

Programmation Mobile

UI/UX Design

2025 - 2026
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Agenda

Interface
Utilisateur (UI)

Expérience
Utilisateur

Utilisabilité

Android et les
Design Patterns

Optimisation des
performances
de UI

Challenge

Agenda

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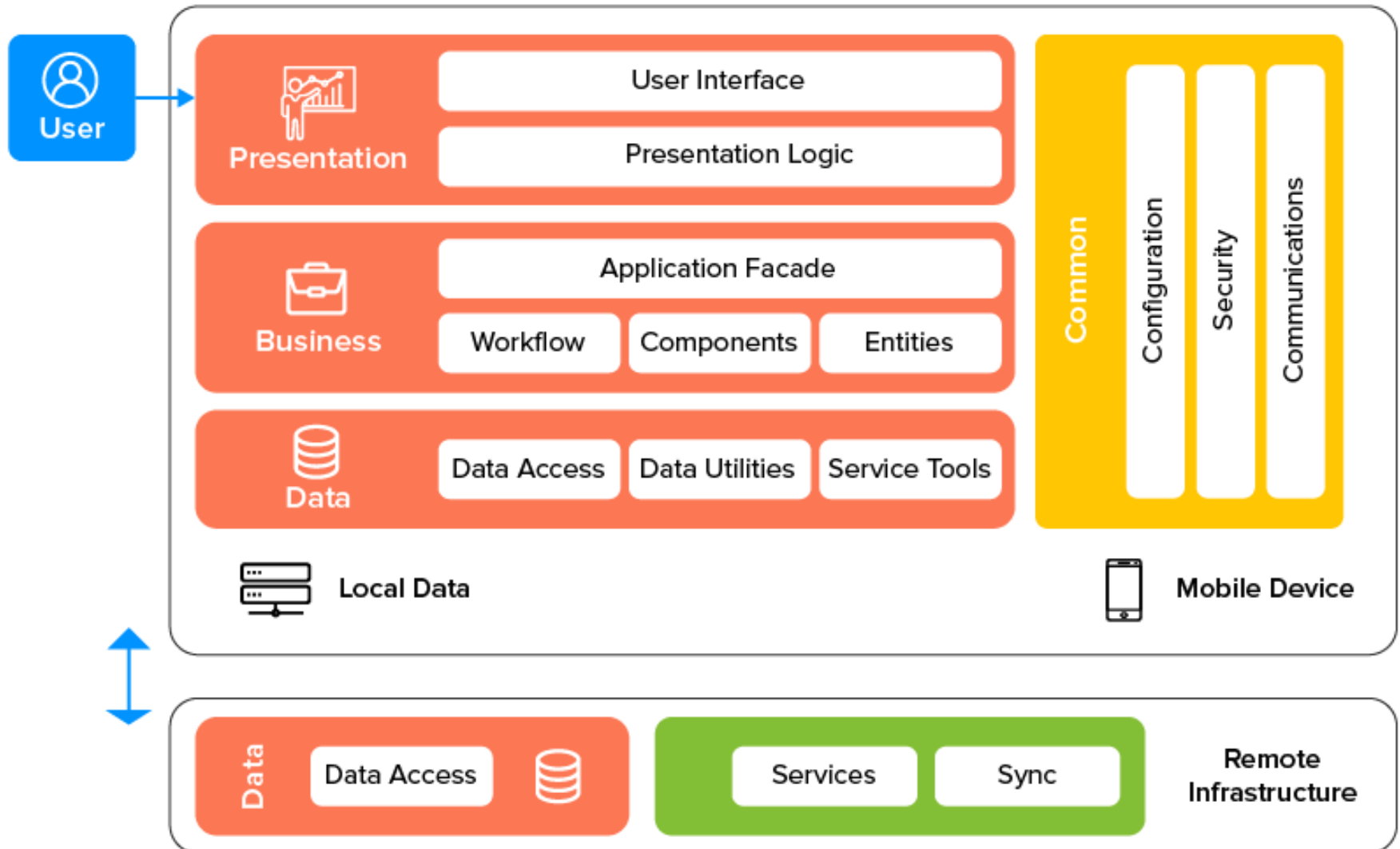
Interface Utilisateur (UI)

- Qu'est-ce que l'interface utilisateur Android ?
- Types d'interface utilisateur Android ?
- Qu'est-ce que ViewGroup et View ?
- Widgets
- Types de Layouts

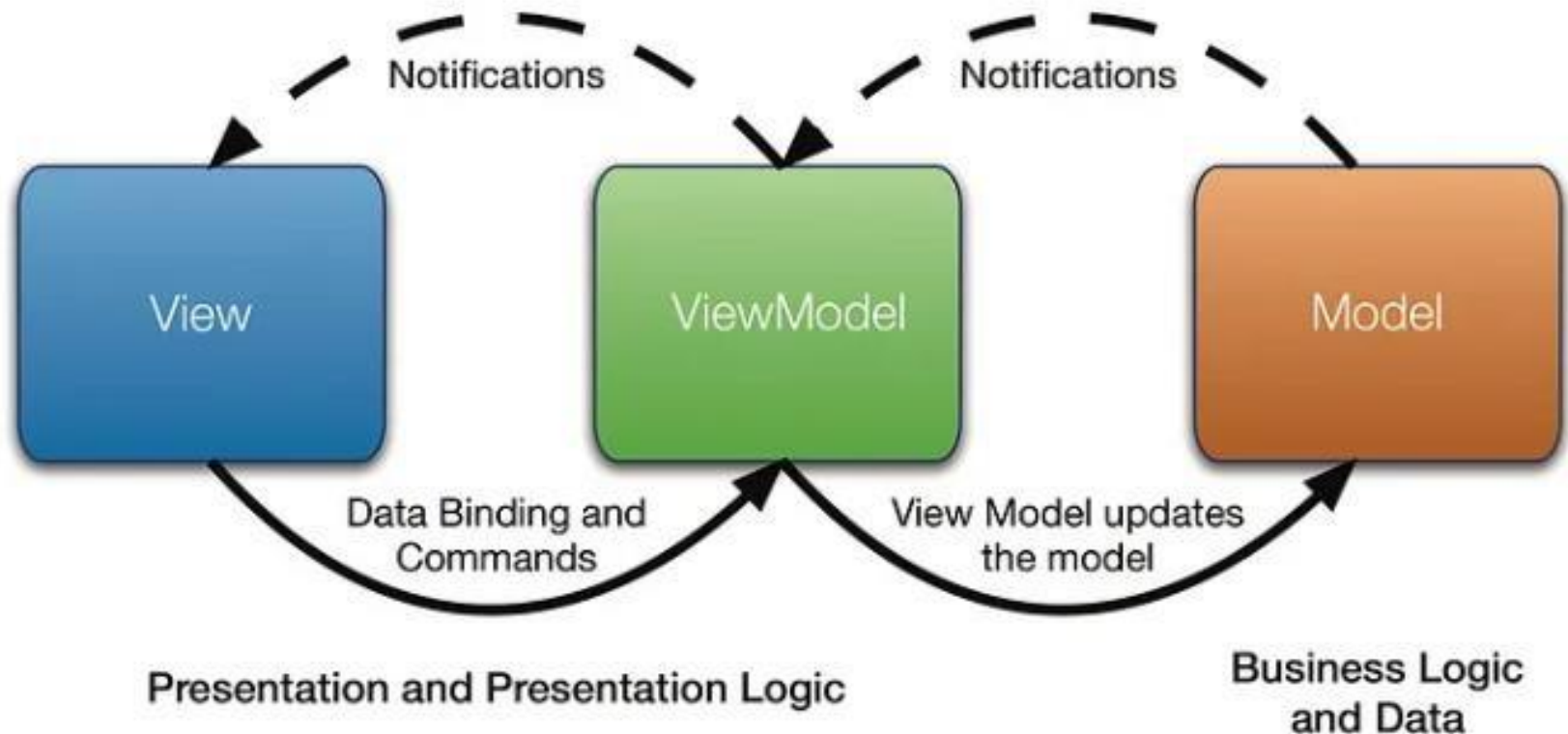
Introduction



Qu'est-ce que l'architecture des applications mobiles ?



A mobile app architecture diagram of the MVP pattern



Qu'est-ce que l'interface utilisateur Android ?



