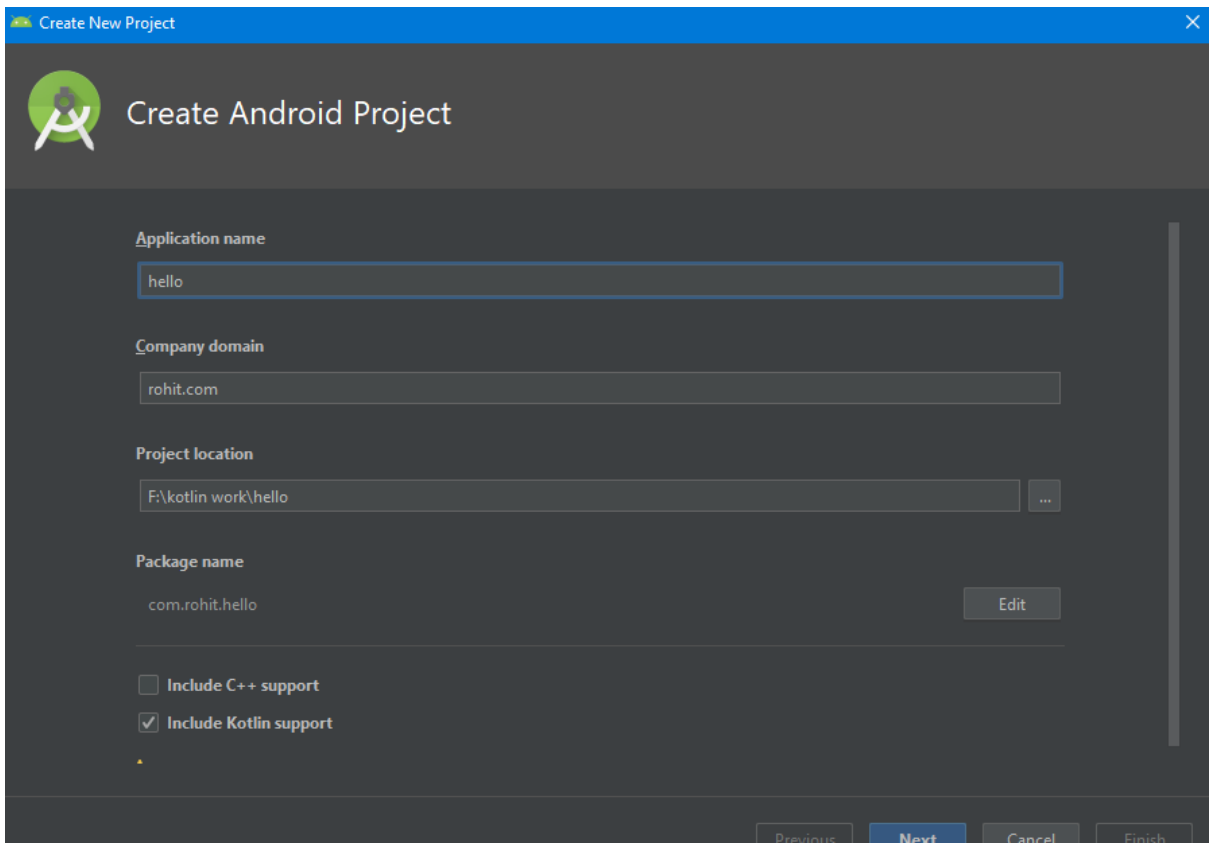
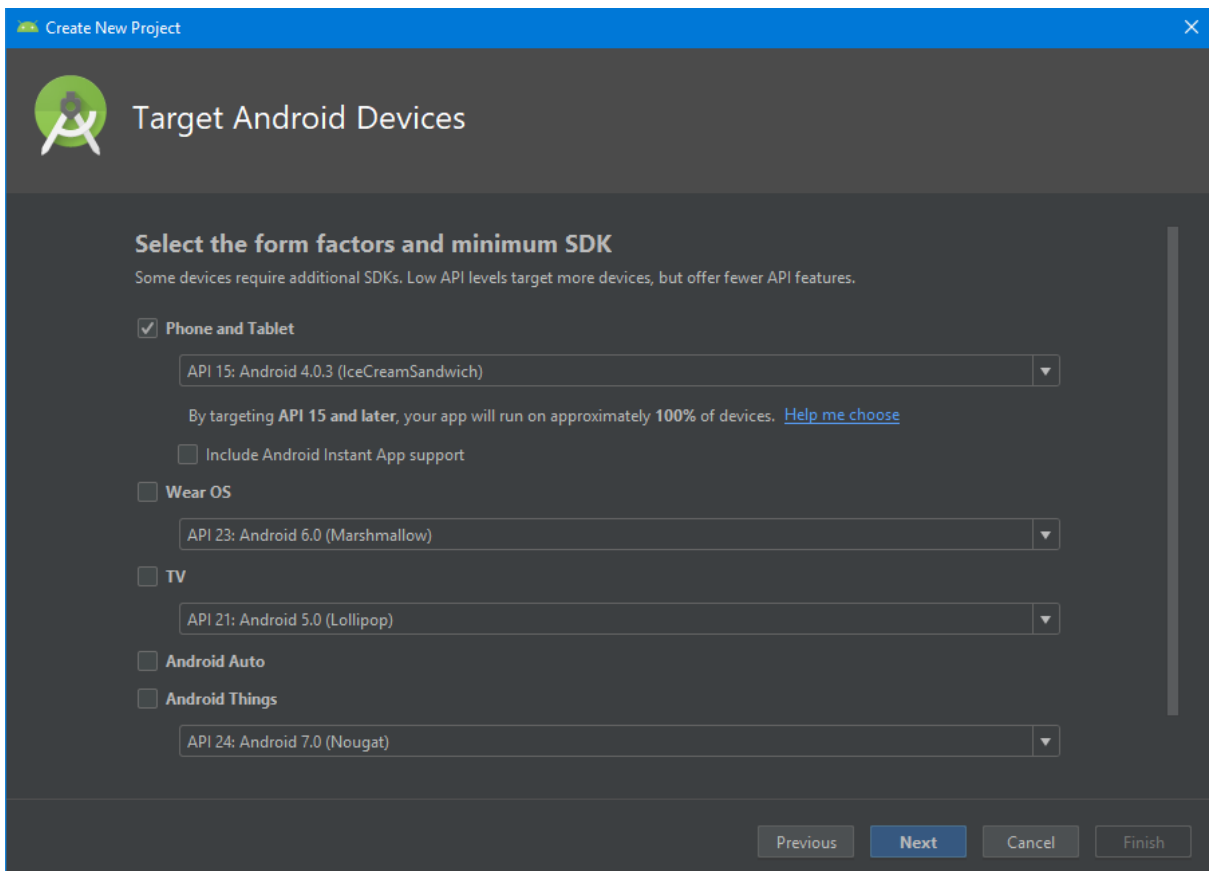
Android Developer Fundamentals

