Menus in Android

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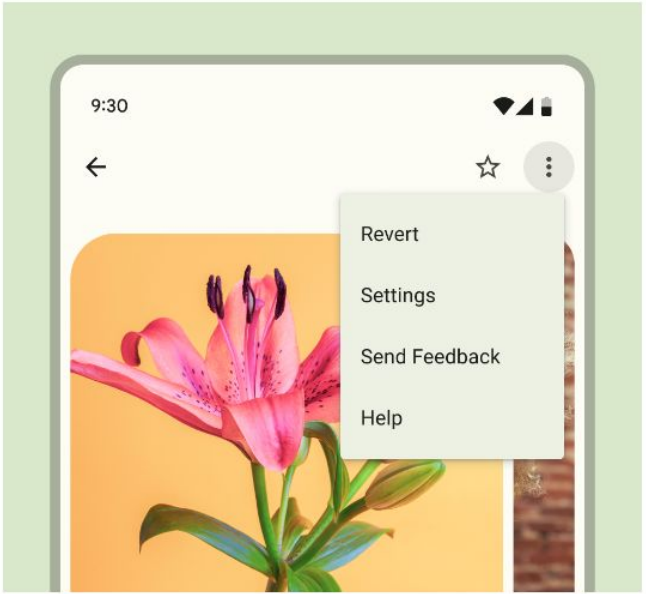
What is a menu?

- Menus are a common user interface component in many types of apps.
- With the help of menu, users can experience a smooth and consistent experience throughout the application.



What is a menu?

- Three fundamental types of menus:
  - **Options menu:** The options menu is the primary collection of menu items for an activity. It's where you place actions that have a global impact on the app, such as "Search," "Compose email," and "Settings."
  - **Context menu**: A context menu is a floating menu that appears when the user performs a touch & hold on an element. It provides actions that affect the selected content or context frame. The contextual action mode displays action items that affect the selected content in a bar at the top of the screen and lets the user select multiple items.
  - **Popup menu:** A popup menu displays a vertical list of items that's anchored to the view that invokes the menu. Actions in a popup menu don't directly affect the corresponding content—that's what contextual actions are for. Rather, the popup menu is for extended actions that relate to regions of content in your activity.

Define a menu in xml

- Android provides a standard XML format to define menu items.
- Instead of building a menu in your activity's code, define a menu and all its items in an XML menu resource.
- Create an XML file inside your project's res/menu/ directory
    - Create a new folder **menu** inside of our project directory (res/menu) to define the menu and also add a new XML file to build the menu
    - Right click on menu-> New -> Menu Resource file
    - Give a name -> ok

Define a menu in xml

`<menu>`

Defines a `Menu`, which is a container for menu items. A `<menu>` element must be the root node for the file, and it can hold one or more `<item>` and `<group>` elements.

`<item>`

Creates a `MenuItem`, which represents a single item in a menu. This element can contain a nested `<menu>` element to create a submenu.

`<group>`

An optional, invisible container for `<item>` elements. It lets you categorize menu items so they share properties, such as active state and visibility. For more information, see the Create a menu group section.

Define a menu in xml

`android:id`

A resource ID that's unique to the item, which lets the app recognize the item when the user selects

`android:icon`

A reference to a drawable to use as the item's icon.

`android:title`

A reference to a string to use as the item's title.

`android:showAsAction`

The specification for when and how this item appears as an action item in the app bar.