Interface utilisateur basée sur Android : quelques exemples



3G 3:45 PM

Serialization

Firstname

Lastname

Age

Home address

Line 1

Line2

Zipcode

City

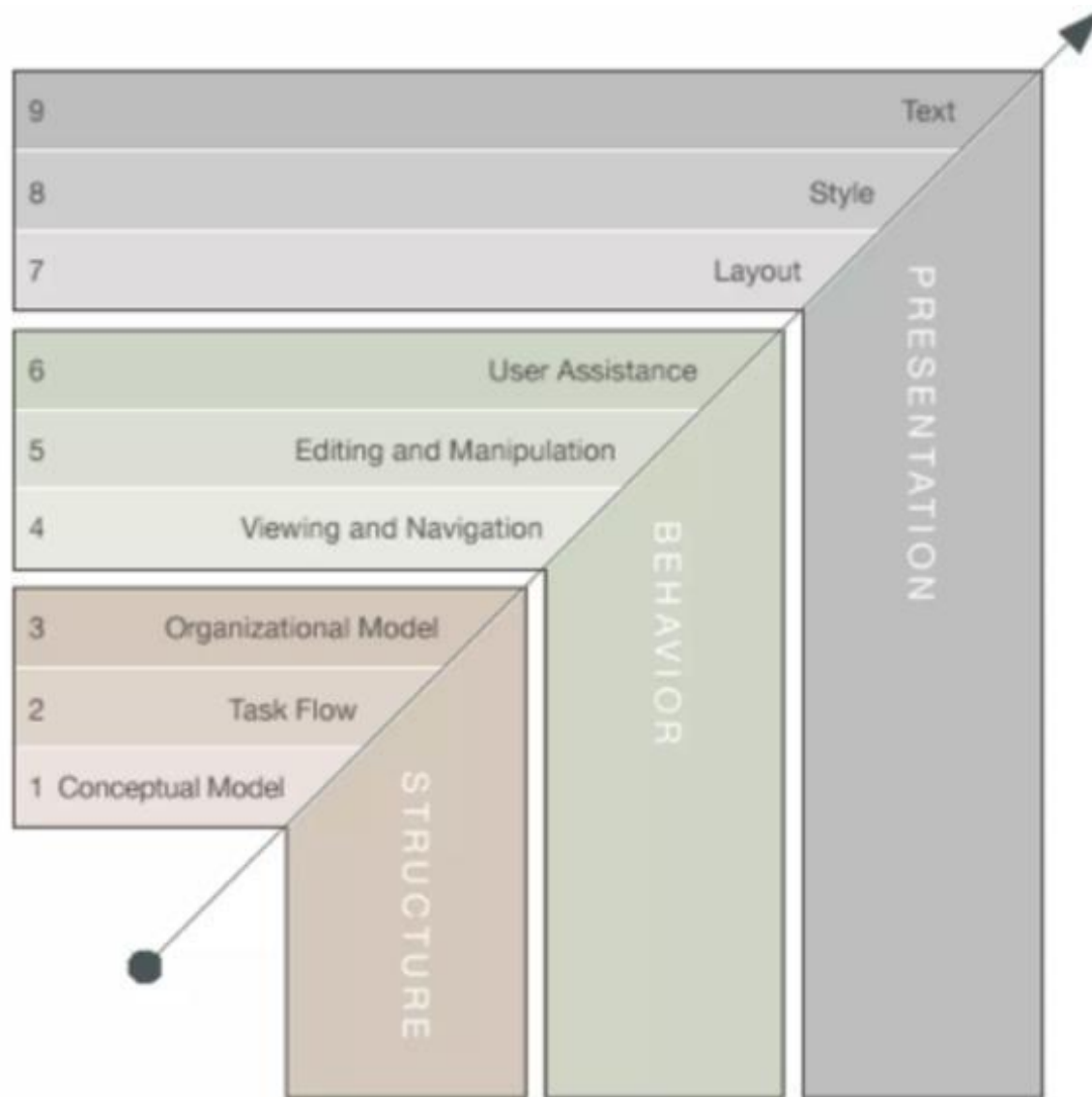
Country



Qu'est-ce que l'interface utilisateur (UI) Android ?

- ❑ Une frontière ou surface commune entre le système interactif et l'utilisateur
- ❑ Tous les éléments qui assurent la communication entre le système interactif et l'utilisateur
- ❑ Interface utilisateur dans la plate-forme Android, tout comme les autres interfaces utilisateur basées sur Java

Éléments d'une interface utilisateur




Création d'interface utilisateur des app mobile

❑ Création des interfaces utilisateur:

- **Statique** [Drag and Drop]
- **Dynamique** [Run time]

Interface utilisateur Java vs Interface utilisateur Android

Type d'application	Java [UI Design]	Android [UI Design]
Windows	Awt,Swings	
Web based	Html,css,java script	

Création d'interface utilisateur des app mobile

Android Design Code

DroidDraw

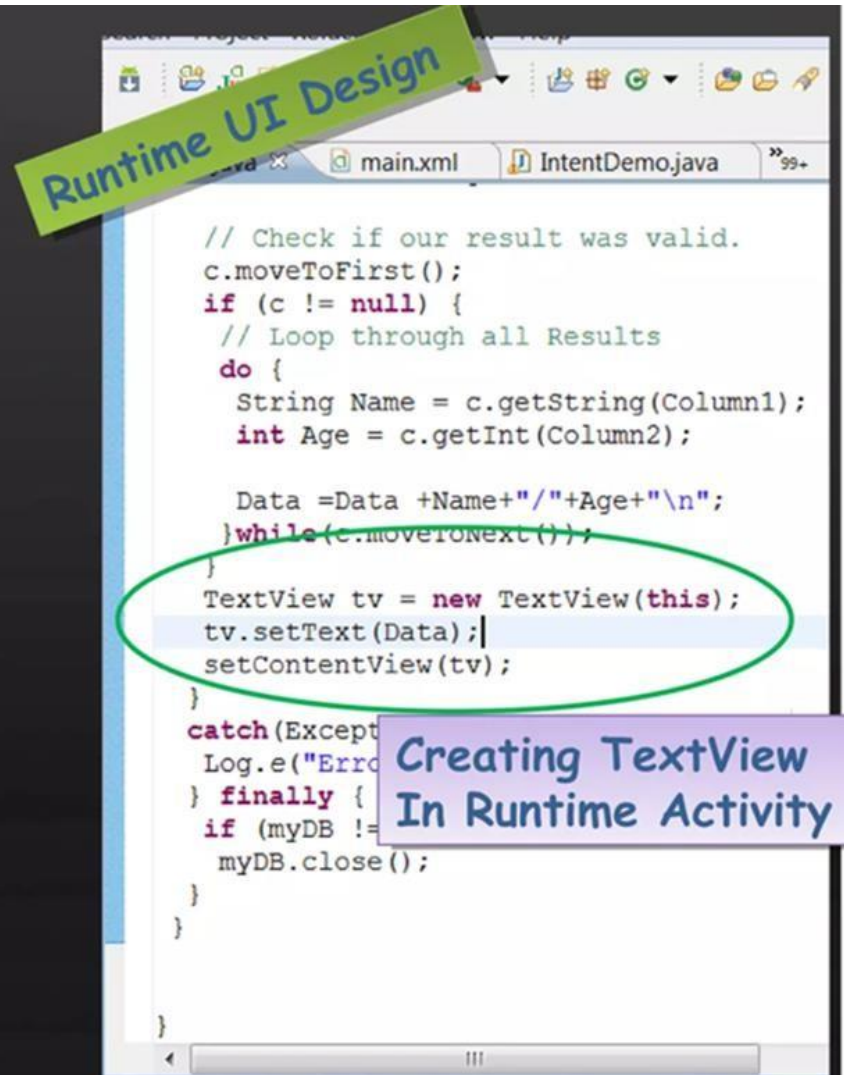
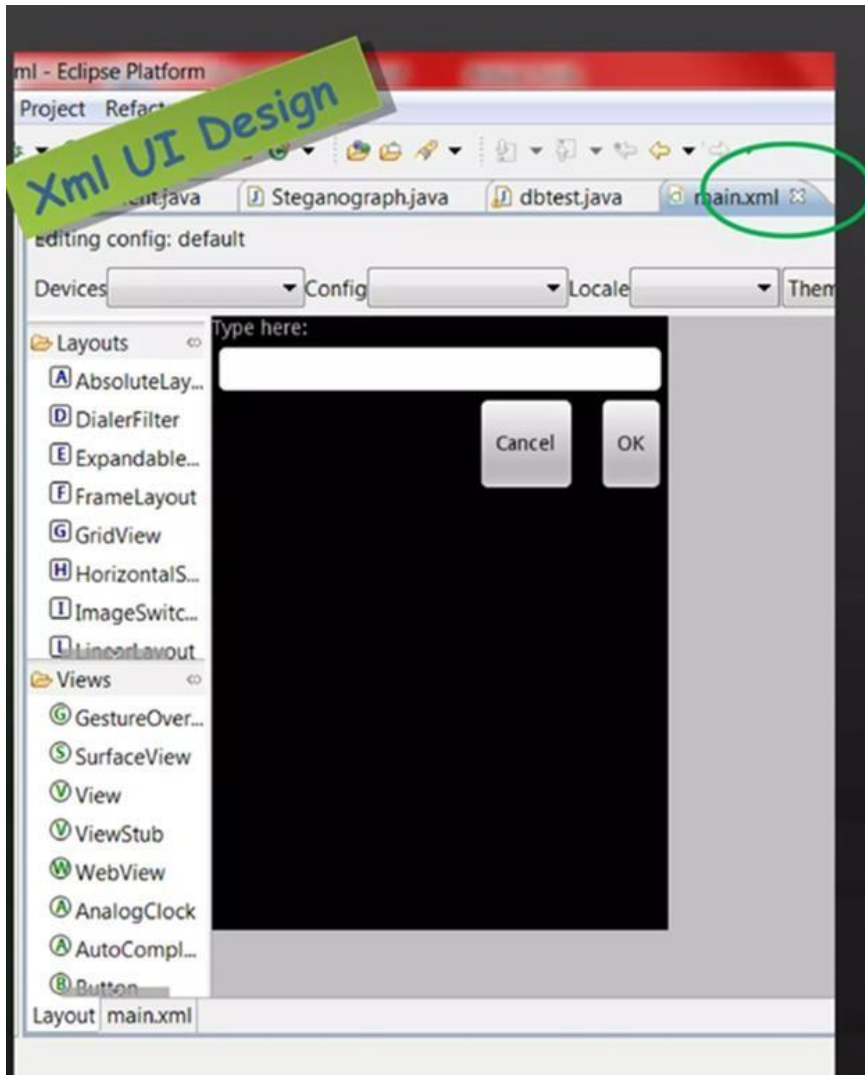
Sign Up

Sign in

Exit

```
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout
xmlns:android="http://schemas.android.com/apk/res/an
droid"
>
<Button
android:layout_width="100px"
android: text="Sign Up"
android:textStyle="bold"
android:layout_x="76px"
android:layout_y="115px"
>
</Button>
<Button
android:id="@+id/widget29"
>
</Button>
<Button
android:id="@+id/widget30"
android:layout_width="100px"
>
</Button>
```

