Lesson 8

Android
Using Menus

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Notes are based on:

The Busy Coder's Guide to Android Development
by Mark L. Murphy

ISBN: 978-0-9816780-0-9
&
Android Developers
http://developer.android.com/index.html

Using Menus

- Menus are used to add functionality without cluttering the UI.
- A menu is displayed as an overlapping layer on top of the current UI.
- In principle an *unlimited* number of additional operations could be added in a single menu
- An application could have any number of menus.

Android supports two types of menus: **options menu** and **context menu**.

1. The ***options menu*** is triggered by pressing the hardware/virtual **Menu** button on the device, while

2. the ***context menu*** is raised by a *tap-and-hold interaction* on the widget associated to the menu.

Using Menus

Figure 1.
Using an ***option menu & physical menu button***

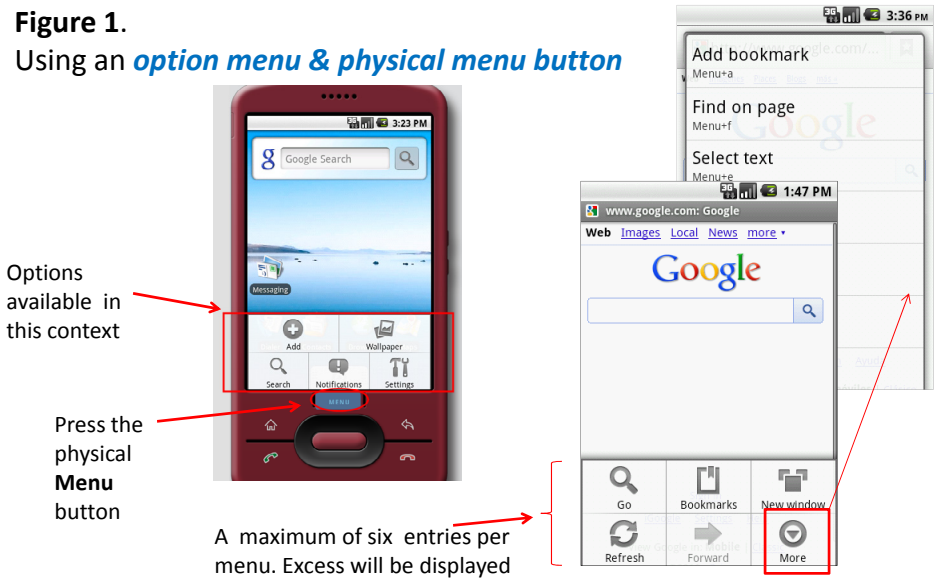

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Figure 2.
Using an ***option menu & emulator's hardware menu button***

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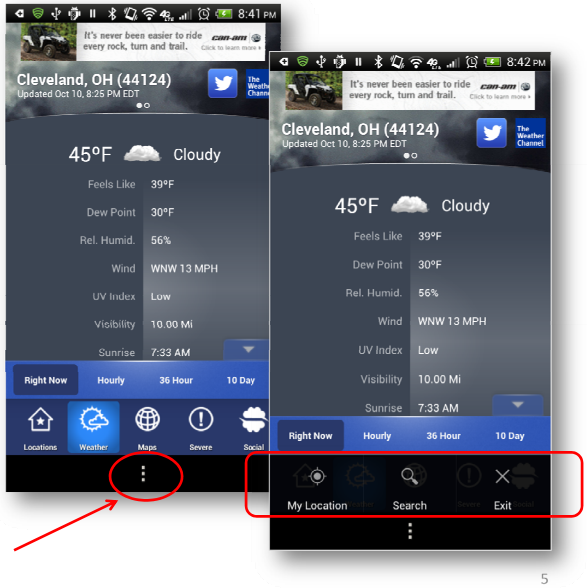
Figure 3.
Using an ***option menu & device's virtual menu button***
(HTC One phone)