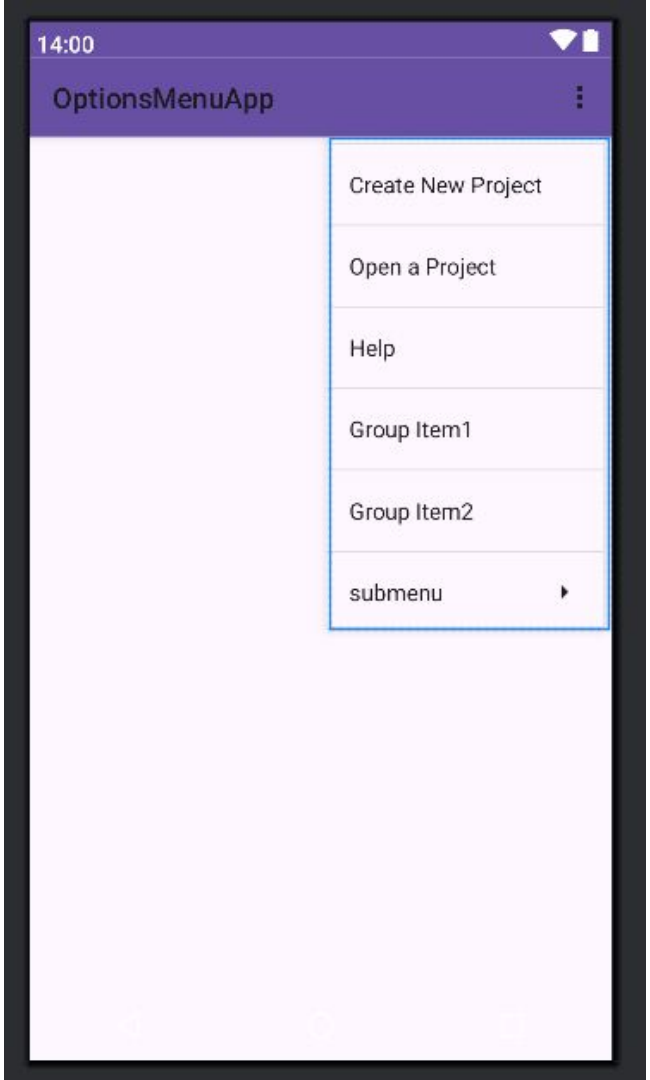
Sub menu

- If we want to add a submenu in menu item, then we need to add a <menu> element as the child of an <item>
- Submenus are useful when your app has a lot of functions that can be organized into topics.

Menu via code

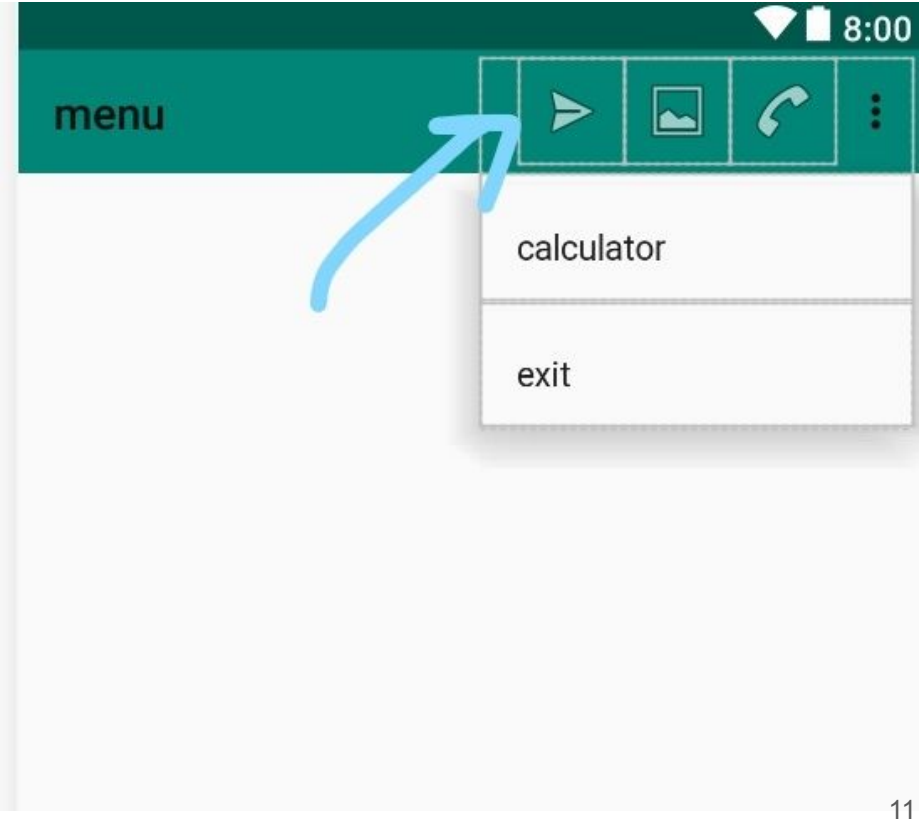
- To use the menu in your activity, _inflate_ the menu resource, converting the XML resource into a programmable object using **MenuInflater.inflate()**
- You can declare items for the menu from your Activity subclass or a Fragment subclass.
- If both your activity and your fragments declare items for the menu, the items are combined in the UI.
- The activity's items appear first, followed by those of each fragment, in the order in which the fragments are added to the activity.
- If necessary, you can reorder the menu items with the android:orderInCategory attribute in each <item> you need to move.

```xml
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <item
        android:id="@+id/item1"
        android:title="@string/create_new_project" />
    <item
        android:id="@+id/item2"
        android:title="@string/open_a_project"/>
    <item
        android:id="@+id/item3"
        android:title="@string/help"/>

    <group >
        <item
            android:id="@+id/gi1"
            android:title="@string/group_item1" />
        <item
            android:id="@+id/gi2"
            android:title="@string/group_item2" />
    </group>
    <item android:title="@string/submenu">
        <menu>
            <item android:title="@string/submenu_item1" />
            <item android:title="@string/submenu_item2" />
        </menu>
    </item>
</menu>
```