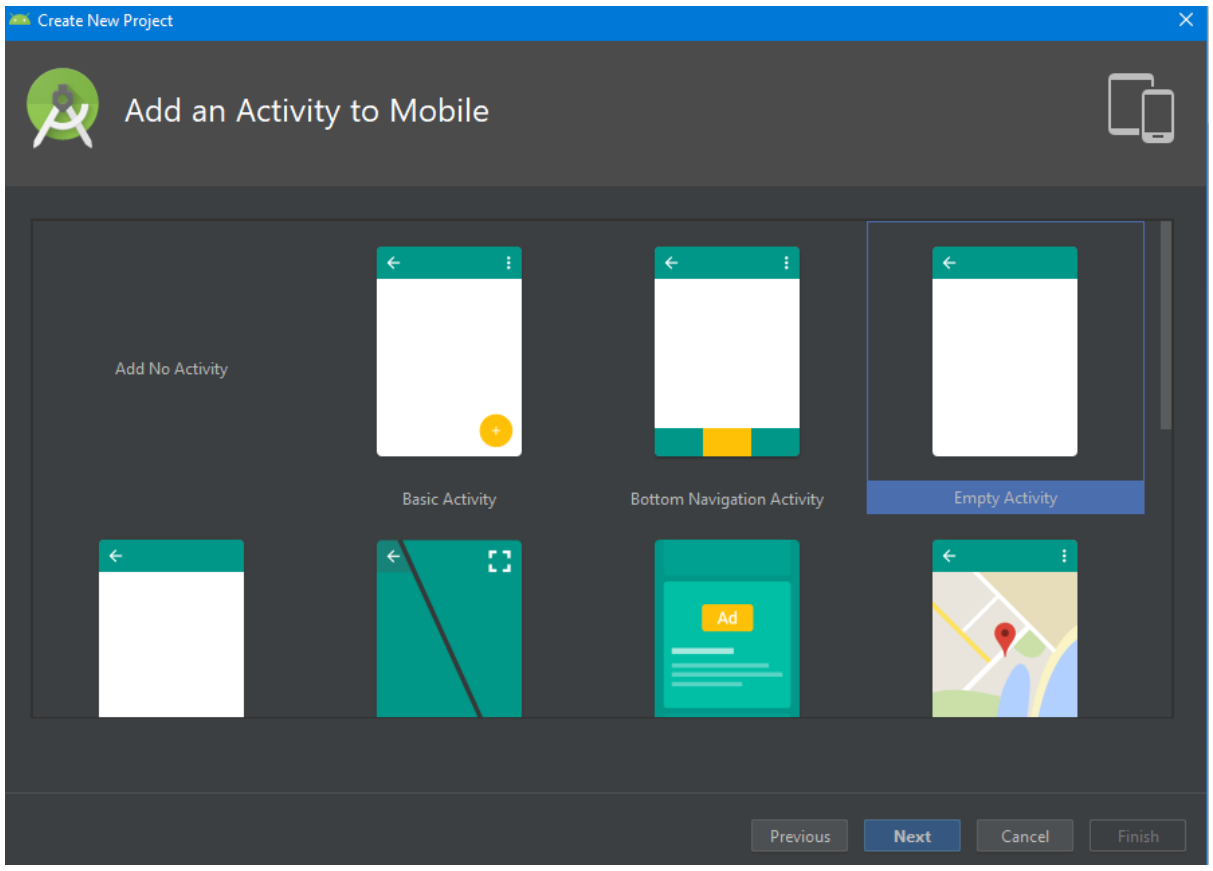
1. **Install android studio and run hello world program.**