Création d'interface utilisateur des app mobile

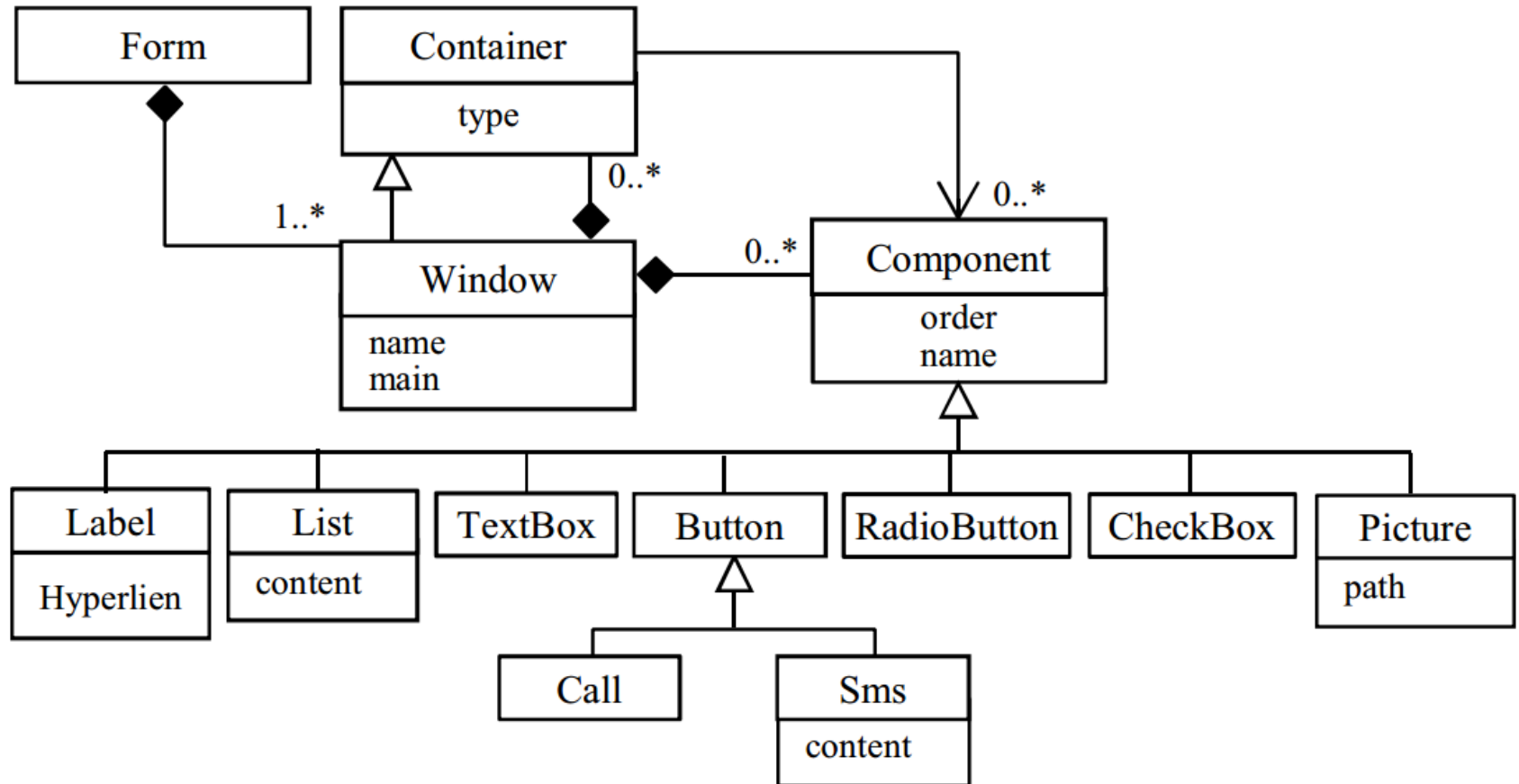


INTERFACE UTILISATEUR

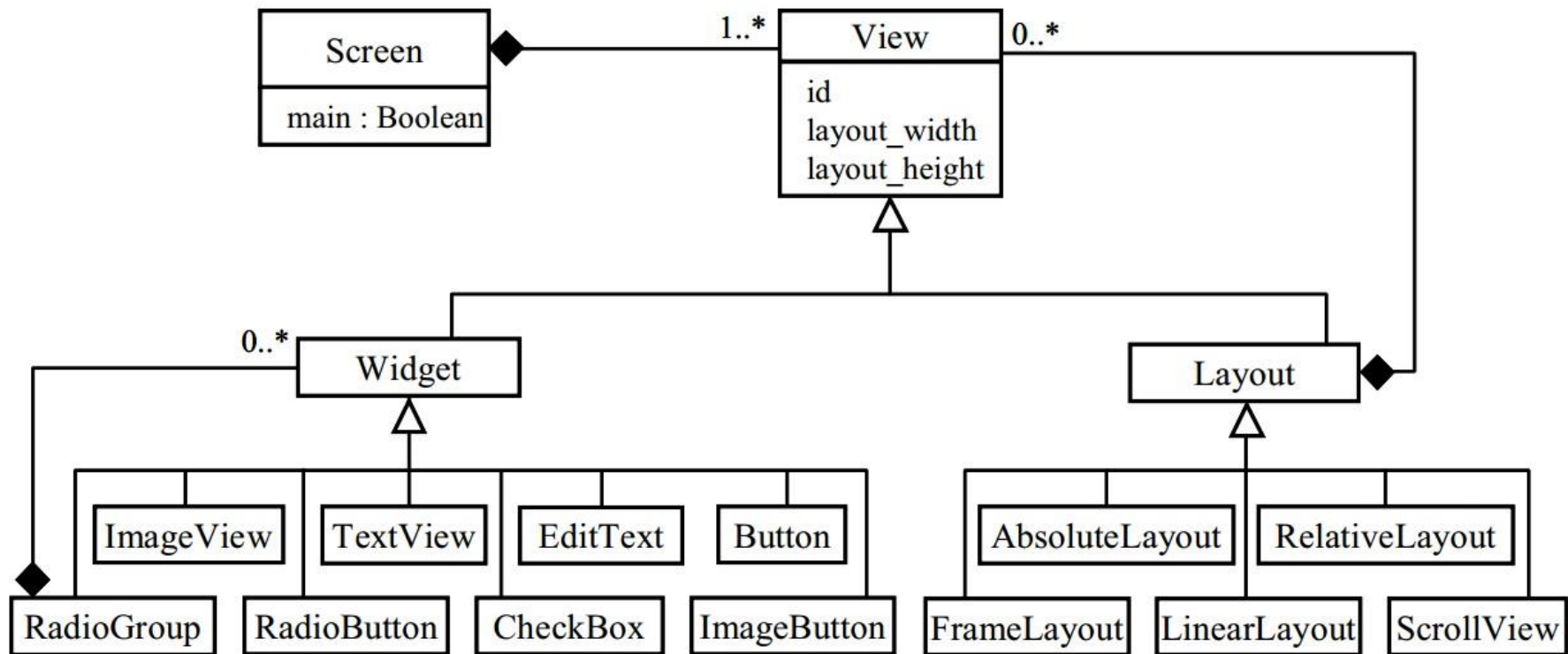
- **View/WIDGETS**
- **Layouts**



Un métamodèle d'application mobile



Un extrait du métamodèle de l'application Android



INTERFACE UTILISATEUR

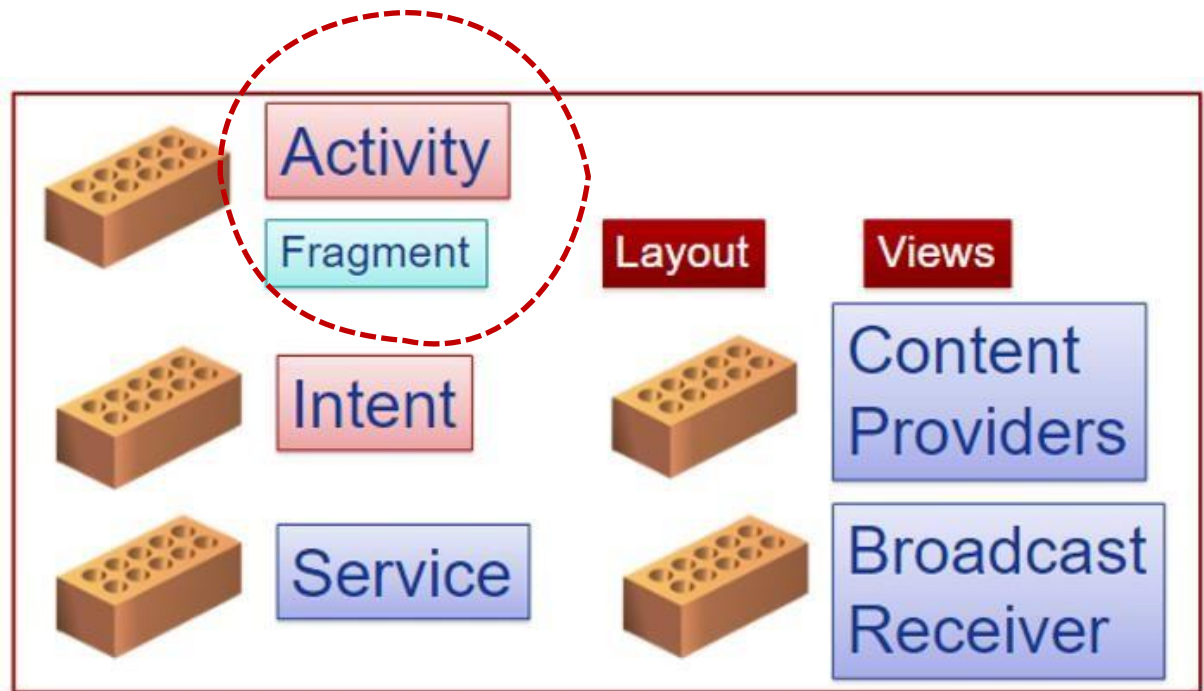
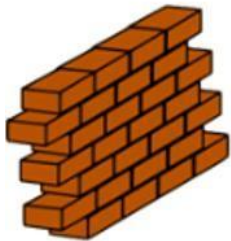
- **View/WIDGETS**

- **Layouts**



Applications Android: Design

Développer une application Android, c'est utiliser de manière appropriée **les composants de base d'Android...**



Android: Views & Layout

Composants de l'interface utilisateur (UI) d'une activité

ViewGroup

- ❖ **Conteneur** de View.
- ❖ Responsable du **placement** d'autres View sur l'écran
- ❖ Chaque layout doit étendre un **ViewGroup**

View

- ❖ **Composant de base (UI)**
- ❖ Peut gérer/produire des **événements**
- ❖ Nouveau composant: extension de **View**

Fichier XML ayant LinearLayout

Linear layout is a View Group that displays child View elements in a linear direction, either vertically or horizontally.