Options Menu

- To specify the options menu for an activity, override onCreateOptionsMenu().
- Fragments provide their own onCreateOptionsMenu() callback.
- In this method, you can inflate your menu resource, defined in XML, into the Menu provided in the callback.
- You can also add menu items using add() and retrieve items with findItem() to revise their properties with MenuItem APIs.



Options Menu

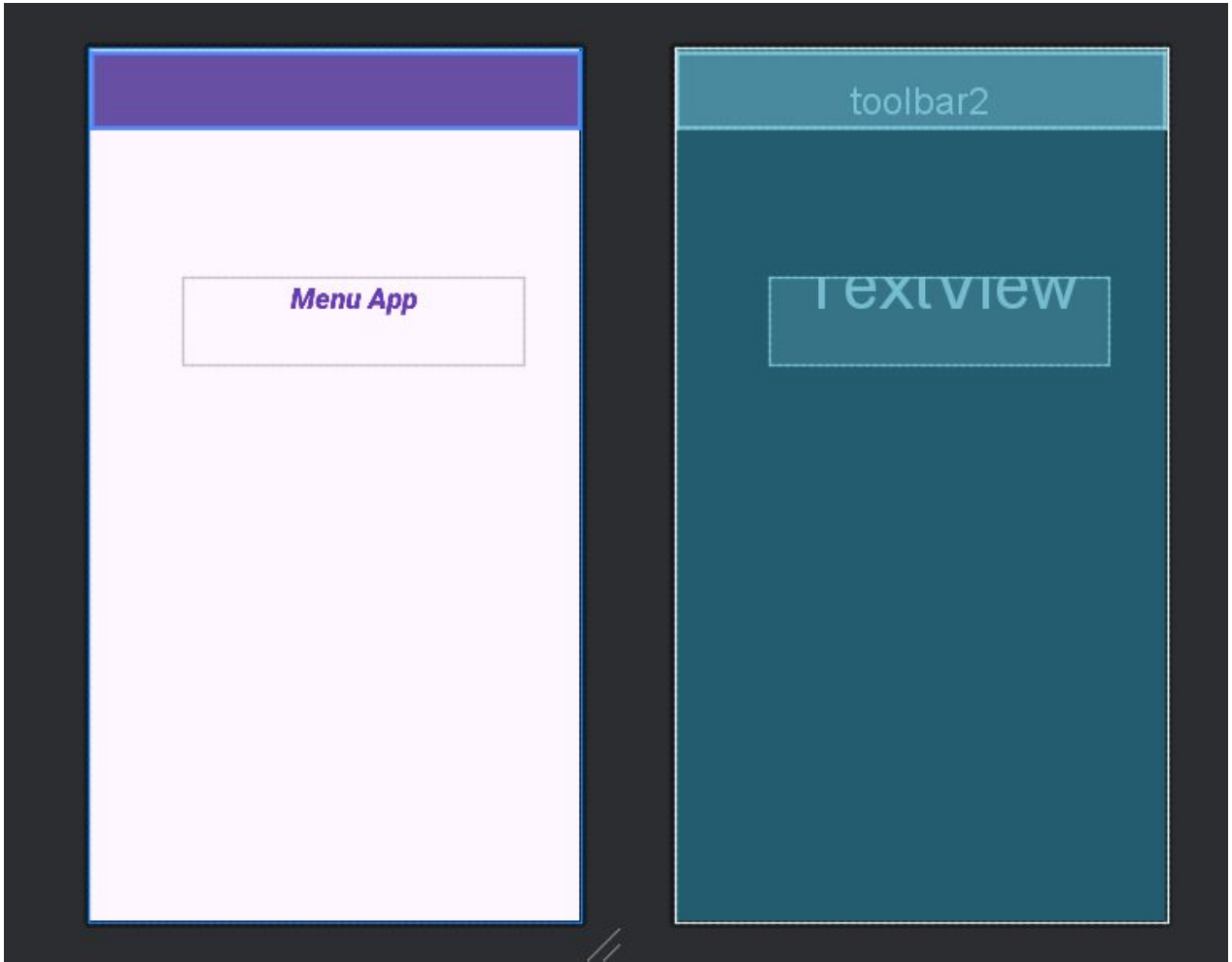
- When the user selects an item from the options menu, including action items in the app bar, the system calls your activity's onOptionsItemSelected() method.
- This method passes the MenuItem selected.
- You can identify the item by calling getItemId(), which returns the unique ID for the menu item, defined by the android:id attribute in the menu resource or with an integer given to the add() method.
- You can match this ID against known menu items to perform the appropriate action.

