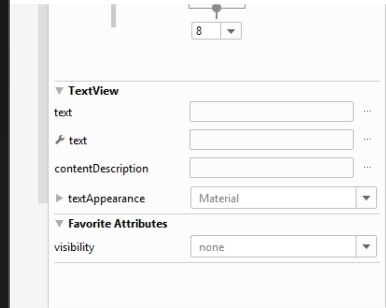
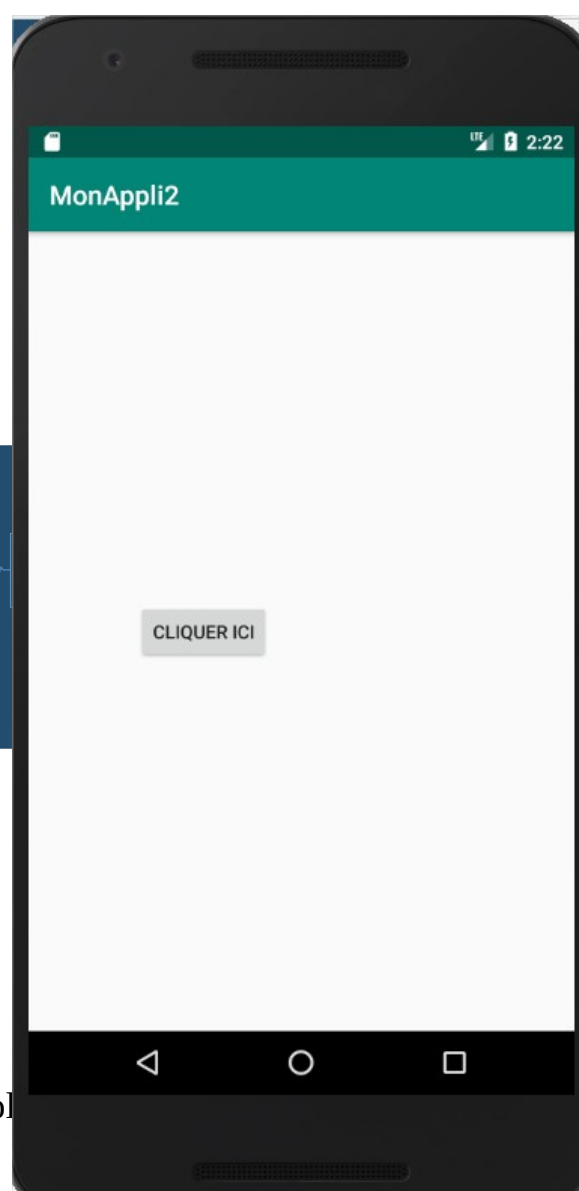
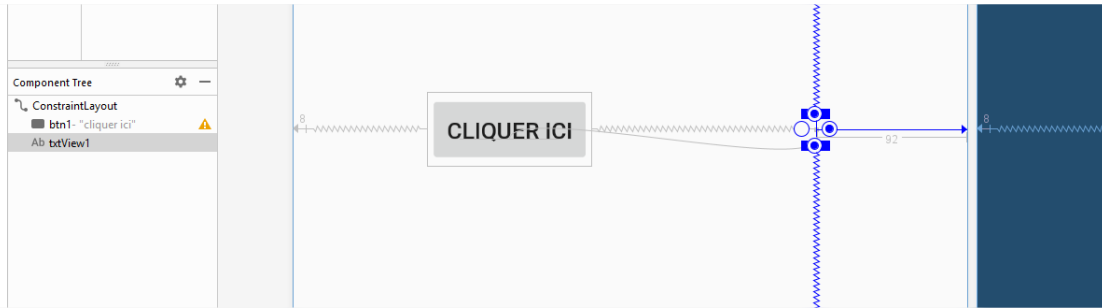
Code completion available (Ctrl+ Espace)

text	<input type="text"/>
text	<input type="text"/>
contentDescription	<input type="text"/>
textAppearance	<input type="text" value="Material"/>
<b>Favorite Attributes</b>	
visibility	<input type="text" value="none"/>

[View all attributes](#)

Si on lance notre machine virtuelle, on peut observer que le click sur le bouton ne donne rien...