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical" >
```

Main.xml

Drag and Drop « Views »

```
<!-- More GUI components go here -->
```

```
</LinearLayout>
```

Fichier XML ayant LinearLayout

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical" >

    <TextView android:id="@+id/text"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="This is a TextView" />

    <Button android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="This is a Button" />

    <!-- More GUI components go here -->

</LinearLayout>
```



Views

View Group

Une fois votre mise en page (layout) est créée, vous pouvez charger **ressource** de mise en page (layout) à partir du code de votre application, dans votre implémentation « **Activity.onCreate()** »

```
public void onCreate(Bundle savedInstanceState) {  
    super.onCreate(savedInstanceState);  
    setContentView(R.layout.activity_main);  
}
```

Android: Views & Layout

Composants de l'interface utilisateur (UI) d'une activité



ViewGroup

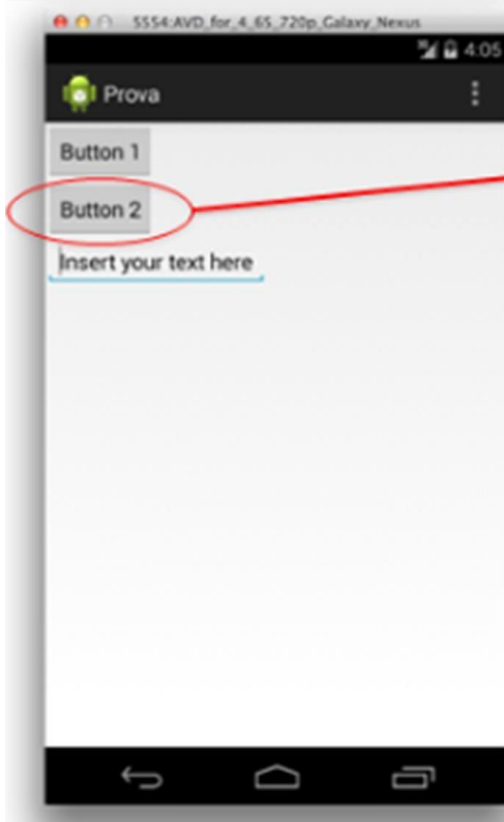
- ❖ **Conteneur** de View.
- ❖ Responsable du **placement** d'autres View sur l'écran
- ❖ Chaque layout doit étendre un **ViewGroup**

View

- ❖ **Composant de base (UI)**
- ❖ Peut gérer/produire des **événements**
- ❖ Nouveau composant: extension de **View**

Android: Views objects

Views → éléments de base pour les composants de l'interface utilisateur



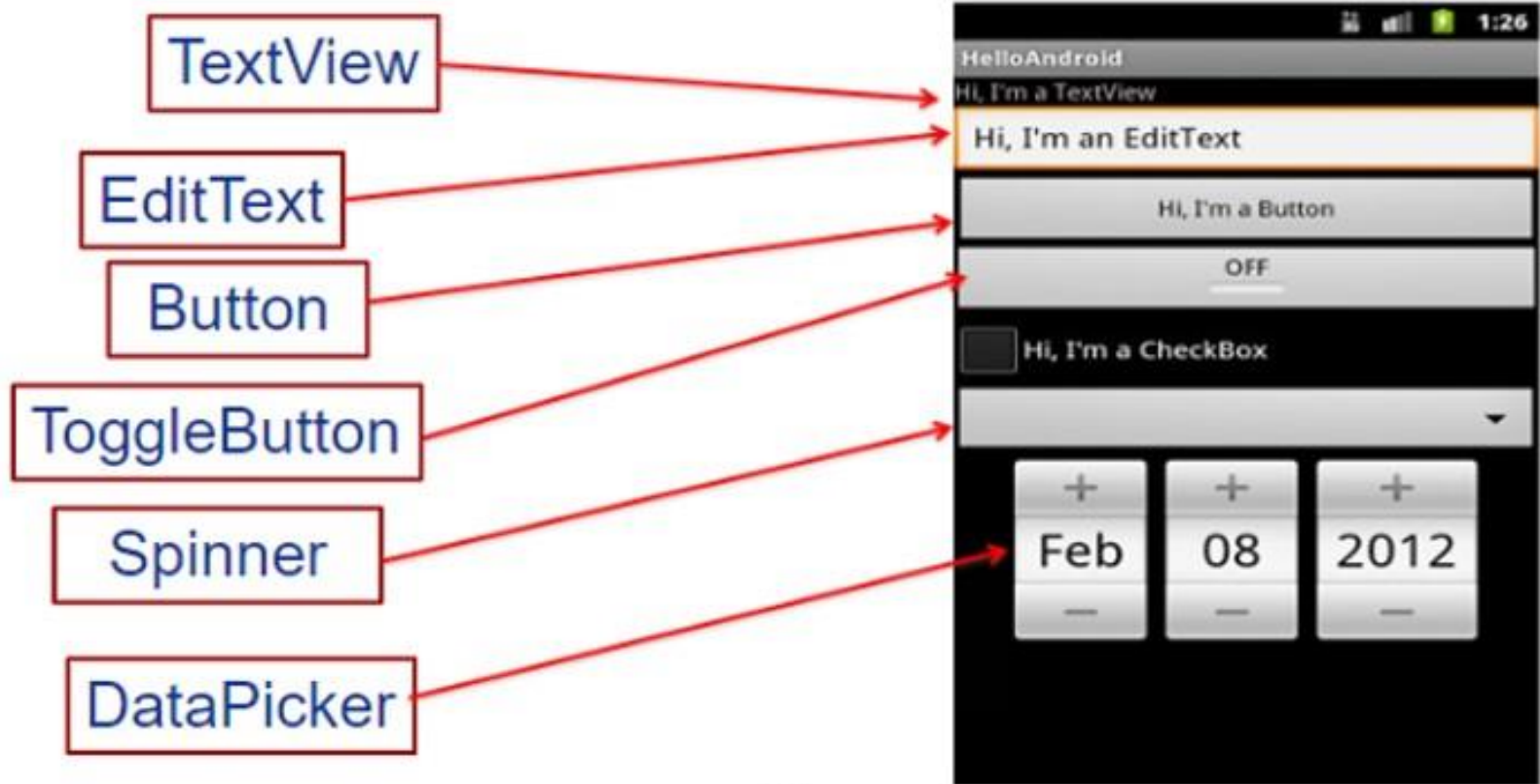
- ❖ Zone rectangulaire de l'écran
- ❖ Responsable du **dessin**
- ❖ Responsable de **la gestion des événements**

EXEMPLES d'objets **VIEWS** :

- GoogleMap
- WebView
- **Widgets** → sujet du jour
- User-defined Views

Android: Views objects

Widget → Composants d'interface utilisateur interactifs
prédéfinis (android.view.widgets)



Widgets: code XML

Widgets can be defined in the **XML layout files**

```
< TextView
    android:id="@+id/textLabel"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:visibility="visible"
    android:enabled="true"
    android:scrollbars="vertical"
    android:text="Hello World"
/>
```

Propriétés: définies via **Android : ... attributes**

Widgets: Code Java et XML

Les **widgets** peuvent être définis en **XML** et accessibles depuis **Java/Koltlin**

```
< TextView
```

```
    android:id="@+id/name1" />
```

XML

```
public TextView text;  
text=(TextView) findViewById (R.id.name1);
```

JAVA

CAST REQUIRED

```
public TextView text;  
text=new TextView();
```

Widgets: Code Java et XML

- ❑ Chaque widget peut avoir un **focus** et une **visibilité**, basés sur l'interaction de l'utilisateur.
 - ❑ L'utilisateur peut forcer le focus sur un composant spécifique via la méthode **requestFocus()**.
 - ❑ L'utilisateur peut modifier la visibilité d'un composant spécifique via la méthode **setVisibility(int)**.

```
public TextView text;  
text=(TextView) findViewById(R.id.name1);  
text.setVisibility(true)  
text.requestFocus();
```

Widgets: TextView

❖ XML tags: **<TextView> </TextView>**


- Peut être rempli de chaînes ou de **balises** HTML
- Non directement modifiable par les utilisateurs
- Habituellement utilisé pour afficher des informations **statiques**

```
<TextView  
    android:text="@string/textWelcome"  
    android:id="@+id/textLabel"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
>
```

Widgets: Méthods TextView

➤ Méthodes pour placer certains textes dans un TextView

- ❖ public void **setText**(CharSequence text)
- ❖ public **CharSequence** **getText**()
- ❖ public void **setSingleLine**(boolean singleLine)
- ❖ public void **setHorizontallyScrolling**(boolean enable)
- ❖ public void **setLines**(int lines)
- ❖ public void **setEllipsize**(TextUtils.TruncateAt where)
- ❖ public void **setHints**(CharSequence hints)

- 
- ❖ TextUtils.TruncateAt.**END**
 - ❖ TextUtils.TruncateAt.**MARQUEE**
 - ❖ TextUtils.TruncateAt.**MIDDLE**
 - ❖ TextUtils.TruncateAt.**START**

Widgets: EditText

- XML tags: **<EditText> </EditText>**
 - Similaire à un TextView, mais **modifiable** par les utilisateurs
 - Un **clavier** approprié sera affiché

```
<EditText
    android:text="@string/textDefault"
    android:id="@+id/editText"
    android:inputType="textCapSentences" |
                        "textCapWords" |
                        "textAutoCorrect" |
                        "textPassword" |
    "textMultiLine" />
```


Widgets: Button

❖ XML tags: **< Button></Button>**

- Sous-classe d'un TextView, mais non directement **modifiable** par les utilisateurs
- Peut générer des événements liés au clic, au clic long, etc.

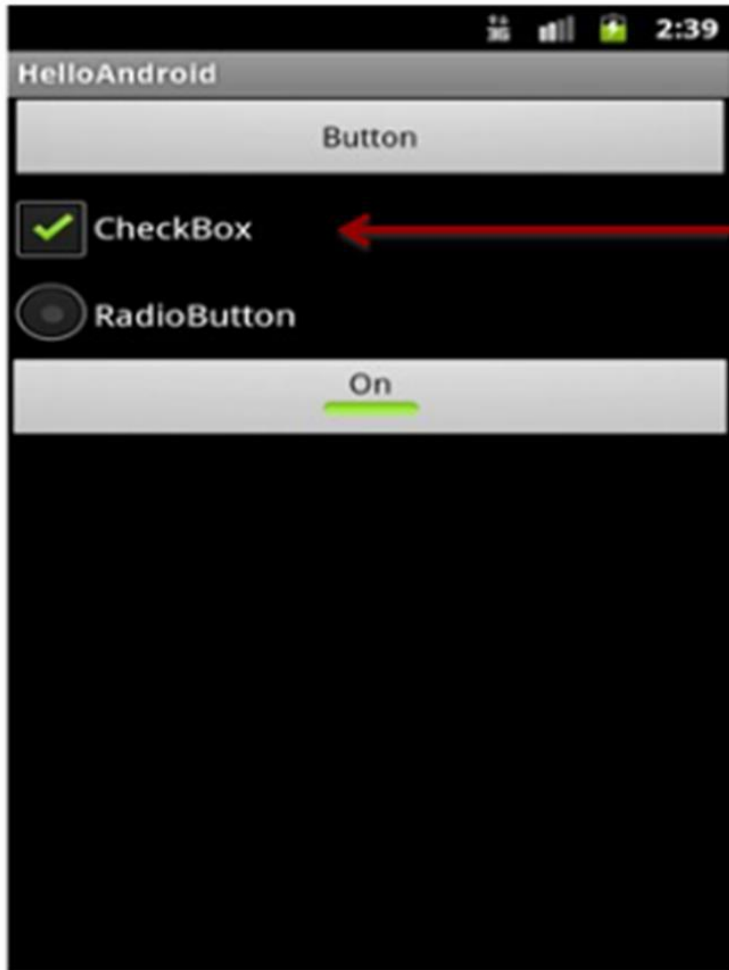
```
<Button  
    android:text="@string/textButton"  
    android:id="@+id/idButton"  
    android:background="@color/blue"  
>
```

```
<selector>  
    <item  
        android:color="#ff819191"  
        android:state_pressed="true">  
    </item>  
</selector>
```

res/color/blue.xml

❖ **CompoundButton**: Button + *state* (checked/unchecked)