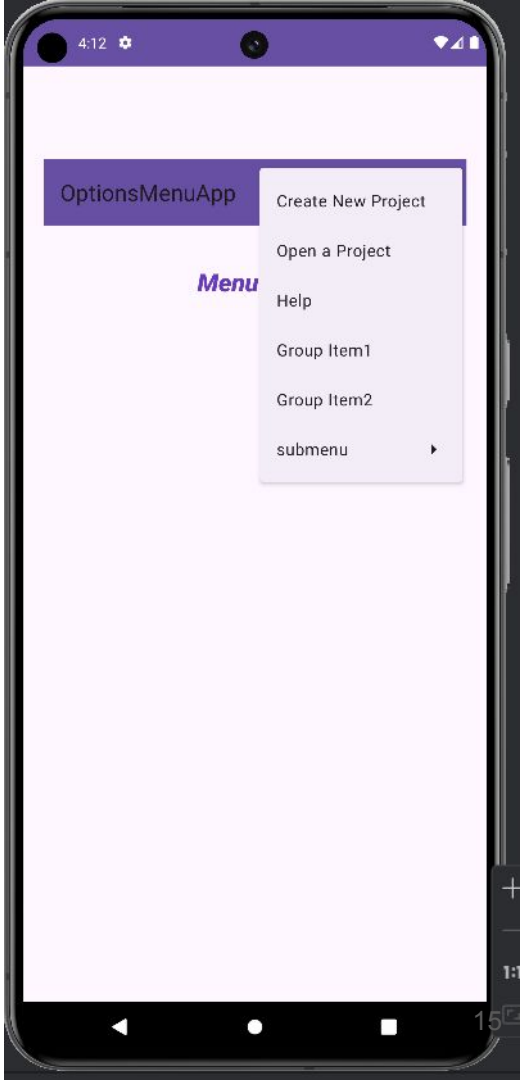
Options Menu

- When you successfully handle a menu item, return true.
- If you don't handle the menu item, call the superclass implementation of onOptionsItemSelected().
- The default implementation returns false.
- If your activity includes fragments, the system first calls onOptionsItemSelected() for the activity, then for each fragment in the order the fragments are added, until one returns true or all fragments are called.

Options Menu

- If you want to modify the options menu based on events that occur during the activity lifecycle, you can do so in the onPrepareOptionsMenu() method.
- This method passes you the Menu object as it currently exists so you can modify it, such as by adding, removing, or disabling items.
- Fragments also provide an onPrepareOptionsMenu() callback.
- The options menu is considered always open when menu items are presented in the app bar.
- When an event occurs and you want to perform a menu update, call invalidateOptionsMenu() to request that the system call onPrepareOptionsMenu().


Menu App
toolbar2
TextView


4:12
OptionsMenuApp
Menu
Create New Project
Open a Project
Help
Group Item1
Group Item2
submenu

Options Menu

```
import android.view.Menu;

import android.view.MenuInflater;

import android.view.MenuItem;

import android.widget.Toast;

import androidx.appcompat.widget.Toolbar;
```

Options Menu

```
protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Toolbar toolbar = (Toolbar) findViewById(R.id.toolbar2);
        setSupportActionBar(toolbar);
    }
```

Options Menu

```
public boolean onCreateOptionsMenu(Menu menu) {
        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.menu_example, menu);
        return true;
    }
```