Nous devons Programmer nos objet XML, pour cela nous allons utiliser du code Java



## (1) Déclaration des variables

On déclare nos variables **JAVA** en **private**, ici donc seulement pour la classe dans laquelle on se trouve.

```
1 package com.example.monappli2;
2
3 import android.support.v7.app.AppCompatActivity;
4 import android.os.Bundle;
5 import android.view.View;
6 import android.widget.Button;
7 import android.widget.TextView;
8
9 public class MainActivity extends AppCompatActivity {
10
11     private Button btn;
12     private TextView txt;
13
14
15     @Override
16     protected void onCreate(Bundle savedInstanceState) {
17         super.onCreate(savedInstanceState);
18         setContentView(R.layout.activity_main);
19     }
20 }
```



## (2) Initialisation Objets XML

Initialisation des pointeurs vers les objets XML

```
8 public class MainActivity extends AppCompatActivity {
9
10     private Button btn;
11     private TextView txt;
12
13
14     @Override
15     protected void onCreate(Bundle savedInstanceState) {
16         super.onCreate(savedInstanceState);
17         setContentView(R.layout.activity_main);
18
19         btn = findViewById(R.id.btn);
20
21     }
22
23
24
25
26
27
28 }
```

IntelliJ tooltip for `findViewById` showing the return type `com.example.monappli2.R.id` and the value `btn1`.

```
7
8 public class MainActivity extends AppCompatActivity {
9
10     private Button btn;
11     private TextView txt;
12
13
14     @Override
15     protected void onCreate(Bundle savedInstanceState) {
16         super.onCreate(savedInstanceState);
17         setContentView(R.layout.activity_main);
18
19         btn = findViewById(R.id.btn);
20
21     }
22
23
24
25
26
27
28 }
```

Inspection tooltip: Casting 'findViewById(R.id.btn1)' to 'Button' is redundant less... (Ctrl+F1)  
Inspection info: This inspection reports unnecessary cast expressions.

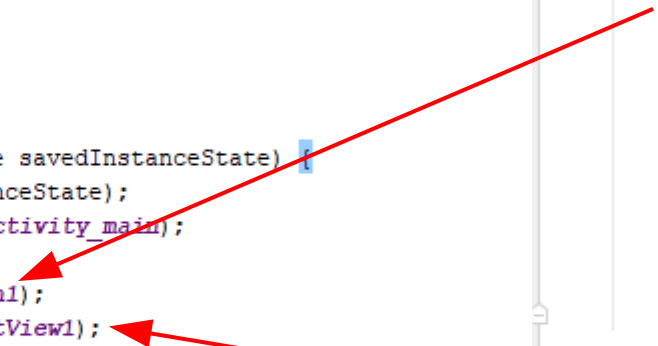
IntelliJ context menu for the redundant cast:

- Remove redundant cast(s)
- Cleanup code
- Move assignment to field declaration
- Remove breakpoint (Ctrl+F8)
- Disable breakpoint
- Edit breakpoint (Ctrl+Maj+F8)



```
1 package com.example.monappli2;
2
3 import android.support.v7.app.AppCompatActivity;
4 import android.os.Bundle;
5 import android.widget.Button;
6 import android.widget.TextView;
7
8 public class MainActivity extends AppCompatActivity {
9
10     private Button btn;
11     private TextView txt;
12
13
14     @Override
15     protected void onCreate(Bundle savedInstanceState) {
16         super.onCreate(savedInstanceState);
17         setContentView(R.layout.activity_main);
18
19         btn = findViewById(R.id.btn1);
20         txt = findViewById(R.id.txtView1);
21
22
23
24
25
26
27
28
29     }
30 }
31
```

```
<?xml version="1.0" encoding="utf-8" ?>
<android.support.constraint.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res-auto"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/btn1"
        android:layout_width="wrap_content"
        android:layout_height="45dp"
        android:layout_marginStart="8dp"
        android:layout_marginEnd="8dp"
        android:text="cliquer ici"
        app:layout_constraintBaseline_toBaselineOf="@+id/txtView1"
        app:layout_constraintEnd_toStartOf="@+id/txtView1"
        app:layout_constraintHorizontal_bias="0.365"
        app:layout_constraintStart_toStartOf="parent" />
    <TextView
        android:id="@+id/txtView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="92dp"
        android:layout_marginBottom="8dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</android.support.constraint.ConstraintLayout>
```



```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    btn = findViewById(R.id.btn1);
    txt = findViewById(R.id.txtView1);
}
```