Widgets: Button and CompoundButton

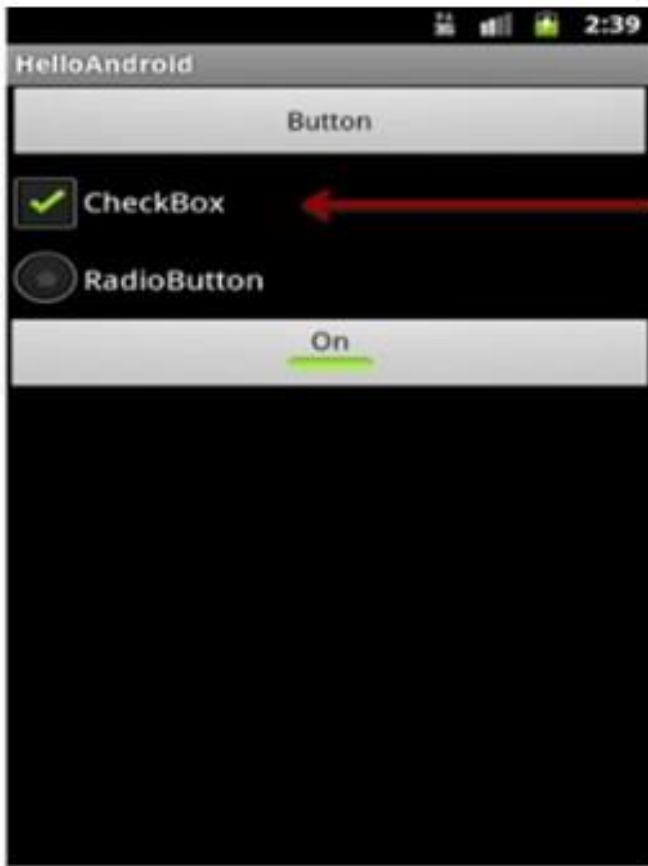


checkBox CompoundButton

XML tags: **<checkBox>**

```
<checkBox  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:id="@+id/buttonCheck"  
    android:text="CheckBox"  
    android:checked="true"  
/>
```

Widgets: Button and CompoundButton



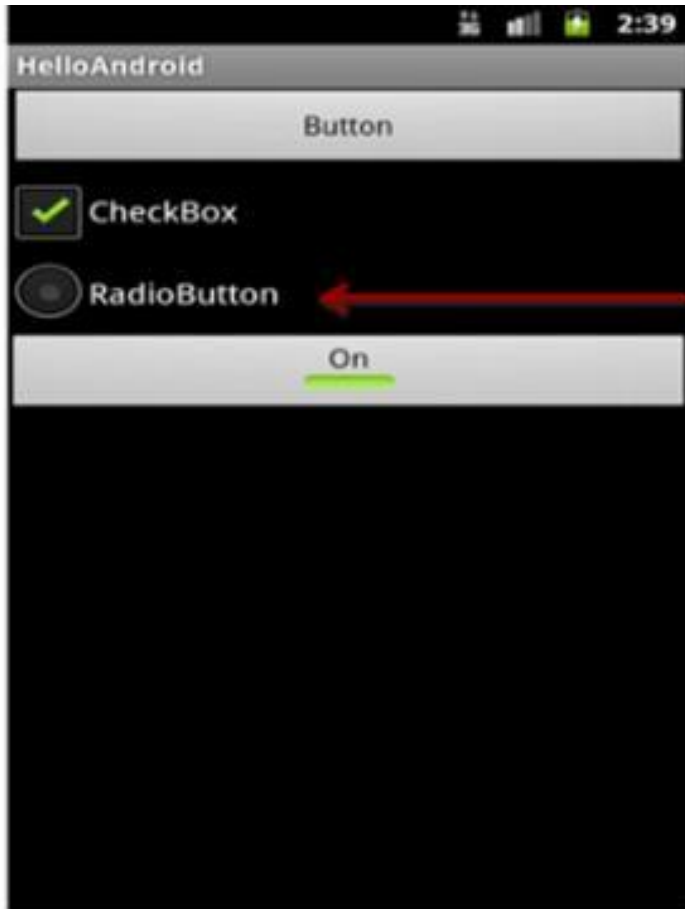
checkBox CompoundButton

- ❖ **public boolean isChecked():**
Returns true if the button is checked, false otherwise.
- ❖ **public boolean setChecked(bool)**

Listener:

onCheckedChangeListener

Widgets: Button and CompoundButton

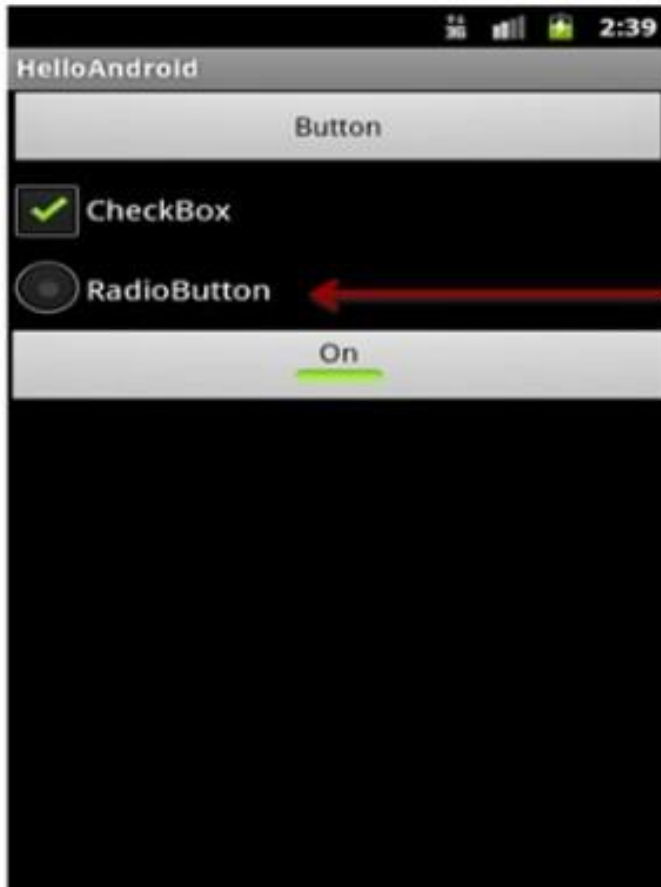


radioButton CompoundButton

XML tags: **<RadioButton>**

```
<RadioButton  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:id="@+id/buttonRadio"  
    android:text="ButtonRadio"  
    android:checked="true"  
/>
```

Widgets: Button and CompoundButton



radioButton CompoundButton

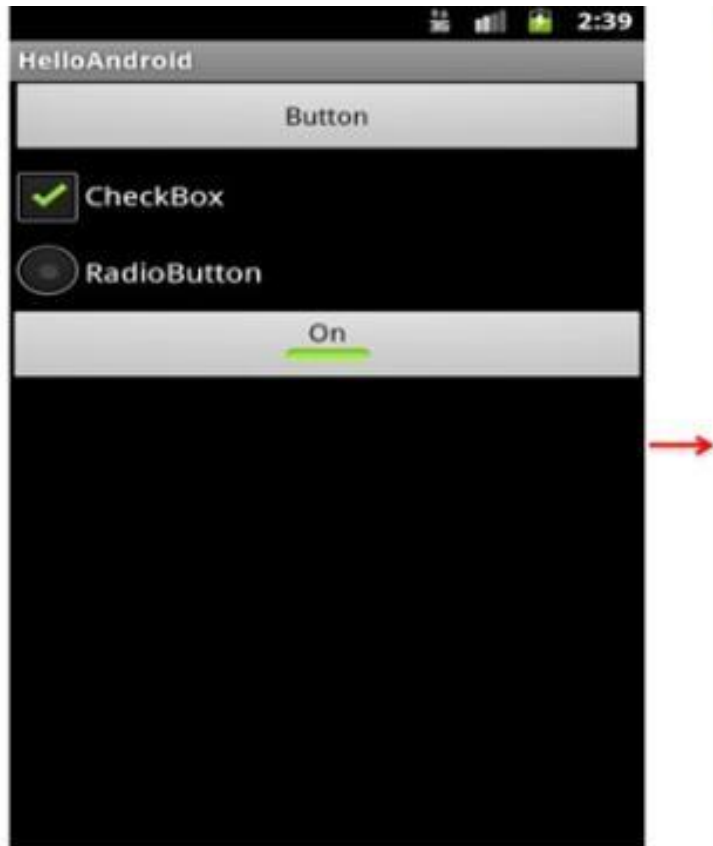
✧ Define multiple (**mutual-exclusive**) options through a `<RadioGroup>` tag.

✧ Only one button can be checked within the same **RadioGroup**.