Press **Menu** button

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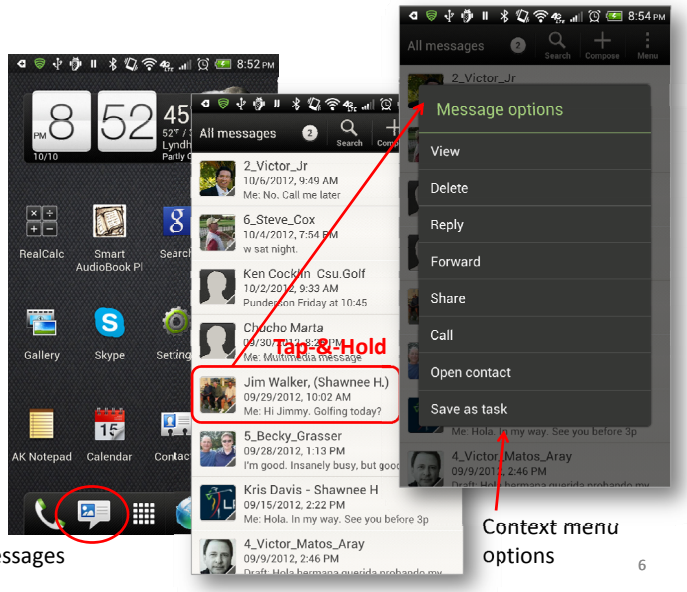
Using Menus

Figure 4.
Dealing with text-messages by using the built-in *Messaging* app's ***context menu***



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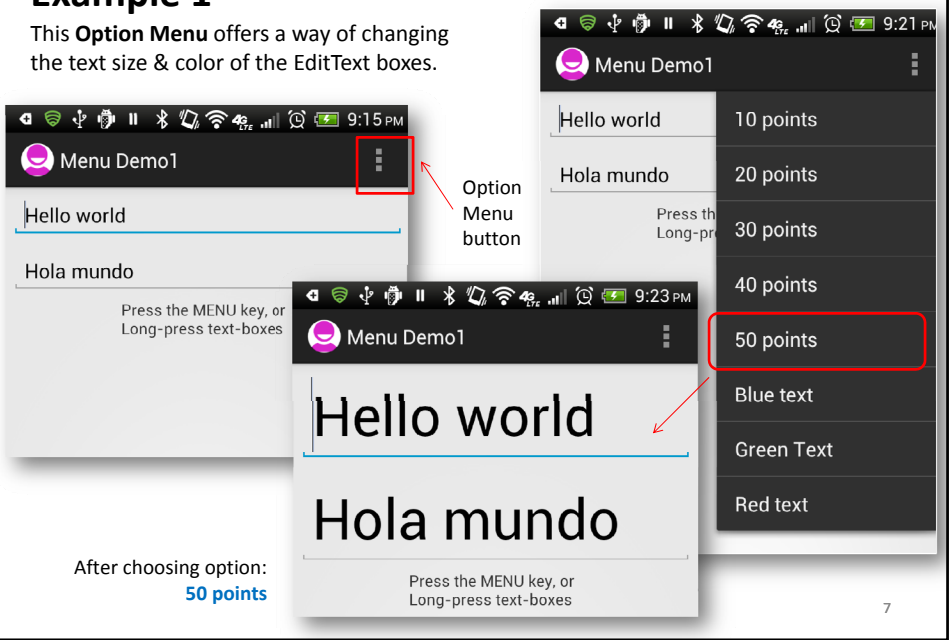
Using Menus

Example 1

This **Option Menu** offers a way of changing the text size & color of the EditText boxes.

