5COSC005W MOBILE APPLICATION DEVELOPMENT
Lecture 9: Menus - Pickers - Dialogs

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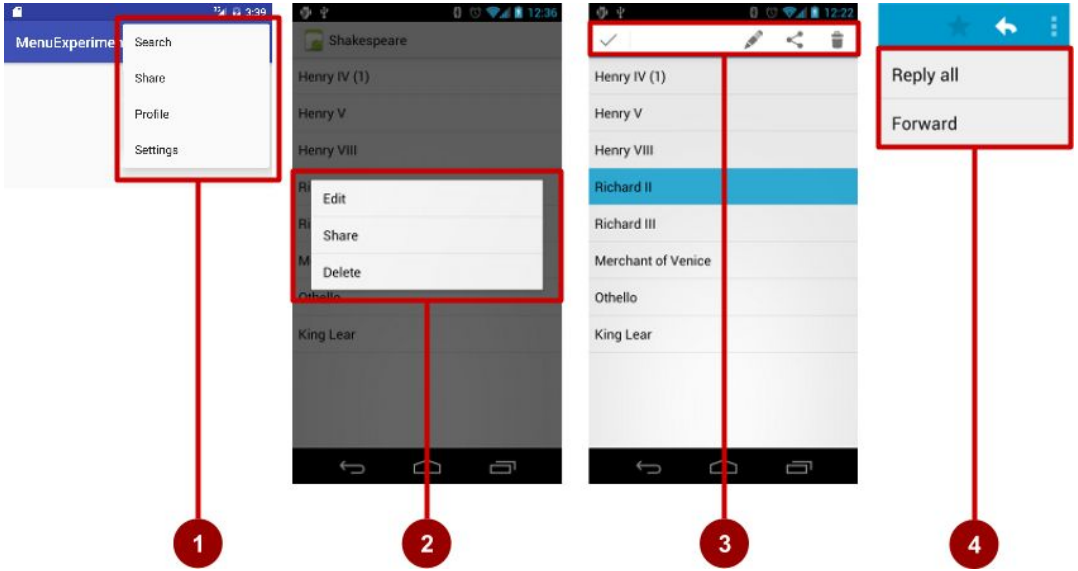
Module Web page:

https://dracopd.users.ecs.westminster.ac.uk/DOCUM/courses/5cosc005w/5cosc005w.html