btn.set


m	setOnClickListener (OnClickListener l)	void
m	setAccessibilityDelegate (AccessibilityDelegate delegate)	void
m	setAccessibilityHeading (boolean isHeading)	void
m	setAccessibilityLiveRegion (int mode)	void
m	setAccessibilityPaneTitle (CharSequence accessibilityPaneT..	void
m	setAccessibilityTraversalAfter (int afterId)	void
m	setAccessibilityTraversalBefore (int beforeId)	void
m	setActivated (boolean activated)	void
m	setAllCaps (boolean allCaps)	void
m	setAlpha (float alpha)	void
m	setAnimation (Animation animation)	void
m	setAutoFillHints (String autoFillHints)	void

android.view.View  
public void **setOnClickListener**(View.OnClickListener l)

Register a callback to be invoked when this view is clicked. If this view is not clickable, it becomes clickable.

Params: l – The callback that will run

See Also: [setClickable \(boolean\)](#)

 < Android API 28 Platform >

MainActivity > onCreate()

9 15:39

```
18 btn = findViewById(R.id.btn1);
19
20 txt = findViewById(R.id.txtView1);
21
22
23
```

```
24 btn.setOnClickListener(new V);
```

```
View.OnClickListener[...] (android.view.View)
VerifyError (java.lang)
VirtualMachineError (java.lang)
Void (java.lang)
KeyboardView (android.inputmethodservice)
ActionMenuItemView (android.support.v7.view.menu)
SafeVarargs (java.lang)
```

android.view

public static interface View.OnClickListener

Interface definition for a callback to be invoked when a view is clicked.

< Android API 28 Platform >

```
btn.setOnClickListener(new V);
```

```
View.OnClickListener[...] (android.view.View)
VerifyError (java.lang)
VirtualMachineError (java.lang)
Void (java.lang)
KeyboardView (android.inputmethodservice)
ActionMenuItemView (android.support.v7.view.menu)
SafeVarargs (java.lang)
```

## Un peu d'explications !

```
12 private TextView txt;
13
14
15 @Override
16 protected void onCreate(Bundle savedInstanceState) {
17     super.onCreate(savedInstanceState);
18     setContentView(R.layout.activity_main);
19
20     btn = findViewById(R.id.btn1);
21     txt = findViewById(R.id.txtView1);
22
23
24
25     btn.setOnClickListener(new View.OnClickListener() {
26         @Override
27         public void onClick(View v) {
28
29         }
30     });
31
32
33
34
35 }
36
37
```

l'interface d'écoute qui est implémentée est `OnClickListener`, qui est ici déclarée sur la classe `View`. (Rappel `View` est la Classe mère de tous composants graphiques)

`OnClickListener` est une interface, on ne peut pas instancier une interface, donc il faut dériver cette interface. On a ici une classe anonyme (représentée par `"{}"`) pour un "click" de l'attribut `btn` d'où le `;"` à la fin.