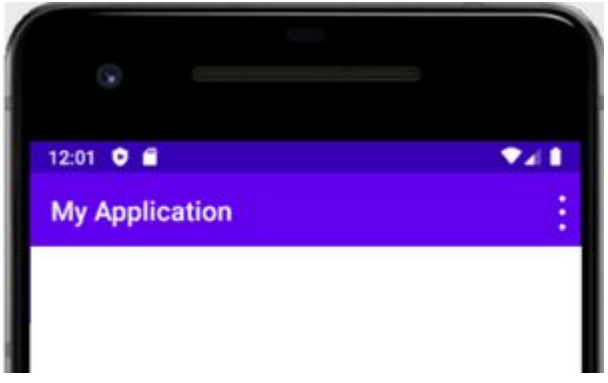
```java
public boolean onOptionsItemSelected(MenuItem item) {
    // Handle item selection.
    if (item.getItemId() == R.id.item1)
            Toast.makeText( context: MainActivity.this,  text: " Create a New Project", Toast.LENGTH_LONG).show();
    if (item.getItemId() == R.id.item2)
            Toast.makeText( context: MainActivity.this,  text: " Open a Project", Toast.LENGTH_LONG).show();
    if (item.getItemId() == R.id.item3)
            Toast.makeText( context: MainActivity.this,  text: " Help", Toast.LENGTH_LONG).show();
    if (item.getItemId() == R.id.gi1)
            Toast.makeText( context: MainActivity.this,  text: " Group Item 1", Toast.LENGTH_LONG).show();
    if (item.getItemId() == R.id.gi2)
            Toast.makeText( context: MainActivity.this,  text: " Group Item 2", Toast.LENGTH_LONG).show();
    if (item.getItemId() == R.id.s1)
            Toast.makeText( context: MainActivity.this,  text: " Sub menu Item 1", Toast.LENGTH_LONG).show();
    if (item.getItemId() == R.id.s2)
            Toast.makeText( context: MainActivity.this,  text: " Sub menu Item 2", Toast.LENGTH_LONG).show();
    return super.onOptionsItemSelected(item);
}
```

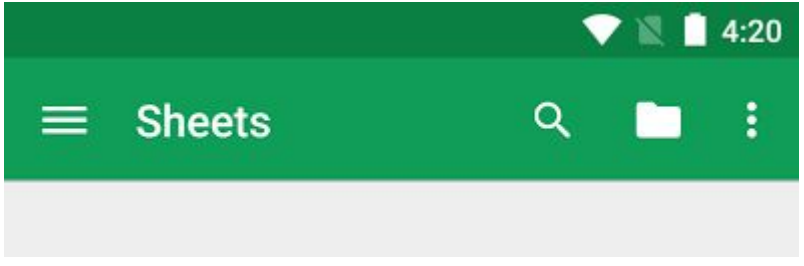
App Bar/ Action Bar

- App bar, also known as the action bar, is one of the most important design elements in your app's activities
- Provides a visual structure and interactive elements that are familiar to users.
- Using the app bar makes your app consistent with other Android apps, letting users quickly understand how to operate your app and have a great experience.
- Action bar displays the title for the activity on one side and an overflow menu on the other.
- Provides useful information to users and gives Android apps a consistent look and feel.

App Bar/ Action Bar

- Android **Toolbar** widget as an app bar.
- There are other ways to implement an app bar.
  - Some themes set up an **ActionBar** as an app bar by default.
  - Using the AppCompat Toolbar makes it easier to set up an app bar that works on the widest range of devices.
- It also gives you room to customize your app bar later in your app's development.