Listener:

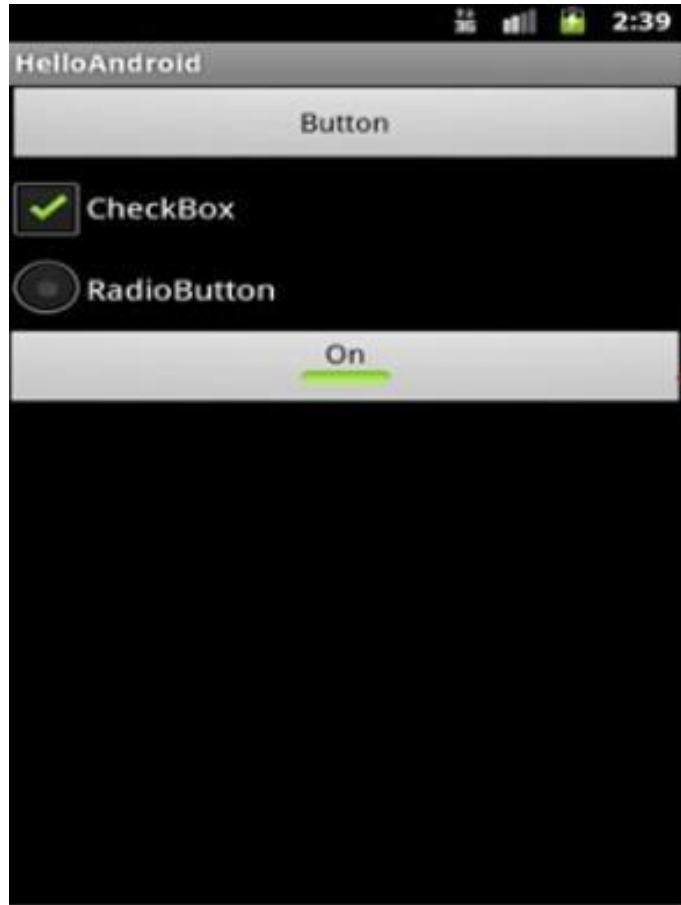
`OnCheckedChangeListener`

Widgets: Button and CompoundButton



```
<RadioGroup
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:orientation="vertical">
    <RadioButton
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/buttonRadio1"
        android:text="Option 1"
        android:checked="true" />
    <RadioButton
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/buttonRadio2"
        android:text="Option 2" />
</RadioGroup >
```

Widgets: Button and CompoundButton



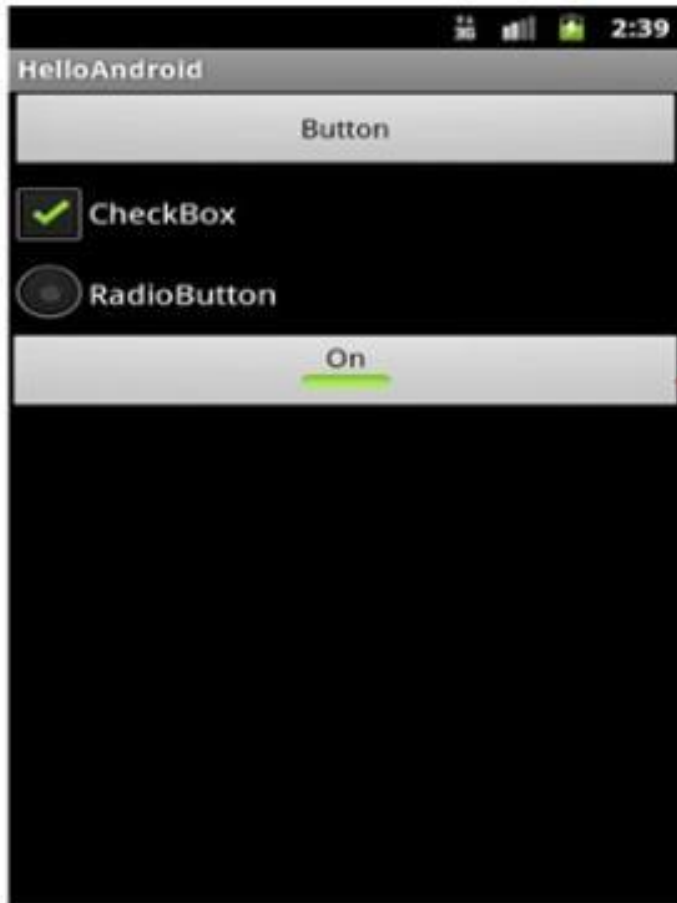
toggleButton CompoundButton

- It can assume only 2 states: checked/unchecked
- Different labels for the states with:
android:textOn and
android:textOff XML attributes.

Listener:

- `OnCheckedChangeListener`

Widgets: Button and CompoundButton



toggleButton CompoundButton

XML tags: **<ToggleButton>**

```
<ToggleButton  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:id="@+id/toggleButtonId"  
    android:textOn="Button ON"  
    android:textOff="Button OFF"  
    android:checked="false"  
>
```


Widgets: Spinners



Spinner component

XML tags: **<Spinner>**

- ✧ Provides a quick way to select values from a specific set.
- ✧ The spinner value-set can be defined in XML (through the **entries** tag) or through the *SpinnerAdapter* in Java

Listener:

OnItemSelectedListener

Widgets: Spinners



Spinner component

XML tags: **<Spinner>**

```
<resources>
  <string-array name="stringOptions">
    <item>Option 1</item>
    <item>Option 2</item>
    <item>Option 3</item>
    <item>Option 4</item>
  </string-array>
</resources>
```

res/values.xml

```
<Spinner
  android:layout_width="wrap_content"
  android:layout_height="wrap_content"
  android:id="@+id/spinnerId"
  android:entries="@array/stringOptions">
/>
```

Widgets: Button and CompoundButton

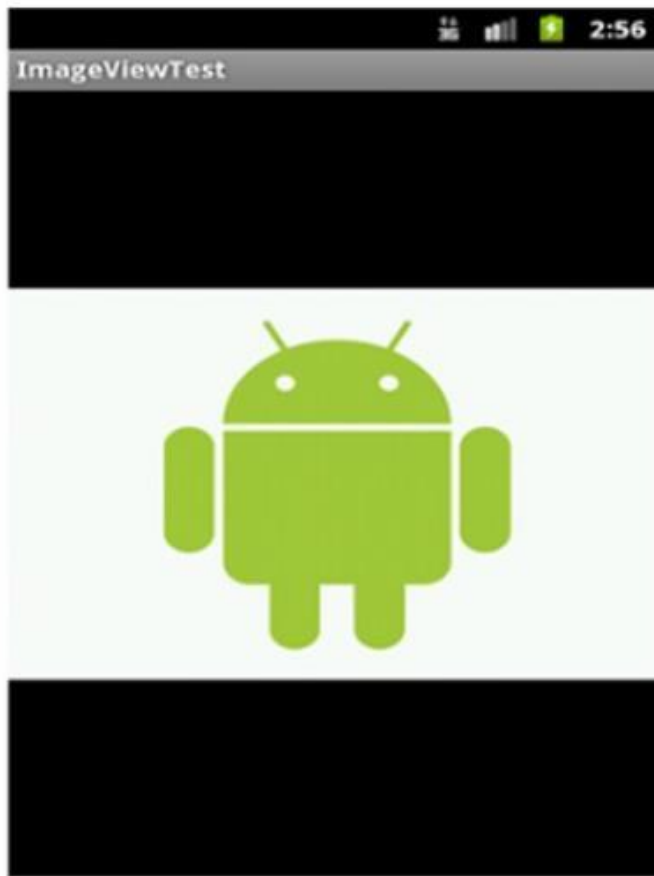


DatePicker component

XML tags: **<DatePicker>**

```
<DatePicker  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:id="@+id/datePickerId"  
    android:endYear="1990"  
    android:startYear="2014"  
    android:maxDate="10/10/2014"  
/>
```

Widgets: ImageView



ImageView: subclass of View object.

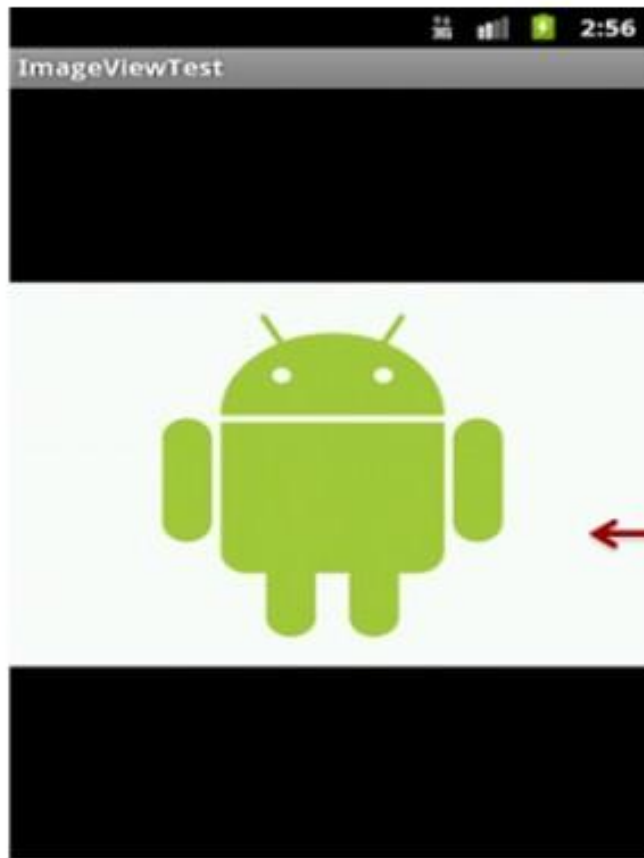
Some methods to manipulate an image:

- void **setScaleType** (enum scaleType)
- void **setAlpha** (double alpha)
- void **setColorFilter** (ColorFilter color)



CENTER, CENTER_CROP, CENTER_INSIDE,
FIT_CENTER, FIT_END, FIT_START, FIT_XY, MATRIX

Widgets: ImageView



ImageView component

XML tags: **<ImageView>**

```
<ImageView  
  android:layout_width="wrap_content"  
  android:layout_height="wrap_content"  
  android:id="@+id/imageId"  
  android:src="@drawable/android"  
>
```

Source: **android** .jpg in drawable/

View & Events



View & Events

Les vues/Widgets sont des composants **interactifs** → Lors de certaines actions de l'utilisateur, un événement approprié sera déclenché



clic, clic long, focus, éléments sélectionnés, éléments cochés, glisser,...



Comment gérer les événements générés par une View ?

1. Directement depuis **XML**

2. Via **Event Listeners** (général, recommandé)

View and Events

Pour un ensemble limité de composants, il est possible de gérer les événements via des **rappels** indiqués dans la mise en page XML.

```
<Button  
  android:text="@string/textButton"  
  android:id="@+id/idButton"  
  android:onClick="doSomething"  
>
```

XML Layout File

Java code

```
public void doSomething(View w) {  
    // Code to manage the click  
    event  
}
```


View & Events

Les vues/Widgets sont des composants **interactifs** → Lors de certaines actions de l'utilisateur, un événement approprié sera déclenché



clic, clic long, focus, éléments sélectionnés, éléments cochés, glisser,...