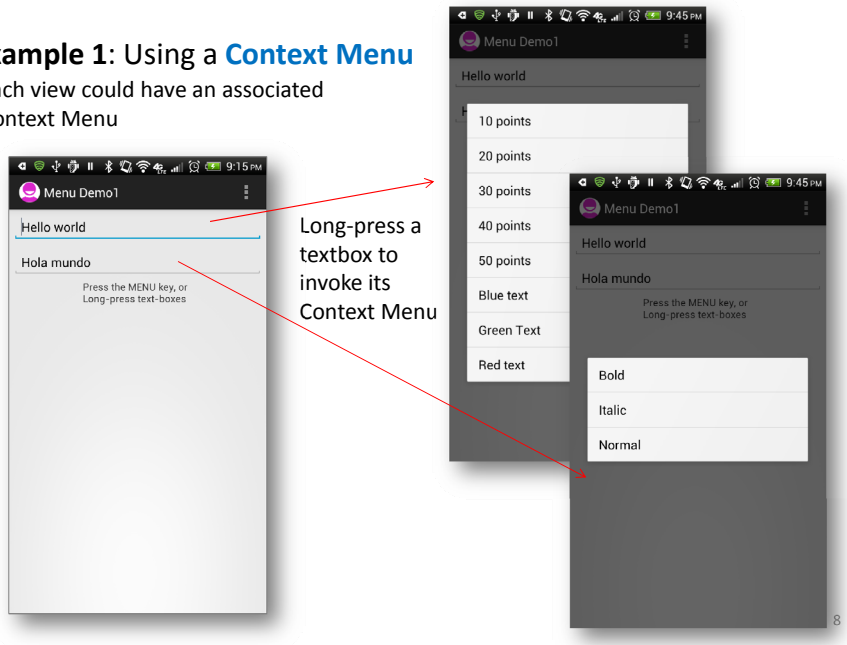


After choosing option: **50 points**

Using Menus

Example 1: Using a **Context Menu**

Each view could have an associated Context Menu



Using Menus

Example 1: Using **Option and Context Menu**

The app shows two text boxes. Menus are used to change text's size, color, and style.

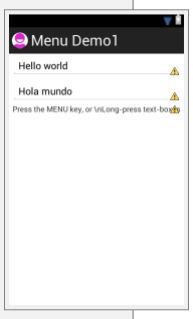
```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical" >

    <EditText
        android:id="@+id/txtBox1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="5dp"
        android:text="Hello world" />

    <EditText
        android:id="@+id/txtBox2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="5dp"
        android:text="Hola mundo" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:text="Press the MENU key, or \nLong-press text-boxes" />

</LinearLayout>
```



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Using Menus

Example 1: Using **Option and Context Menu**

The app shows two text boxes. Menus are used to change text's size, color, and style.

```
public class MainActivity extends Activity {
    EditText txtBox1;
    EditText txtBox2;
    Integer[] arrayPointSize = {10, 20, 30, 40, 50};

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
        txtBox1 = (EditText)findViewById(R.id.txtBox1);
        txtBox2 = (EditText)findViewById(R.id.txtBox2);

        // you may register an individual context menu for each view
        registerForContextMenu(txtBox1);
        registerForContextMenu(txtBox2);

    } //onCreate
```

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Example 1: Using **Option and Context Menu**

The app shows two text boxes. Menus are used to change text's size, color, and style.

```
// set the option menu for the current activity
     @Override
     public boolean onCreateOptionsMenu(Menu menu) {
              // only one Option menu per activity
              populateMyFirstMenu(menu);
              return true;
     }

// detect what view is calling and create its context menu
     @Override
     public void onCreateContextMenu(ContextMenu menu, View v,
                       ContextMenuInfo menuInfo) {
              // decide what context menu needs to be made
              if (v.getId() == txtBox1.getId())
                       // create a menu for txtBox1 box
                       populateMyFirstMenu(menu);
              if (v.getId() == txtBox2.getId()){
                       // create a menu for txtBox2 box
                       populateMySecondMenu(menu);
              }
     } //onCreateContextMenu
```

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Using Menus

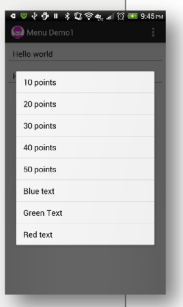
Example 1: Using **Option and Context Menu**