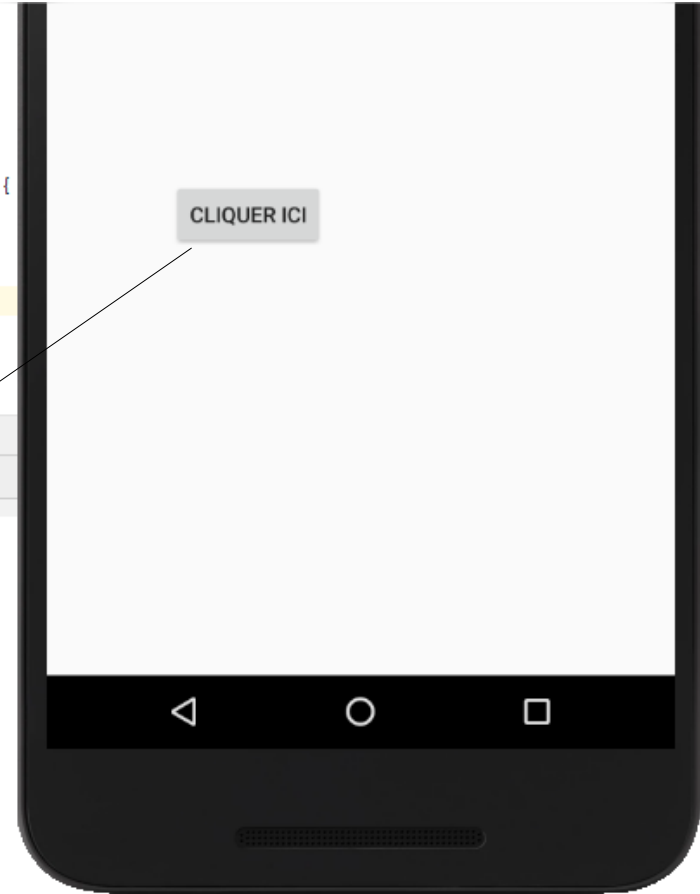


```
20  
21     btn = findViewById(R.id.btn1);  
22     txt = findViewById(R.id.txtView1);  
23  
24  
25  
26     btn.setOnClickListener(new View.OnClickListener() {  
27         @Override  
28         public void onClick(View v) {  
29             Log.i( tag: "btn", msg: "btn1 cliqué");  
30         }  
31     });  
32  
33
```

MainActivity > onCreate() > new OnClickListener > onClick()

Logcat

```
2019-03-17 16:07:30.733 2506-2506/com.example.monappli2 I/btn: btn1 cliqué  
2019-03-17 16:07:31.023 2506-2506/com.example.monappli2 I/btn: btn1 cliqué  
2019-03-17 16:07:31.431 2506-2506/com.example.monappli2 I/btn: btn1 cliqué  
2019-03-17 16:07:32.400 2506-2506/com.example.monappli2 I/btn: btn1 cliqué  
2019-03-17 16:07:33.050 2506-2506/com.example.monappli2 I/btn: btn1 cliqué  
2019-03-17 16:07:33.931 2506-2506/com.example.monappli2 I/btn: btn1 cliqué  
2019-03-17 16:07:34.297 2506-2506/com.example.monappli2 I/btn: btn1 cliqué  
2019-03-17 16:07:34.564 2506-2506/com.example.monappli2 I/btn: btn1 cliqué  
2019-03-17 16:08:19.087 2506-2506/com.example.monappli2 I/btn: btn1 cliqué  
2019-03-17 16:08:19.747 2506-2506/com.example.monappli2 I/btn: btn1 cliqué  
2019-03-17 16:08:20.221 2506-2506/com.example.monappli2 I/btn: btn1 cliqué  
2019-03-17 16:08:20.620 2506-2506/com.example.monappli2 I/btn: btn1 cliqué  
2019-03-17 16:08:20.982 2506-2506/com.example.monappli2 I/btn: btn1 cliqué  
2019-03-17 16:08:21.289 2506-2506/com.example.monappli2 I/btn: btn1 cliqué
```



```

1 package com.example.monappli2;
2
3 import android.support.v7.app.AppCompatActivity;
4 import android.os.Bundle;
5 import android.util.Log;
6 import android.view.View;
7 import android.widget.Button;
8 import android.widget.TextView;
9
10 public class MainActivity extends AppCompatActivity {
11
12     private Button btn;
13     private TextView txt;
14
15
16     @Override
17     protected void onCreate(Bundle savedInstanceState) {
18         super.onCreate(savedInstanceState);
19         setContentView(R.layout.activity_main);
20
21         btn = findViewById(R.id.btn1);
22         txt = findViewById(R.id.txtView1);
23
24
25
26         btn.setOnClickListener(new View.OnClickListener() {
27             @Override
28             public void onClick(View v) {
29
30                 Log.i( tag: "btn", msg: "btn1 cliqué");
31                 txt.setText("Merci d'avoir cliqué");
32
33             }
34         });
35     }
36 }