Comment gérer les événements générés par une View ?

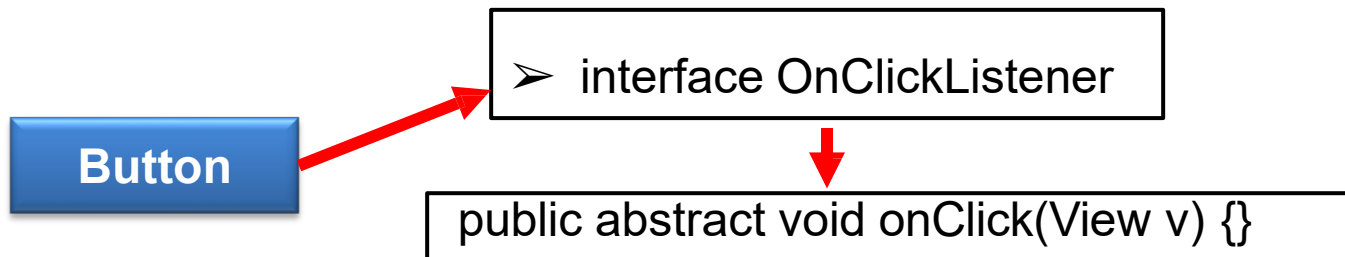
1. Directement depuis **XML**

2. Via **Event Listeners** (général, recommandé)

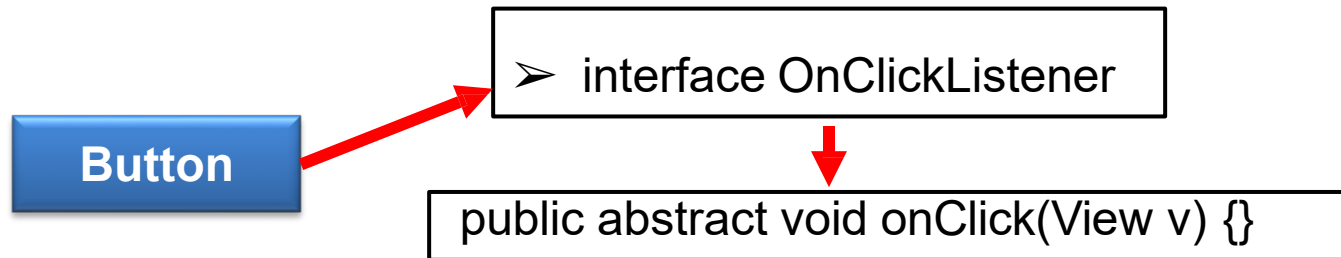
View & Events

Chaque View contient une collection d'interfaces imbriquées (listeners).

- Chaque listener gère un seul **event** ...
- Chaque listener contient une seule méthode de rappel...
- Le rappel est invoqué lors de l'apparition de l'événement.



View & Events



```
...  
Button button=(Button)findViewById(R.id.buttonNext);  
button.performClick();  
...
```

```
// Callback method  
public void onClick(View v) {  
    ...  
}
```

View & Events: ActionListener

LISTE DES INTERFACES **ACTIONLISTENER**

- interface **OnClickListener**
abstract method: *onClick()*
- interface **OnLongClickListener**
abstract method: *onLongClick()*
- interface **OnFocusChangeListener**
abstract method: *onFocusChange()*
- interface **OnKeyListener**
abstract method: *onKey()*
- interface **OnCheckedChangeListener**
abstract method: *onCheckedChanged()*

- interface **OnItemSelectedListener**
abstract method: *onItemSelected()*
- interface **OnCheckedChangeListener**
abstract method: *onCheckedChanged()*
- interface **OnItemSelectedListener**
abstract method: *onItemSelected()*
- interface **OnTouchListener**
abstract method: *onTouch()*
- interface **OnCreateContextMenuListener**
abstract method: *onCreateContextMenu()*

INTERFACE UTILISATEUR

- **View/WIDGETS**

- **Layouts**



Android: Views & Layout

Composants de l'interface utilisateur (UI) d'une activité



ViewGroup

- ❖ **Conteneur** de View.
- ❖ Responsable du **placement** d'autres View sur l'écran
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View

- ❖ **Composant de base (UI)**
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Android: ViewGroups

ViewGroup → définir l'emplacement des vues.

➤ Défini en code Java/kotlin (activity file)

➤ Défini en XML (layout file)



❖ Utiliser des **balises XML** pour placer un ViewGroup

❖ Placez une View dans ViewGroup en utilisant ces **attributs XML**

android:layout_width

android:layout_height



match_parent | wrap_content

Android: ViewGroups

Liste des **Layouts** les plus courantes fournies par Android

Nom	XML Tag	Description
LinearLayout	<code><LinearLayout></code> <code></LinearLayout></code>	arrange Views by aligning them on a single row or column
RelativeLayout	<code><RelativeLayout></code> <code></RelativeLayout></code>	arrange Views through relative positions
TableLayout	<code><TableLayout></code> <code></TableLayout></code>	arrange Views into rows and columns
FrameLayout	<code><FrameLayout></code> <code></FrameLayout></code>	arrange a single View within a Layout
AbsoluteLayout	<code><AbsoluteLayout></code> <code></AbsoluteLayout></code>	arrange Views through absolute positions
ConstraintLayout	<code><ConstraintLayout></code> <code></ConstraintLayout></code>	arrange views through constraints in ConstraintLayout:

❖ Un Layout peut être déclaré dans un autre layout

Android: ViewGroups

Liste des **Layouts** les plus courantes fournies par Android

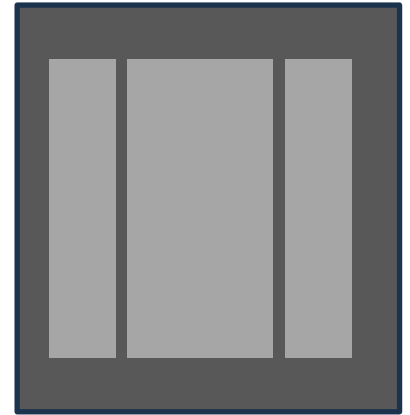
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❖ Un Layout peut être déclaré dans un autre layout

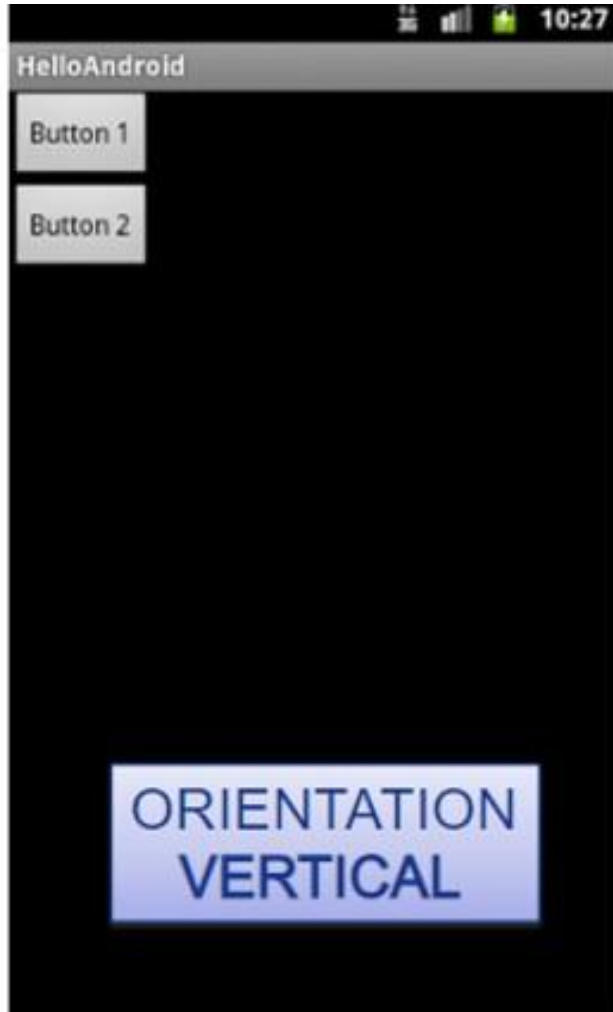
Android: ViewGroups

LinearLayout → view group that aligns all children in a single direction, vertically or horizontally

- ❖ **Orientation** can be declared through XML tag
android:orientation= HORIZONTAL|VERTICAL
- ❖ **Orientation** can also be declared in Java through
`setOrientation(int orientation)`
- ❖ Views has also other two attributes:
 - gravity** → Align the View with its parent
 - weight** → How much space is assigned to the View



Android: ViewGroups



Android: ViewGroups

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical" >          <!-- Also horizontal ->
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/buttonString1" />
    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/buttonString2" />
</LinearLayout>
```

Android: ViewGroups

- ❖ For each **View** in a **LinearLayout**, we can set the **android:weight** XML property (integer value)



Importance of a View, how much it can **expand**

```
<LinearLayout>
<Button
...android:layout_width=match_parent
  android:weight=1/>
<Button ...
  android:layout_width=match_parent
  android:weight=1/>
</LinearLayout>
```

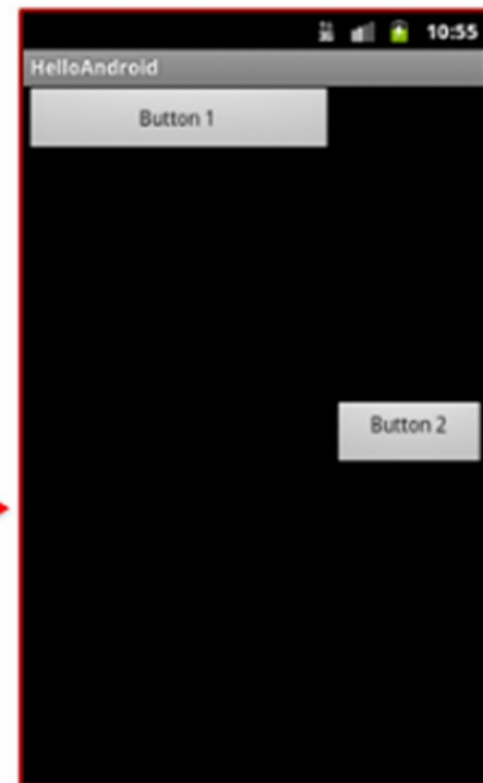


Android: ViewGroups

- ❖ For each **View** in a **LinearLayout**, we can set the **layout_gravity** XML property

↓
Align a View with its parent (LinearLayout)