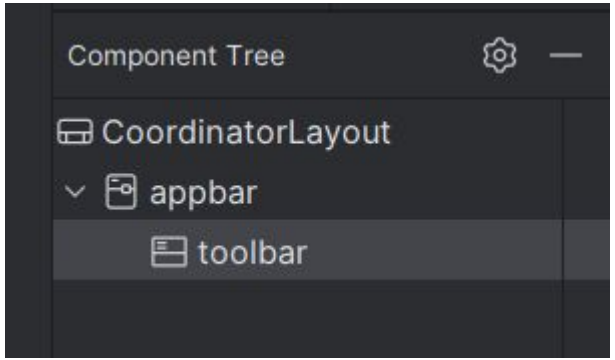


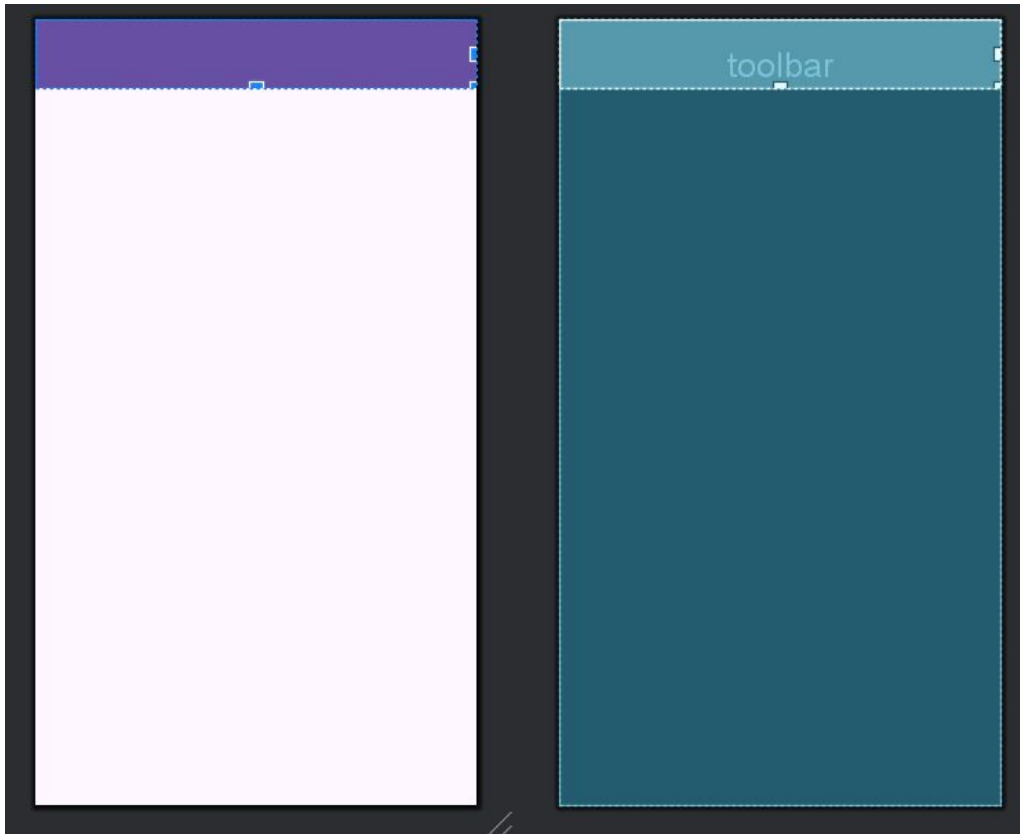
App Bar/ Action Bar

- Create a New Project with Empty Views Activity.
- Create res/menu directory.
- Add a new Menu resource file
- Add images for action items
  - res -> New-> Image Asset -> Icon Type (Action Bar and Tab Icons) -> create a name for image -> Clip art(asset type) -> Click on Clip art icon -> search and select image -> Next -> Finish.
  - Icons present in res/drawable/
- Design the menu file
  - For each item, android:icon=”@drawable/image_name”
  - app:showAsAction="ifRoom"

App Bar/ Action Bar

- Design activity_main.xml
- Insert AppBarLayout from palette
- Insert a ToolBar into AppBarLayout, Give id to ToolBar