The app shows two text boxes. Menus are used to change text's size, color, and style.

```
private void populateMyFirstMenu(Menu menu){
     int groupId = 0; int order= 0;
     //arguments: groupId, optionId, order, title
     menu.add(groupId, 1, 1, "10 points");
     menu.add(groupId, 2, 2, "20 points");
     menu.add(groupId, 3, 3, "30 points");
     menu.add(groupId, 4, 4, "40 points");
     menu.add(groupId, 5, 5, "50 points");

     menu.add(groupId, 6, 8, "Red text");
     menu.add(groupId, 7, 7, "Green Text");
     menu.add(groupId, 8, 6, "Blue text");
} //populateMyFirstMenu

private void populateMySecondMenu(Menu menu){
     int groupId = 0; int order= 0;
     //arguments: groupId, optionId, order, title
     menu.add(groupId,  9, 1, "Bold");
     menu.add(groupId, 10, 2, "Italic");
     menu.add(groupId, 11, 3, "Normal");
}//populateMySecondMenu
```



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Using Menus

Example 1: Using **Option and Context Menu**

The app shows two text boxes. Menus are used to change text's size, color, and style.

```
// called whenever an item in your context menu is selected
@Override
public boolean onContextItemSelected(MenuItem item) {
     return applyMenuOption( item );
}

// called whenever an item in your options menu is selected.
@Override
public boolean onOptionsItemSelected(MenuItem item) {
     return applyMenuOption( item );
}
```

Note:
`boolean` event observers of the type ***onEvent(. . .)*** by convention return:
true to indicate the triggered event has been consumed by the method, and
false to signal that the event is still alive and could be consumed by others.

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Using Menus

Example 1: Using **Option and Context Menu**

```
// apply the action associated to selected item
private boolean applyMenuOption(MenuItem item){

   int menuItemId = item.getItemId(); //1, 2, 3, ...11
   String strMsg2 = txtBox2.getText().toString();

   if (menuItemId <= 5) {
      // first five option are for setting text size (10pt, 20pt, ... )
      int newPointSize = arrayPointSize[menuItemId - 1];
      txtBox1.setTextSize(newPointSize);
      txtBox2.setTextSize(newPointSize);
   }
   else {
      // either change color on txtBox1 or style on txtBox2
      if (menuItemId == 6)
         txtBox1.setTextColor(color.background_dark | Color.RED); // red
      else if (menuItemId == 7)
         txtBox1.setTextColor(0xff00ff00); // green
      else if (menuItemId == 8)
         txtBox1.setTextColor(0xff0000ff); // blue
      else if (menuItemId == 9)
         txtBox2.setText(beautify(strMsg2, "BOLD")); //bold
      else if (menuItemId == 10)
         txtBox2.setText(beautify(strMsg2, "ITALIC")); //italic
      else if (menuItemId == 11)
         txtBox2.setText(beautify(strMsg2, "NORMAL")); //normal
   }
   return false;
} //applyMenuOption
```

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Using Menus

Example 1: Using **Option and Context Menu**

The app shows two text boxes. Menus are used to change text's size, color, and style.

```
    // changing text style using HTML formatting
    // Spanned is text to which you could add formatting features

    private Spanned beautify (String originalText, String selectedStyle){

        Spanned answer = null;

        if (selectedStyle.equals("BOLD"))
            answer = Html.fromHtml("<b>" + originalText +"</b>");

        else if (selectedStyle.equals("ITALIC"))
            answer = Html.fromHtml("<i>" + originalText +"</i>");

        else if (selectedStyle.equals("NORMAL"))
            answer = Html.fromHtml("<normal>" + originalText +"</normal");

        return answer;
    } //beautify

} //class
```

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Using Menus

Comments on Creating an Option & Context Menu

Step1.
Indicate which widget(s) on your activity have context menus. To do this, call
registerForContextMenu(*theWidget***)**

Step2.
Implement **onCreateContextMenu(…)**, populate your menu adding text, icons, etc. to the different options. Use input **menu** parameter to determine which menu to build (assuming your activity has more than one).