Menus and pickers

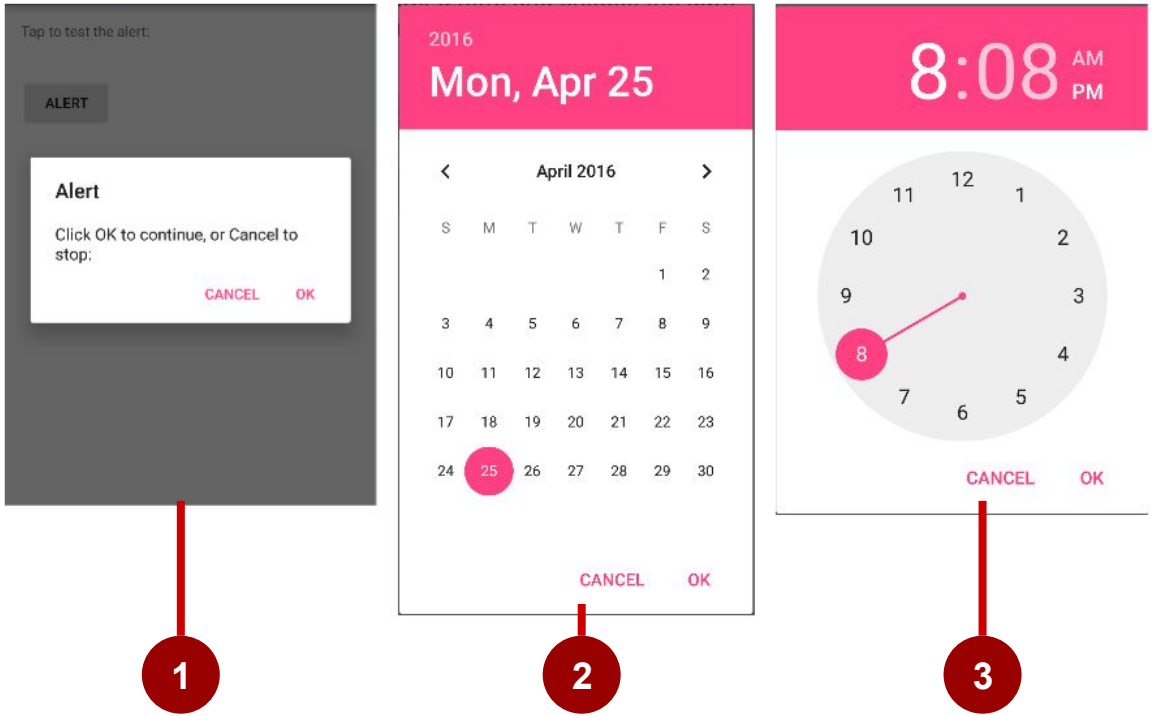
Types of Menus

1. App bar with options menu
2. Context menu
3. Contextual action bar
4. Popup menu



Dialogs and pickers

1. Alert dialog
2. Date picker
3. Time picker

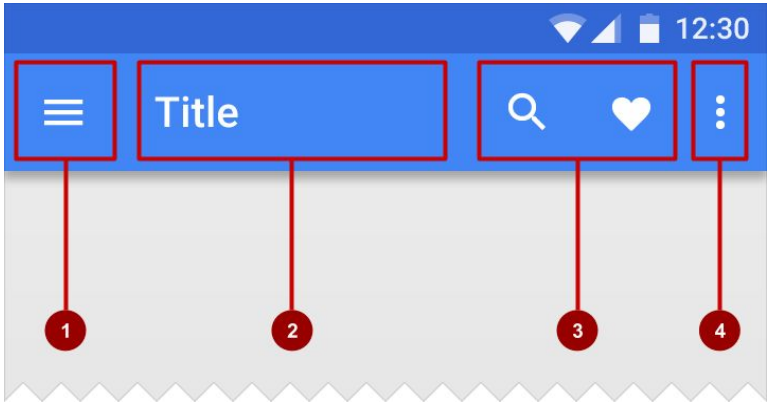


App Bar with Options Menu

What is the App Bar?

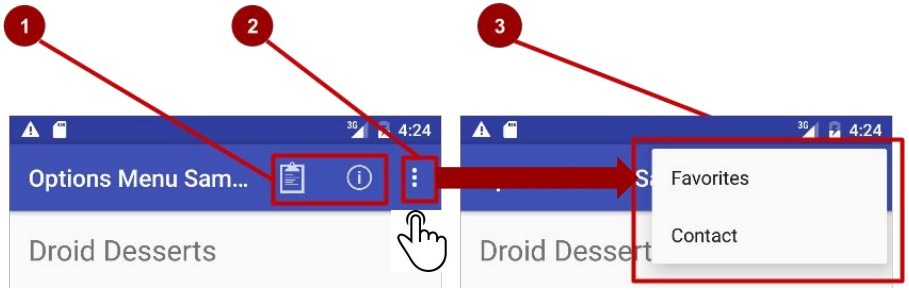
Bar at top of each screen—same for all devices (usually)

1. Nav icon to open navigation drawer
2. Title of current Activity
3. Icons for options menu items
4. Action overflow button for the rest of the options menu



What is the options menu?

- Action icons in the app bar for important items (1)
- Tap the three dots, the "action overflow button" to see the options menu (2)