```

MainActivity > onCreate() > new OnClickListener > onClick()

```

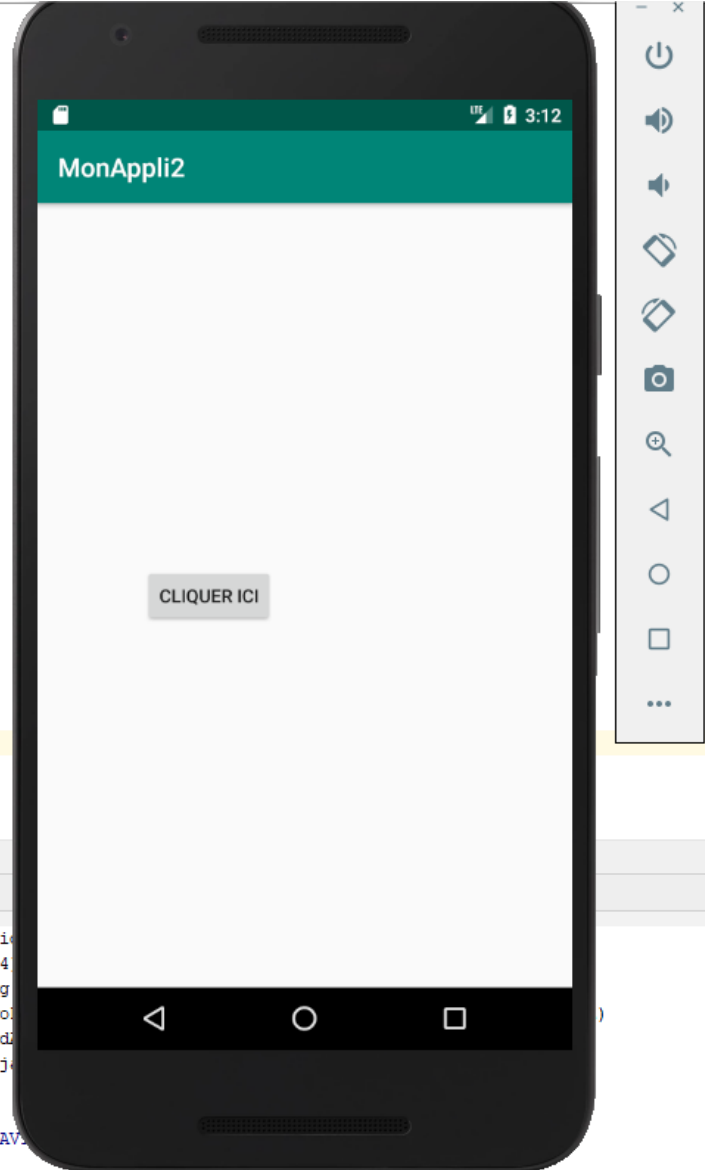
xample.monappli2 I/art: at void android.os.Handler.dispatchMessage(android
xample.monappli2 I/art: at void android.os.Looper.loop() (Looper.java:154
xample.monappli2 I/art: at void android.app.ActivityThread.main(java.lang
xample.monappli2 I/art: at java.lang.Object java.lang.reflect.Method.invo
xample.monappli2 I/art: at void com.android.internal.os.ZygoteInit$Method
xample.monappli2 I/art: at void com.android.internal.os.ZygoteInit.main(j