The ***onCreateContextMenu()*** method gets the *ContextMenu* itself, the *View* the context menu is associated with, and a *ContextMenu.ContextMenuInfo*, which tells you which item in the list the user did the tap-and-hold over, in case you want to customize the context menu based on that information

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Using Menus

Comments on Creating an Option & Context Menu

- *onCreateContextMenu()* is called each time the context menu is requested.
- Unlike the *options menu* (which is only built once per activity), *context menus* are discarded once they are used.
- To find out which context menu choice was made, implement *onContextItemSelected()* on the activity.

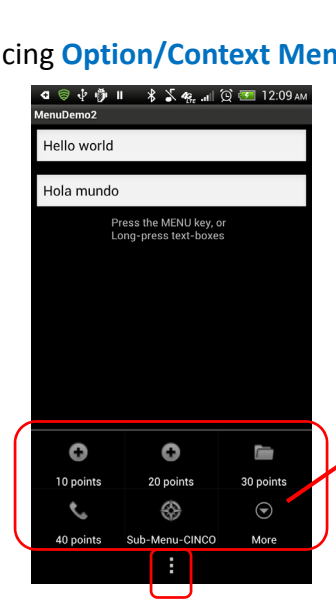
Using Menus

Extending Example1.

Example 2: Enhancing **Option/Context Menu**

A maximum of six options are displayed on the Option Menu.

If you have more than six selections the button **More** will display the remaining entries



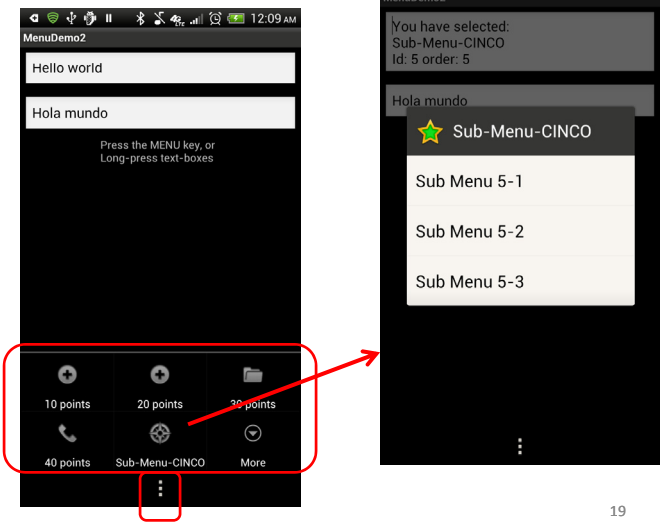
Using Menus

Extending Example1.

Example 2: Enhancing **Option/Context Menu**

A **Sub-Menu** item shows a DialogBox displaying the associated sub-options.

In this example item-5 is a SubMenu type.



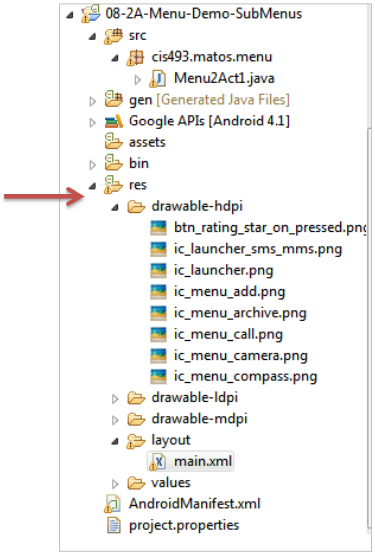
Using Menus

Extending Example1.

Example 2: Enhancing
Option/Context Menu

Add icons to the app's res/drawable folder.

A handfull of icons are available in the folder:
…Android-sdk/docs/images/icon-design



Using Menus

Extending Example1.