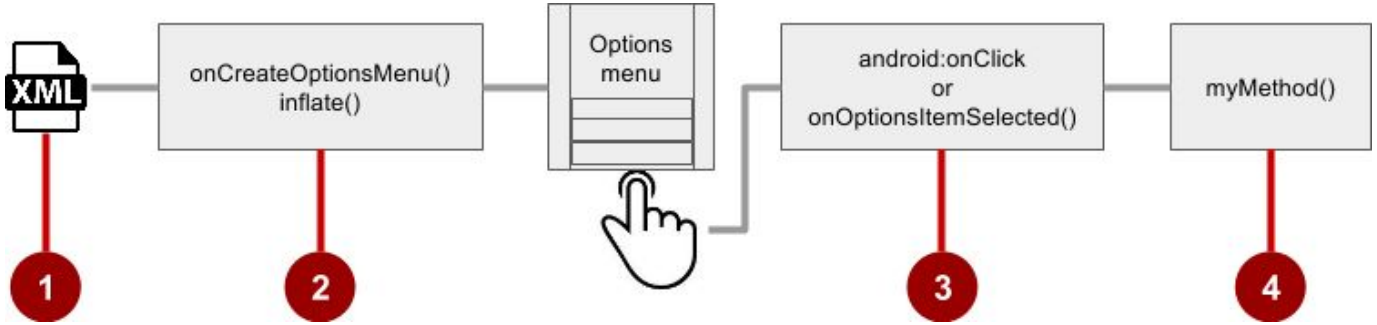


- Appears in the right corner of the app bar (3)
- For navigating to other activities and editing app settings

Adding Options Menu

Steps to implement options menu

1. XML menu resource (`menu_main.xml`)
2. `onCreateOptionsMenu()` to inflate the menu
3. `onClick` attribute or `onOptionsItemSelected()`
4. Method to handle item click



Create menu resource

1. Create menu resource directory
2. Create XML menu resource (`menu_main.xml`)
3. Add entry for each menu item (**Settings** and **Favorites**):

```
<item  android:id="@+id/option_settings"
       android:title="Settings" />
<item  android:id="@+id/option_favorites"
       android:title="Favorites" />
```

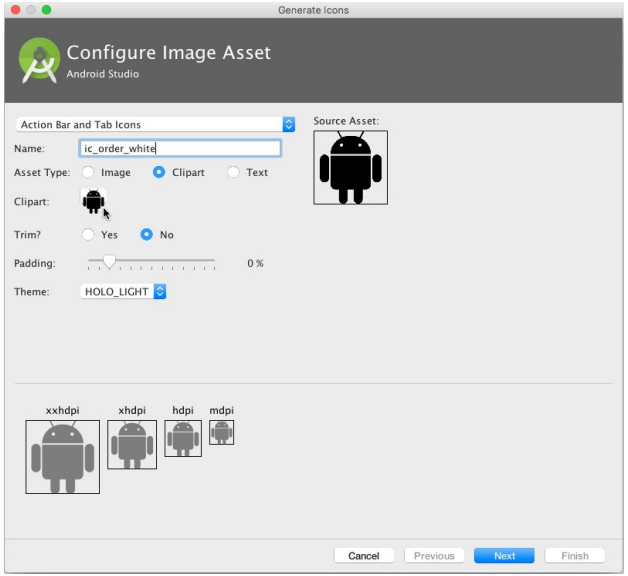
Inflate options menu

Override `onCreateOptionsMenu()` in Activity

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

Add icons for menu items

1. Right-click **drawable**
2. Choose **New > Image Asset**
3. Choose **Action Bar and Tab Items**
4. Edit the icon name
5. Click clipart image, and click icon
6. Click **Next**, then **Finish**



Add menu item attributes

```
<item
        android:id="@+id/action_favorites"
        android:icon="@drawable/ic_favorite"
        android:orderInCategory="30"
        android:title="@string/action_favorites"
        app:showAsAction="ifRoom" />
```

Override onOptionsItemSelected()

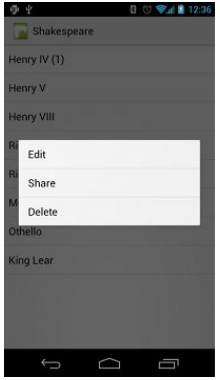
```
@Override
public boolean onOptionsItemSelected(MenuItem item) {
    switch (item.getItemId()) {
        case R.id.action_settings:
            showSettings();
            return true;
        case R.id.action_favorites:
            showFavorites();
            return true;
        default:
                return super.onOptionsItemSelected(item);
        }
}
```

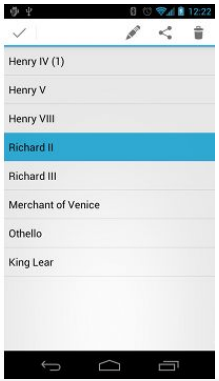
Contextual Menus

What are contextual menus?