```

```

xample.monappli2 I/OpenGLRenderer: Initialized EGL, version 1.4
xample.monappli2 D/OpenGLRenderer: Swap behavior 1
xample.monappli2 W/OpenGLRenderer: Failed to choose config with EGL_SWAP_BEHAV
xample.monappli2 D/OpenGLRenderer: Swap behavior 0
xample.monappli2 D/EGL emulation: eglCreateContext: 0x8fa541e0: mai 2 min 0 rcv 2

```



```

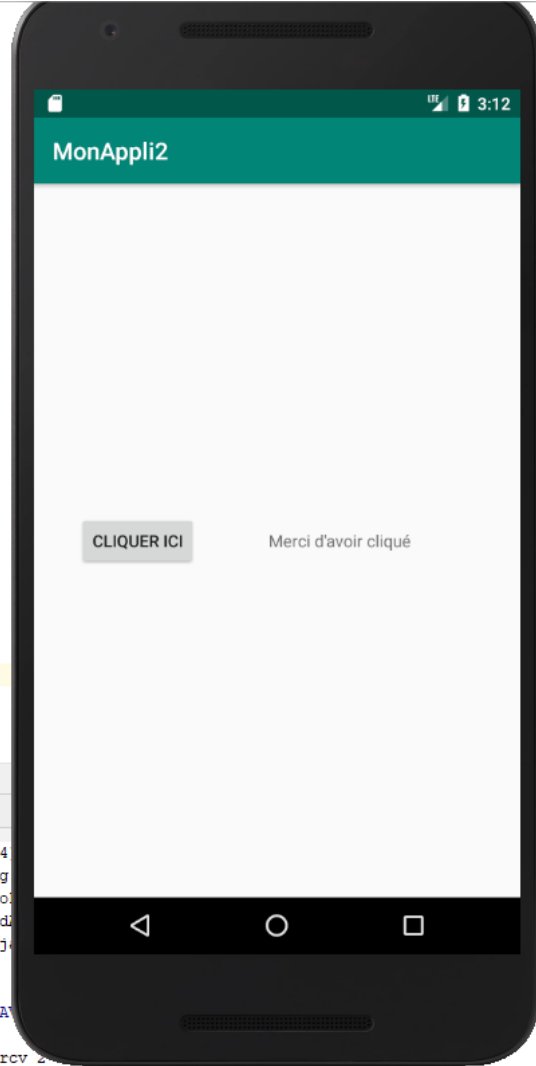
1 package com.example.monappli2;
2
3
4 import android.support.v7.app.AppCompatActivity;
5 import android.os.Bundle;
6 import android.util.Log;
7 import android.view.View;
8 import android.widget.Button;
9 import android.widget.TextView;
10
11 public class MainActivity extends AppCompatActivity {
12
13     private Button btn;
14     private TextView txt;
15
16     @Override
17     protected void onCreate(Bundle savedInstanceState) {
18         super.onCreate(savedInstanceState);
19         setContentView(R.layout.activity_main);
20
21         btn = findViewById(R.id.btn1);
22         txt = findViewById(R.id.txtView1);
23
24
25
26         btn.setOnClickListener(new View.OnClickListener() {
27             @Override
28             public void onClick(View v) {
29
30                 Log.i( tag: "btn", msg: "btn1 cliqué");
31                 txt.setText("Merci d'avoir cliqué");
32
33             }
34         });
35     }
36 }

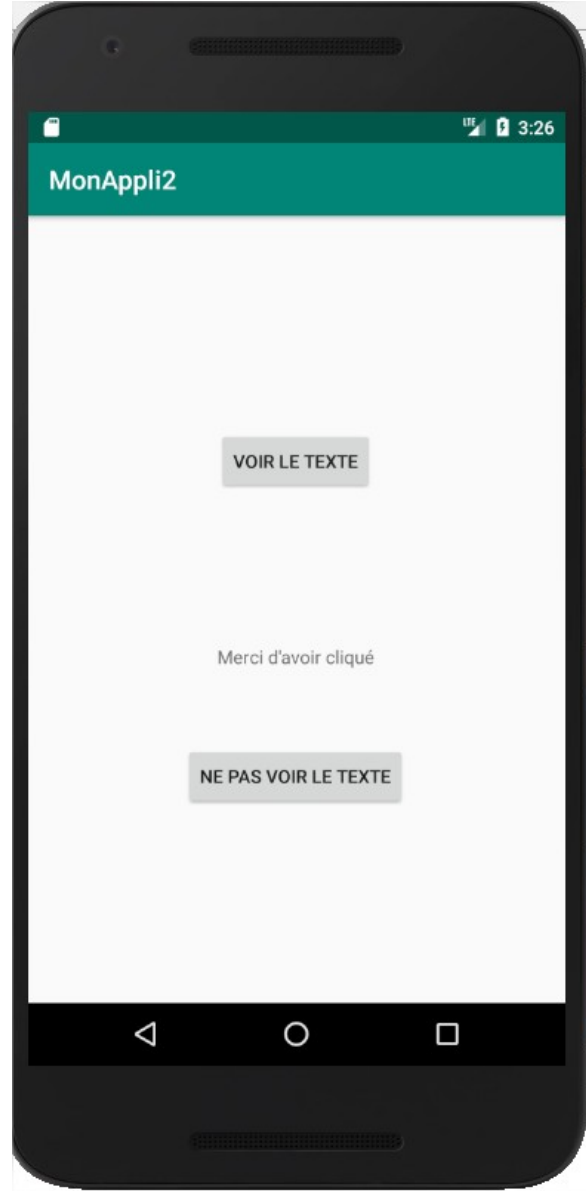
```

```

MainActivity > onCreate() > new OnClickListener > onClick()
xample.monappli2 I/art: at void android.os.Looper.loop() (Looper.java:154)
xample.monappli2 I/art: at void android.app.ActivityThread.main(java.lang
xample.monappli2 I/art: at java.lang.Object java.lang.reflect.Method.invo
xample.monappli2 I/art: at void com.android.internal.os.ZygoteInit$Method