```
<LinearLayout>
<Button ...
android:layout_width=match_parent
android:weight=1/>
<Button ...
android:layout_width=match_parent
android:layout_gravity="center_vertical"
android:weight=2/>
</LinearLayout>
```



Android: ViewGroups

Liste des **Layouts** les plus courantes fournies par Android

Nom	XML Tag	Description
LinearLayout	<code><LinearLayout></code> <code></LinearLayout></code>	arrange Views by aligning them on a single row or column
RelativeLayout	<code><RelativeLayout></code> <code></RelativeLayout></code>	arrange Views through relative positions
TableLayout	<code><TableLayout></code> <code></TableLayout></code>	arrange Views into rows and columns
FrameLayout	<code><FrameLayout></code> <code></FrameLayout></code>	arrange a single View within a Layout
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ConstraintLayout	<code><ConstraintLayout></code> <code></ConstraintLayout></code>	arrange views through constraints in ConstraintLayout:

❖ Un Layout peut être déclaré dans un autre layout

Android: ViewGroups

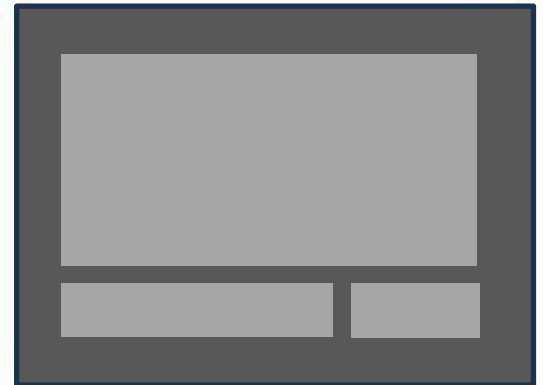
RelativeLayout → View group that displays all **Views** based in relative positions.



RELATIVE= COMPARED to the PARENT LAYOUT

```
android:alignParentBottom="true|false"  
android:alignParentTop="true|false"  
android:alignParentLeft="true|false"  
android:alignParentRight="true|false"  
android:alignParentStart="true|false"  
android:alignParentEnd="true|false"
```

...



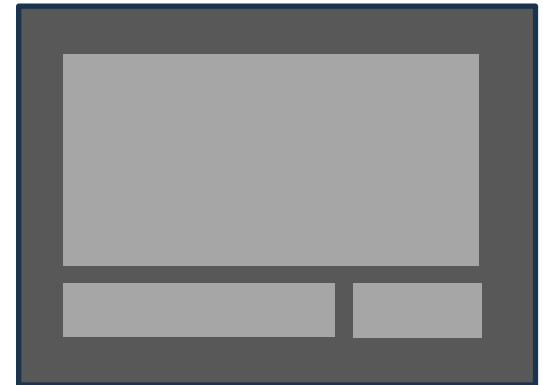
Android: ViewGroups

RelativeLayout → View group that displays all **Views** based in relative positions.

RELATIVE= COMPARED to SIBLING VIEWs

```
android:toLeftOf= ID  
android:toRightOf= ID  
android:toStartOf= ID  
android:toEndOf= ID  
...
```

XML Identifier
of the View
used as reference
point



Android: ViewGroups

ACTIVITY_MAIN.XML

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"    android:layout_height="match_parent" >

    <EditText
        android:id="@+id/username"        android:text="username"
        android:inputType="text"
        android:layout_width="wrap_content"    android:layout_height="wrap_content"
        android:layout_alignParentRight="true"
        android:layout_toRightOf="@+id/usernameLabel" >

    </EditText>

    <TextView
        android:id="@+id/usernameLabel"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignBaseline="@+id/username"
        android:text="Username" />
```

CONTINUE



Android: ViewGroups

```
<EditText
    android:id="@+id/password"    android:text="password"
    android:inputType="textPassword"
    android:layout_below="@+id/username"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignLeft="@+id/username"
    android:layout_alignParentRight="true"
    android:layout_toRightOf="@+id/usernameLabel" >
</EditText>

<TextView
    android:id="@+id/passwordLabel"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignBaseline="@+id/password"
    android:text="Password" />
</RelativeLayout>
```

ACTIVITY_MAIN.XML



Android: ViewGroups

Liste des **Layouts** les plus courantes fournies par Android

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❖ Un Layout peut être déclaré dans un autre layout

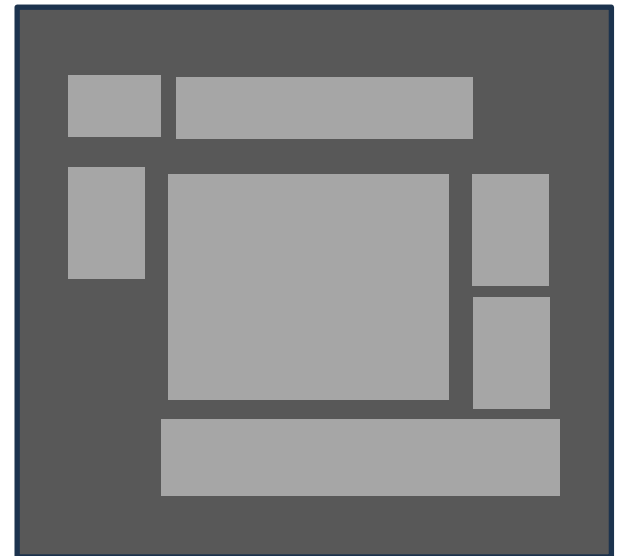
Android: ViewGroups

TableLayout → View group that arranges all **Views** into rows and columns (as an HTML table)

PROPERTIES

1. Consists of a list of **TableRow** objects, each defining a row of the Table.
2. The **width** of a column is defined by the row with the **widest** cell in that column.
3. Cells can be **empty**, or can **span** multiple columns (like in HTML).
4. Border lines of the cells are not displayed.

PROPERTIES Android: ViewGroups



Android: ViewGroups

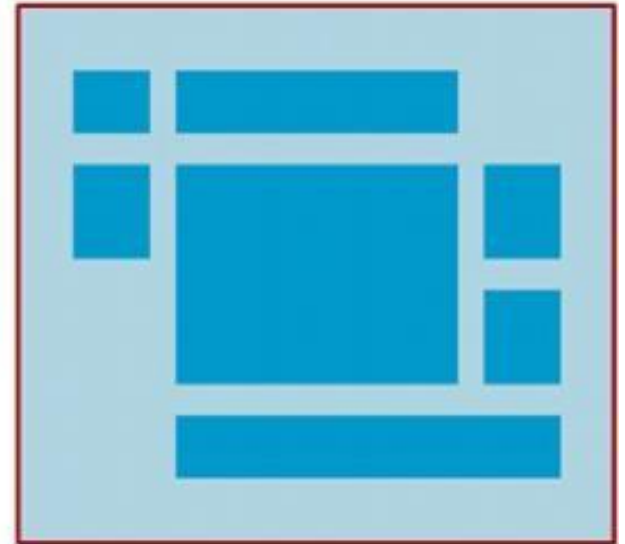
TableLayout → View group that arranges all **Views** into rows and columns (as an HTML table)

ADDITIONAL XML attributes

`android:layout_column`
`android:layout_span`
`android:collapsecolumn`
`android:shrinkColumns`
`android:stretchColumns`

} Apply only to
width

`layout_width` is always **WRAP_CONTENT**
`layout_height` is **WRAP_CONTENT** (default)



Android: ViewGroups

```
<?xml version="1.0" encoding="utf-8"?>
<TableLayout android:layout_width="fill_parent"
    android:layout_height="fill_parent" xmlns:android=schemas.android.com/apk/res/android
    android:id="@+id/tableLayout">
    <TableRow android:layout_width="wrap_content" android:layout_height="wrap_content" android:id="@+id/firstRow">
        <Button
            android:id="@+id/button1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Button" />
        <Button android:id="@+id/button2"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:text="Button" />
        <Button android:id="@+id/button3"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:text="Button" />
    </TableRow>
```

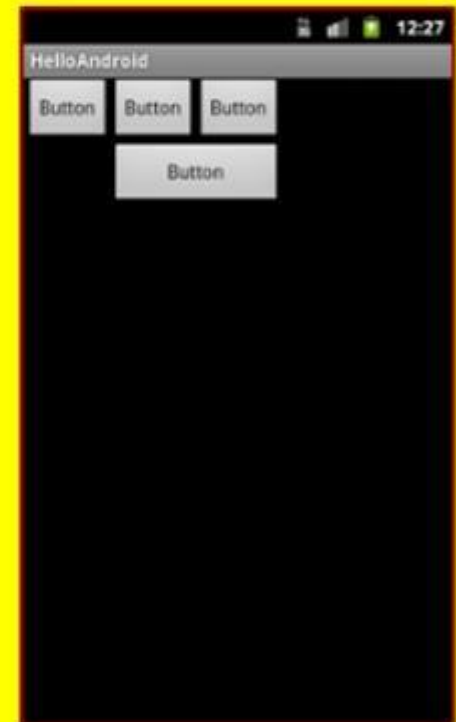
ACTIVITY_MAIN.XML

CONTINUE
→

Android: ViewGroups

```
<TableRow  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:id="@+id/secondRow">  
  
    <Button  
        android:layout_column="1"  
        android:layout_span="2"  
        android:id="@+id/button4"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"  
        android:text="Button">  
    </Button>  
</TableRow>  
</TableLayout>
```

ACTIVITY_MAIN.XML



Android: ViewGroups

Liste des **Layouts** les plus courantes fournies par Android

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❖ Un Layout peut être déclaré dans un autre layout

Android: ViewGroups

FrameLayout → Block out an area on the screen to display a single item (i.e. a single View).



- ❖ It should be used to display a **single View** within the Layout
- ❖ Multiple views can be controlled through **android:layout_gravity**

AbsoluteLayout → Arrange Views on the screen by specifying absolute x-y positions of each View.



- ❖ **Deprecated**, since it is dependant of the **screen resolution**

Agenda

Interface
Utilisateur (UI)

Expérience
Utilisateur

Utilisabilité

Android et les
Design Patterns

Optimisation des
performances de UI

Challenge

Thank you !

Questions ? abdelkader.ouared@univ-tiaret.dz