- Allows users to perform action on selected View
- Can be deployed on any View
- Most often used for items in RecyclerView, GridView, or other View collection

Types of contextual menus

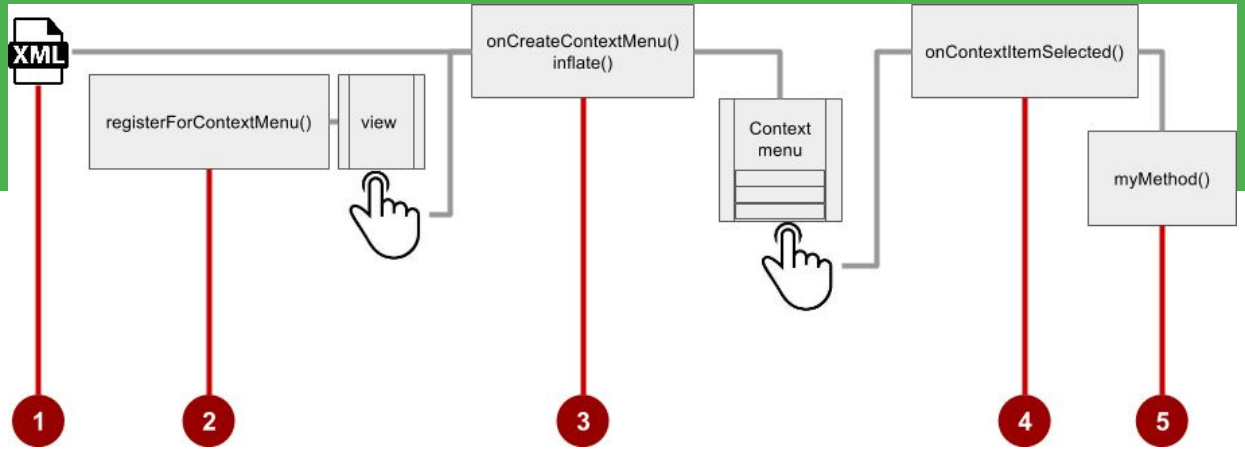




- Floating context menu—long-press on a View
  - User can modify View or use it in some fashion
  - User performs action on one View at a time
- Contextual action mode—temporary action bar in place of or underneath app bar
  - Action items affect the selected View element(s)
  - User can perform action on multiple View elements at once

Floating Context Menu

Steps



1. Create XML menu resource file and assign appearance and position attributes
2. Register View using `registerForContextMenu()`
3. Implement `onCreateContextMenu()` in Activity to inflate menu
4. Implement `onContextItemSelected()` to handle menu item clicks
5. Create method to perform action for each context menu item

Create menu resource

1. Create XML menu resource (`menu_context.xml`)

```
<item
    android:id="@+id/context_edit"
    android:title="Edit"
    android:orderInCategory="10"/>

<item
    android:id="@+id/context_share"
    android:title="Share"
    android:orderInCategory="20"/>
```

Register a view to a context menu

In onCreate() of the Activity:

2. Register View.OnCreateContextMenuListener to View:

```
TextView article_text = findViewById(R.id.article);
registerForContextMenu(article_text);
```

Implement onCreateContextMenu()

3. Specify which context menu

```
@Override
public void onCreateContextMenu(ContextMenu menu, View v,
                                ContextMenu.ContextMenuInfo menuInfo) {
   super.onCreateContextMenu(menu, v, menuInfo);
   MenuInflater inflater = getMenuInflater();
   inflater.inflate(R.menu.menu_context, menu);
}
```

Implement onContextItemSelected()

```
@Override
public boolean onContextItemSelected(MenuItem item) {
    switch (item.getItemId()) {
        case R.id.context_edit:
            editNote();
            return true;
        case R.id.context_share:
            shareNote();
            return true;
        default:
            return super.onContextItemSelected(item);
    }
}
```

Contextual Action Bar

What is Action Mode?

- UI mode that lets you replace parts of normal UI interactions temporarily
- For example: Selecting a section of text or long-pressing an item could trigger action mode

Action mode has a lifecycle

- Start it with startActionMode(), for example, in the listener
- ActionMode.Callback interface provides lifecycle methods you override:
  - `onCreateActionMode(ActionMode, Menu)` once on initial creation
  - `onPrepareActionMode(ActionMode, Menu)` after creation and any time ActionMode is invalidated
  - `onActionItemClicked(ActionMode, MenuItem)` any time contextual action button is clicked
  - `onDestroyActionMode(ActionMode)` when action mode is closed