Example 2: Enhancing **Option/Context Menu**

Replace the method **populateMyFirstMenu** with the following code

```
private void populateMyFirstMenu(Menu menu){
   int groupId = 0;
   //arguments: groupId, optionId, order, title
   MenuItem item1 = menu.add(groupId, 1, 1, "10 points");
   MenuItem item2 = menu.add(groupId, 2, 2, "20 points");
   MenuItem item3 = menu.add(groupId, 3, 3, "30 points");
   MenuItem item4 = menu.add(groupId, 4, 4, "40 points");
   //MenuItem item5 = menu.add(groupId, 5, 5, "50 points");

   MenuItem item6 = menu.add(groupId, 6, 8, "Red text");
   MenuItem item7 = menu.add(groupId, 7, 7, "Green Text");
   MenuItem item8 = menu.add(groupId, 8, 6, "Blue text");

   //set icons
    item1.setIcon(R.drawable.ic_menu_add);
    item2.setIcon(R.drawable.ic_menu_add);
    item3.setIcon(R.drawable.ic_menu_archive);
    item4.setIcon(R.drawable.ic_menu_call);
```

Remove this line from previous version

Icons are added to first five entries of the Option Menu

Using Menus

Extending Example1.

Example 2: Enhancing **Option/Context Menu**

Replace the method **populateMyFirstMenu** with the following code

```
    // adding a sub-menu as fifth entry of this menu
    // .addSubMenu(int groupId, int itemId, int order, CharSequence title)
    int smGroupId = 0; // don't care, same as Menu.NONE
    int smItemId = 5;  // fifth element
    int smOrder = 5;   // don't care, same as Menu.NONE

    SubMenu mySubMenu5 =  menu.addSubMenu(smGroupId, smItemId, smOrder,
                                          "Sub-Menu-CINCO");
    mySubMenu5.setHeaderIcon(R.drawable.btn_rating_star_on_pressed);
    mySubMenu5.setIcon(R.drawable.ic_menu_compass);

    // .add(int groupId, int itemId, int order, CharSequence title)

    MenuItem sub51 = mySubMenu5.add(smGroupId,5,1,"Sub Menu 5-1");
    MenuItem sub52 = mySubMenu5.add(smGroupId,5,2,"Sub Menu 5-2");
    MenuItem sub53 = mySubMenu5.add(smGroupId,5,3,"Sub Menu 5-3");


} //populateMyFirstMenu
```

Using Menus

Extending Example1.

Example 2: Enhancing **Option/Context Menu**

Continuation…
Replace the method **applyMenuOption** with the following code

```
private boolean applyMenuOption(MenuItem item){

    int menuItemId = item.getItemId(); //1, 2, 3, ...11

    String strMsg2 = txtBox2.getText().toString();

    if (menuItemId < 5) {
        // first four options are for setting text size
        int newPointSize = arrayPointSize[menuItemId - 1];
        txtBox1.setTextSize(newPointSize);
        txtBox2.setTextSize(newPointSize);
    }
    else if (menuItemId == 5) {
        // the sub-menu (attached to 5th item) is processed here
        txtBox1.setText (
                    "You have selected: \n" +item.getTitle()
                  + "\nId: " + menuItemId
                  + " order: " + item.getOrder() );
}
    // either change color on text1 or style on text2
    else if (menuItemId == 6)
        txtBox1.setTextColor(0xffff0000); // red
```

Same as before

Take care of sub-menu here

Using Menus

Extending Example1.