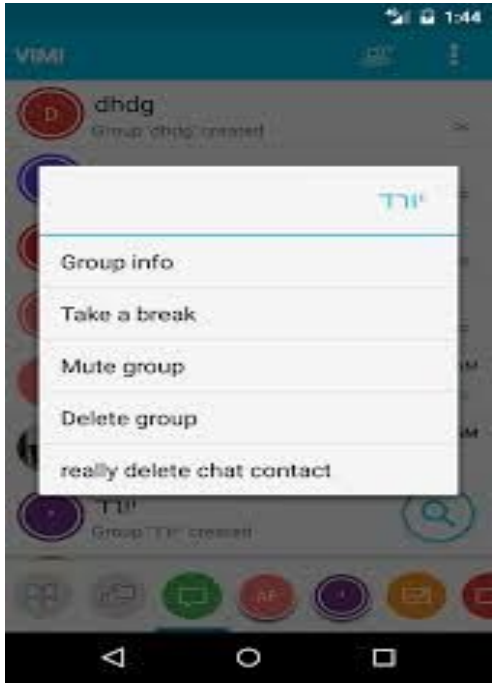
App Bar/ Action Bar

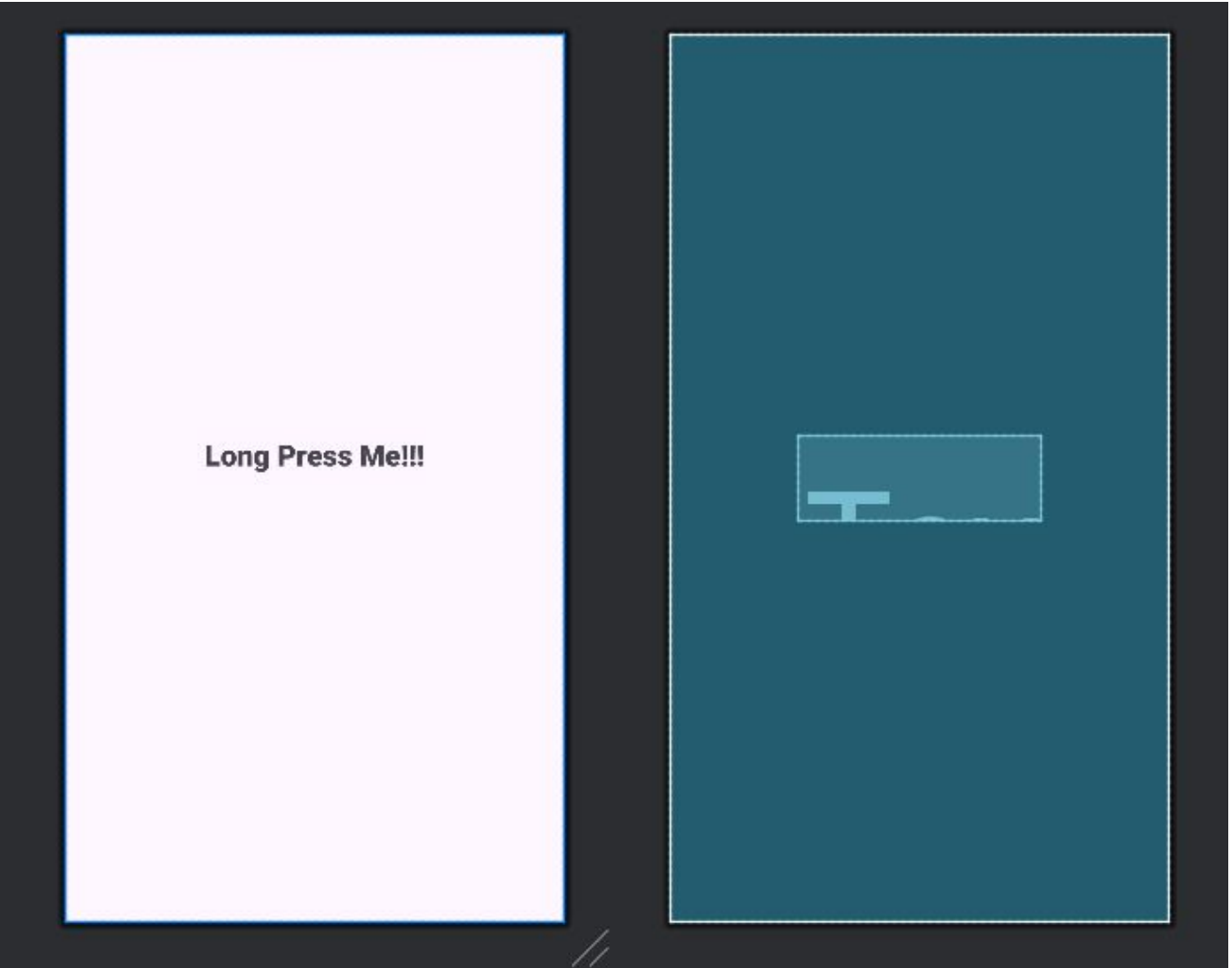
- Write menu code inside MainActivity.java
- Edit the onCreate() to insert the toolbar
  - setSupportActionBar(toolbar);

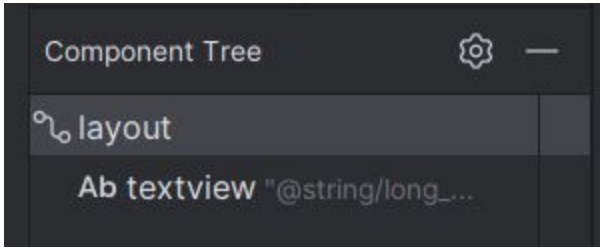
```xml
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <item
        android:id="@+id/create"
        android:icon="@drawable/new_folder"
        android:title="@string/create_new_folder"
        app:showAsAction="ifRoom" />
    <item
        android:id="@+id/search"
        android:icon="@drawable/search"
        android:title="@string/search"
        app:showAsAction="ifRoom" />
    <item
        android:id="@+id/settings"
        android:icon="@drawable/settings"
        android:title="@string/settings"
        app:showAsAction="ifRoom" />
</menu>
```

Context Menu

- Context menu is like a floating menu
- Arises when the user has long-pressed or clicked on an item
- Implement functions that define the specific content or reference frame effect.
- Touch & hold on a view create context menu




Long Press Me!!!


Component Tree
layout
Ab textview "@string/long_...