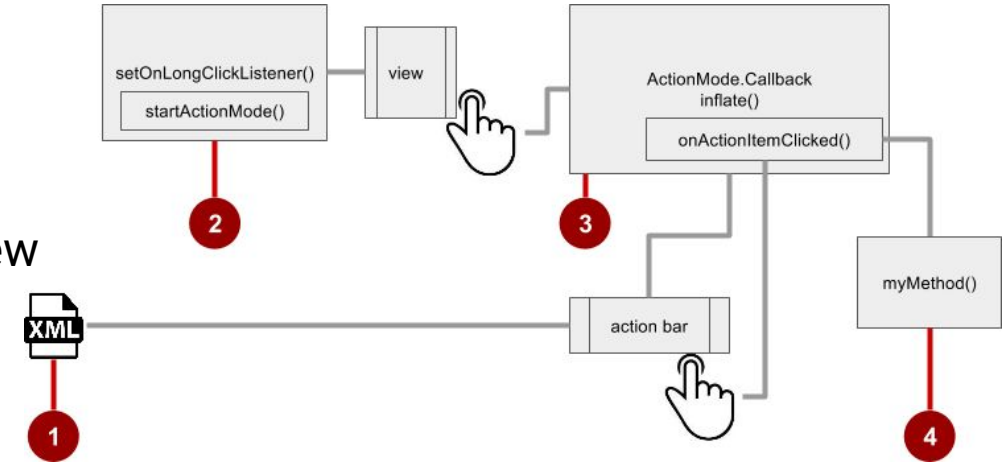
What is a contextual action bar?

Long-press on View shows contextual action bar

1. Contextual action bar with actions
   - **Edit**, **Share**, and **Delete**
   - Done (left arrow icon) on left side
   - Action bar is available until user taps Done
2. View on which long press triggers contextual action bar

Steps for contextual action bar

1. Create XML menu resource file and assign icons for items
2. `setOnLongClickListener()` on View that triggers contextual action bar and call `startActionMode()` to handle click



3. Implement `ActionMode.Callback` interface to handle ActionMode lifecycle; include action for menu item click in `onActionItemClicked()` callback
4. Create method to perform action for each context menu item

Use setOnLongClickListener

```
private ActionMode mActionMode;
```

In onCreate():

```
View view = findViewById(article);
view.setOnLongClickListener(new View.OnLongClickListener() {
   public boolean onLongClick(View view) {
      if (mActionMode != null) return false;
      mActionMode =
            MainActivity.this.startActionMode(mActionModeCallback);
      view.setSelected(true);
      return true;
   }
});
```

Implement mActionModeCallback

```
public ActionMode.Callback mActionModeCallback =
    new ActionMode.Callback() {
     // Implement action mode callbacks here.
};
```

Implement onCreateActionMode

```
@Override
public boolean onCreateActionMode(ActionMode mode, Menu menu) {
    MenuInflater inflater = mode.getMenuInflater();
    inflater.inflate(R.menu.menu_context, menu);
    return true;
}
```

Implement onPrepareActionMode

- Called each time action mode is shown
- Always called after on`CreateActionMode`, but may be called multiple times if action mode is invalidated

```
@Override
public boolean onPrepareActionMode(ActionMode mode, Menu menu) {
   return false; // Return false if nothing is done.
}
```

Implement onActionItemClicked

- Called when users selects an action
- Handle clicks in this method

```
@Override
public boolean onActionItemClicked(ActionMode mode, MenuItem item) {
   switch (item.getItemId()) {
       case R.id.action_share:
         // Perform action for the Share menu item.
         mode.finish(); // Action picked, so close the action bar.
         return true;
       default:
         return false;
   }
}
```

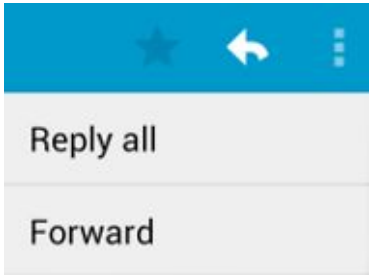
Implement onDestroyActionMode

- Called when user exits the action mode

```
@Override
public void onDestroyActionMode(ActionMode mode) {
    mActionMode = null;
}
```