Example 2: Enhancing **Option/Context Menu**

Continuation…
Replace the method **applyMenuOption** with the following code

```
    else if (menuItemId == 7)
        txtBox1.setTextColor(0xff00ff00); // green
    else if (menuItemId == 8)
        txtBox1.setTextColor(0xff0000ff); // blue

    else if (menuItemId == 9)
        txtBox2.setText(beautify(strMsg2, "BOLD")); //bold
    else if (menuItemId == 10)
        txtBox2.setText(beautify(strMsg2, "ITALIC")); //italic
    else if (menuItemId == 11)
        txtBox2.setText(beautify(strMsg2, "NORMAL")); //normal

    return false;

} //applyMenuOption
```

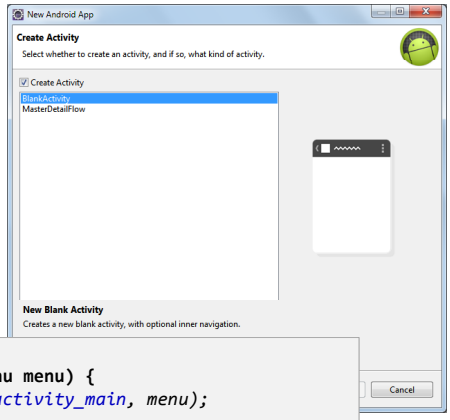
Same as in Example1

Using Menus

Example 3: Using the Menu-Snippet Created by Eclipse+ADK

Assume you are using SDK 4.x.

Applications created using the Eclipse Wizard allows you to choose a new “Blank Activity”.



Those activities include the code fragment:

```
@Override
    public boolean onCreateOptionsMenu(Menu menu) {
        getMenuInflater().inflate(R.menu.activity_main, menu);
        return true;
    }
```

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Using Menus

Example 3: Using the Menu-Snippet Created by Eclipse+ADK

The call to **onCreateOptionsMenu** inflates the skeleton of an XML menu file stored in your app’s **/res/menu/** .

The following example is an extension of the basic xml file

```
<menu xmlns:android="http://schemas.android.com/apk/res/android" >

    <item
        android:id="@+id/menu_settings1"
        android:orderInCategory="100"
        android:title="Menu-Option-1"/>
    <item
        android:id="@+id/menu_settings2"
        android:orderInCategory="110"
        android:title="Menu-Option-2"/>
    <item
        android:id="@+id/menu_settings3"
        android:orderInCategory="120"
        android:title="Menu-Option-3"/>

</menu>
```

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Using Menus

Example 3: Using the Menu-Snippet Created by Eclipse+ADK

To add functionality to the menu you need to implement the **onOptionsItemSelected** method. For instance

```
@Override
public boolean onOptionsItemSelected(MenuItem item) {

      String text = "ID: " + item.getItemId()
                  + " title: " + item.getTitle();

      Toast.makeText(this, text, 1).show();
      return true;
}
```

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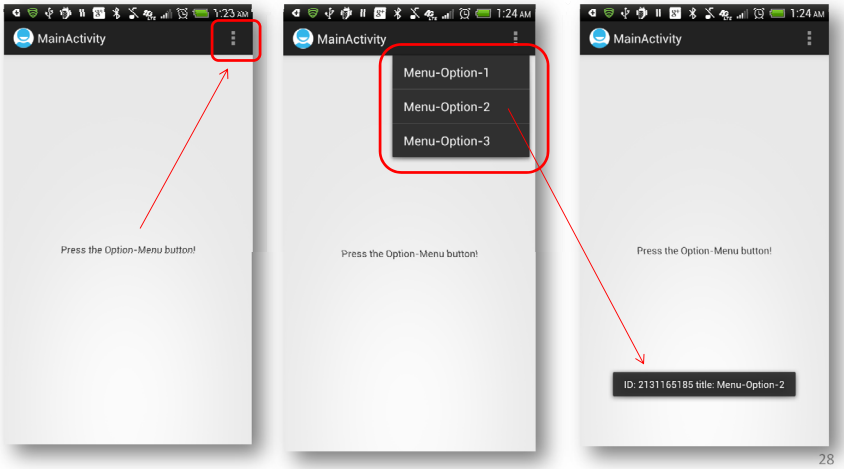
Using Menus

Example 3: Using the Menu-Snippet Created by Eclipse+ADK

Our example produces the following images:



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Questions ?