xample.monappli2 I/art: at void com.android.internal.os.ZygoteInit.main(j
xample.monappli2 I/OpenGLRenderer: Initialized EGL, version 1.4
xample.monappli2 D/OpenGLRenderer: Swap behavior 1
xample.monappli2 W/OpenGLRenderer: Failed to choose config with EGL_SWAP_BEHA
xample.monappli2 D/OpenGLRenderer: Swap behavior 0
xample.monappli2 D/EGL_emulation: eglCreateContext: 0x8fa541e0: maj 2 min 0 rcv 2
xample.monappli2 W/art: Before Android 4.1, method int android.support.v7.widget.DropDownListView.lookForSelectablePosition(int, boolean) would h
xample.monappli2 D/EGL_emulation: eglMakeCurrent: 0x8fa541e0: ver 2 0 (tinfo 0x9e0e3e60)
xample.monappli2 D/EGL_emulation: eglMakeCurrent: 0x8fa541e0: ver 2 0 (tinfo 0x9e0e3e60)
xample.monappli2 I/btn: btn1 cliqué

```





```
12     private Button btn;
13     private Button btn2;
14     private TextView txt;
15
16
17     @Override
18     protected void onCreate(Bundle savedInstanceState) {
19         super.onCreate(savedInstanceState);
20         setContentView(R.layout.activity_main);
21
22         btn = findViewById(R.id.btn1);
23         btn2 = findViewById(R.id.btn2);
24         txt = findViewById(R.id.textView1);
25
26
27
28         btn.setOnClickListener(new View.OnClickListener() {
29             @Override
30             public void onClick(View v) {
31
32                 Log.i( tag: "btn", msg: "btn1 cliqué");
33                 txt.setText("Merci d'avoir cliqué");
34             }
35         });
36
37
38
39
40         btn2.setOnClickListener(new View.OnClickListener() {
41             @Override
42             public void onClick(View v) {
43                 Log.i( tag: "btn", msg: "btn2 cliqué");
44                 txt.setText("");
45             }
46         });
47
48     }
49
50 }
```