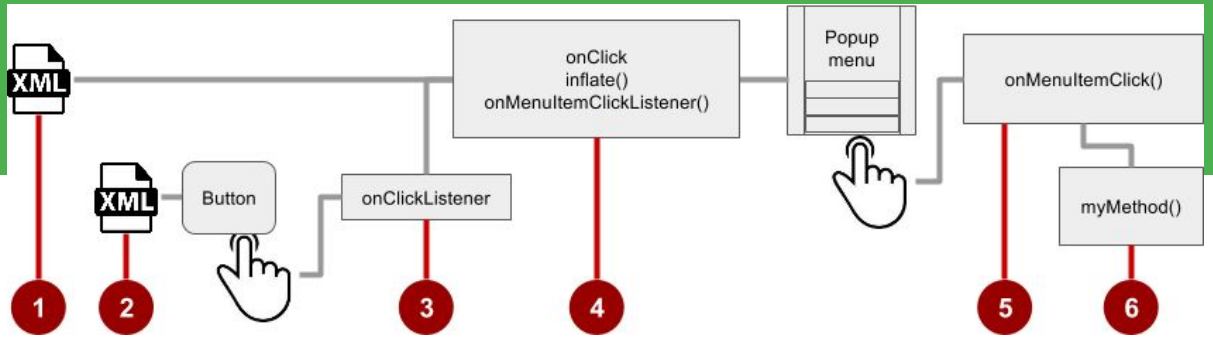
Popup Menu

What is a popup menu?



- Vertical list of items anchored to a view
- Typically anchored to a visible icon
- Actions should not directly affect view content
  - Options menu overflow icon that opens options menu
  - In email app, **Reply All** and **Forward** relate to email message but don't affect or act on message

Steps



1. Create XML menu resource file and assign appearance and position attributes
2. Add `ImageButton` for the popup menu icon in the XML activity layout file
3. Assign `onClickListener` to `ImageButton`
4. Override `onClick()` to inflate the popup and register it with `onMenuItemClickListener()`
5. Implement `onMenuItemClick()`
6. Create a method to perform an action for each popup menu item

Add ImageButton

```
<ImageButton
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/button_popup"
 android:src="@drawable/@drawable/ic_action_popup"/>
```

Assign onClickListener to button

```
private ImageButton mButton =
    (ImageButton) findViewById(R.id.button_popup);
```

In onCreate():

```
mButton.setOnClickListener(new View.OnClickListener() {
    // define onClick
});
```

Implement onClick

```
@Override
public void onClick(View v) {
    PopupMenu popup = new PopupMenu(MainActivity.this, mButton);
    popup.getMenuInflater().inflate(
        R.menu.menu_popup, popup.getMenu());
    popup.setOnMenuItemClickListener(
        new PopupMenu.OnMenuItemClickListener() {
            // implement click listener.
         });
    popup.show();
}
```

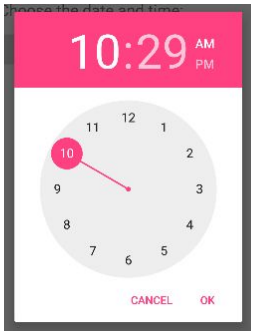
Implement onMenuItemClick

```
public boolean onMenuItemClick(MenuItem item) {
    switch (item.getItemId()) {
        case R.id.option_forward:
            // Implement code for Forward button.
            return true;
        default:
            return false;
    }
}
```

Dialogs

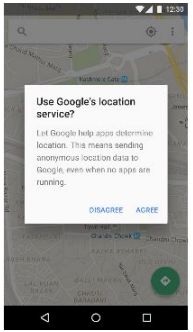
Dialogs

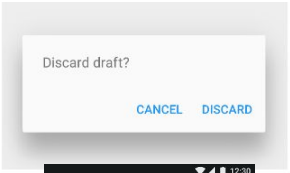
- Dialog appears on top, interrupting flow of Activity
- Requires user action to dismiss