Context Menu

```
import android.view.ContextMenu;
import android.view.MenuItem;
import android.view.View;
import android.widget.TextView;
import android.graphics.Color;
import androidx.constraintlayout.widget.ConstraintLayout;
```

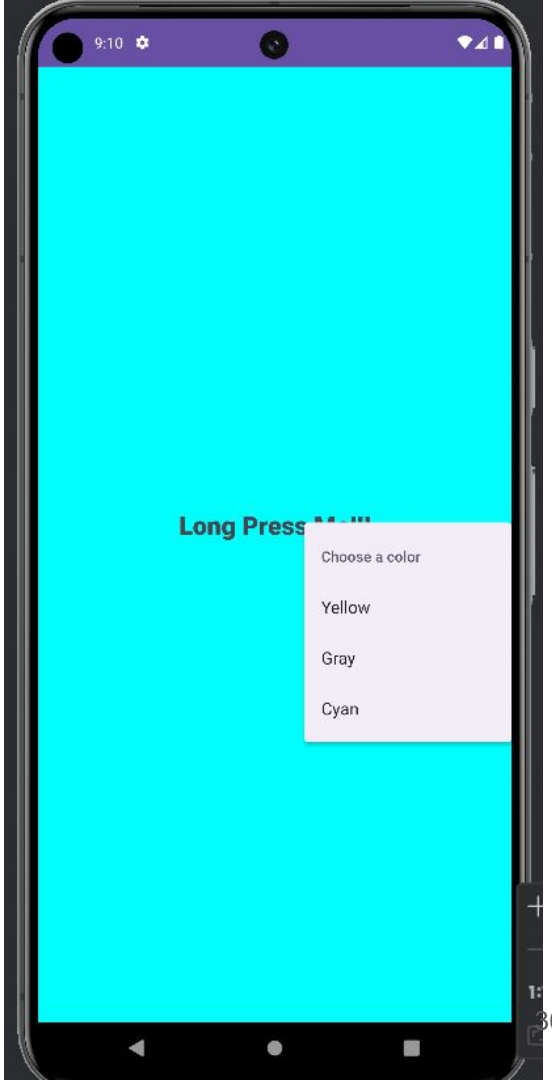
```java
public class MainActivity extends AppCompatActivity {
    2 usages
    TextView textView;
    4 usages
    ConstraintLayout layout;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        // Link those objects with their respective id's that we have given in .XML file
        textView = (TextView) findViewById(R.id.textview);
        layout=(ConstraintLayout) findViewById(R.id.layout);
        // here you have to register a view for context menu
        // you can register any view like listview, image view, textview, button etc
        registerForContextMenu(textView);
    }
```

Context Menu

```
public void onCreateContextMenu(ContextMenu menu, View v, ContextMenu.ContextMenuInfo menuInfo) {
    super.onCreateContextMenu(menu, v, menuInfo);
    // you can set menu header with title icon etc
    menu.setHeaderTitle("Choose a color");
    // add menu items
    menu.add( groupId: 0, v.getId(), order: 0, title: "Yellow");
    menu.add( groupId: 0, v.getId(), order: 0, title: "Gray");
    menu.add( groupId: 0, v.getId(), order: 0, title: "Cyan");
}
```

Context Menu

```
// menu item select listener
@Override
public boolean onContextItemSelected(MenuItem item) {
    if (item.getTitle() == "Yellow") {
        layout.setBackgroundColor(Color.YELLOW);
    } else if (item.getTitle() == "Gray") {
        layout.setBackgroundColor(Color.GRAY);
    } else if (item.getTitle() == "Cyan") {
        layout.setBackgroundColor(Color.CYAN);
    }
    return true;
}
```



Pop Up Menus

- A Popup Menu displays a Menu in a modal popup window anchored to a View.
- The popup will appear below the anchor view if there is room, or above it if there is not.
- Touching outside of the popup will dismiss it.

Pop Up Menus

- Make a popup menu anchored to a Button and on click, the popup menu will appear, and on a touch of the popup menu item, a Toast message will be shown.
- Create a New Project. Insert a Button on the UI. (onclick:onPop)
- Add some color attributes in order to enhance the app bar.
  - Go to app > res > values > colors.xml and add the following color attributes.

```xml
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="black">#FF000000</color>
    <color name="white">#FFFFFFFF</color>
    <color name="colorPrimary">#0F9D58</color>
    <color name="colorPrimaryDark">#16E37F</color>
    <color name="colorAccent">#03DAC5</color>
</resources>
```

```
android:onClick="onPop"
```

Pop Up Menus

- Create a new folder inside /res named ‘menu’
- Create a new menu resource file inside the menu folder.