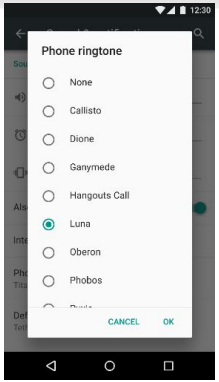


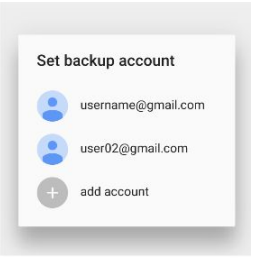
TimePickerDialog

DatePickerDialog







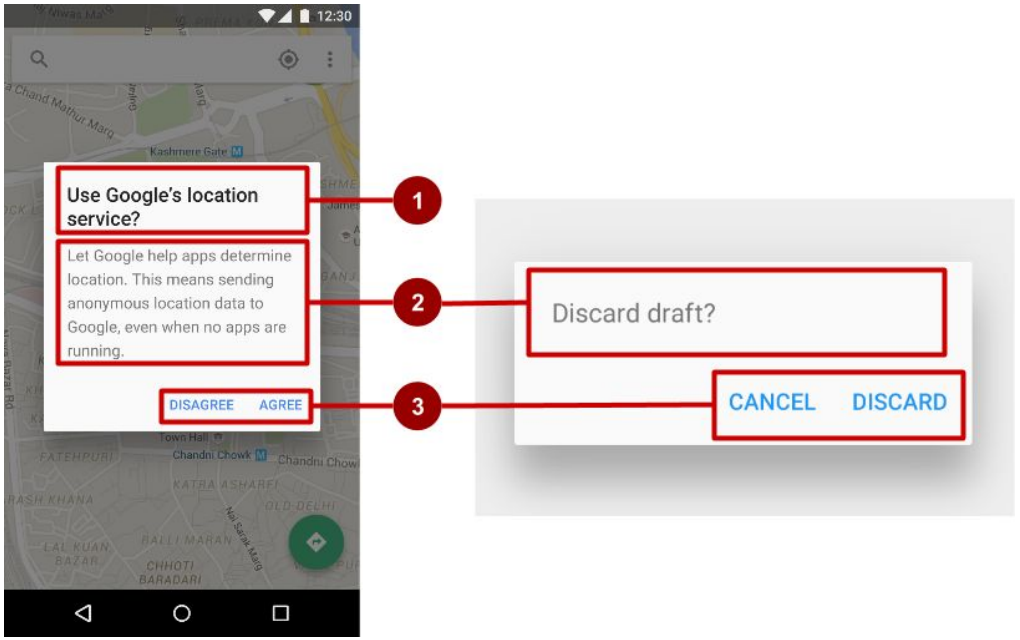


AlertDialog

AlertDialog

AlertDialog can show:

1. Title (optional)
2. Content area
3. Action buttons



Build the AlertDialog

Use `AlertDialog.Builder` to build alert dialog and set attributes:

```
public void onClickShowAlert(View view) {
    AlertDialog.Builder alertDialog = new
                        AlertDialog.Builder(MainActivity.this);
    alertDialog.setTitle("Connect to Provider");
    alertDialog.setMessage(R.string.alert_message);
    // ... Code to set buttons goes here.
```

Set the button actions

- `alertDialog.setPositiveButton()`
- `alertDialog.setNeutralButton()`
- `alertDialog.setNegativeButton()`

alertDialog code example

```
alertDialog.setPositiveButton(
                    "OK", newDialogInterface.OnClickListener() {
    public void onClick(DialogInterface dialog, int which) {
        // User clicked OK button.
    }
});
```

Same pattern for setNegativeButton() and setNeutralButton()

Pickers

Pickers

- DatePickerDialog
- TimePickerDialog

Pickers use fragments

- Use DialogFragment to show a picker
- DialogFragment is a window that floats on top of Activity window

Introduction to fragments

- A Fragment is like a mini-Activity within an Activity
  - Manages its own own lifecycle
  - Receives its own input events
- Can be added or removed while parent Activity is running
- Multiple fragments can be combined in a single Activity
- Can be reused in more than one Activity

Creating a date picker dialog

1. Add a blank `Fragment` that extends `DialogFragment` and implements `DatePickerDialog.OnDateSetListener`
2. In `onCreateDialog()` initialize the date and return the dialog
3. In `onDateSet()` handle the date
4. In `Activity` show the picker and add method to use date

Creating a time picker dialog

1. Add a blank `Fragment` that extends `DialogFragment` and implements `TimePickerDialog.OnTimeSetListener`
2. In `onCreateDialog()` initialize the time and return the dialog
3. In `onTimeSet()` handle the time
4. In Activity, show the picker and add method to use time