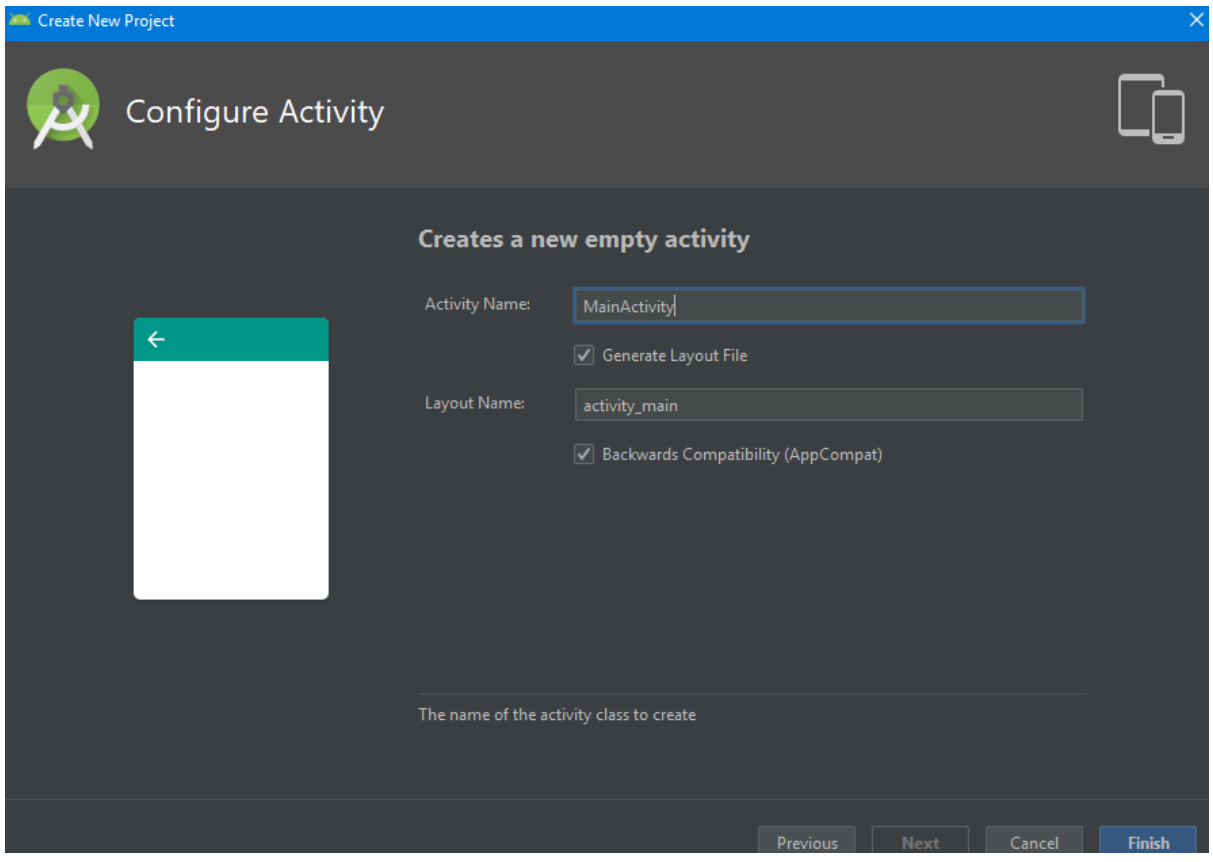
   Solution:

   Creating a project:









Activity_Main.Kt

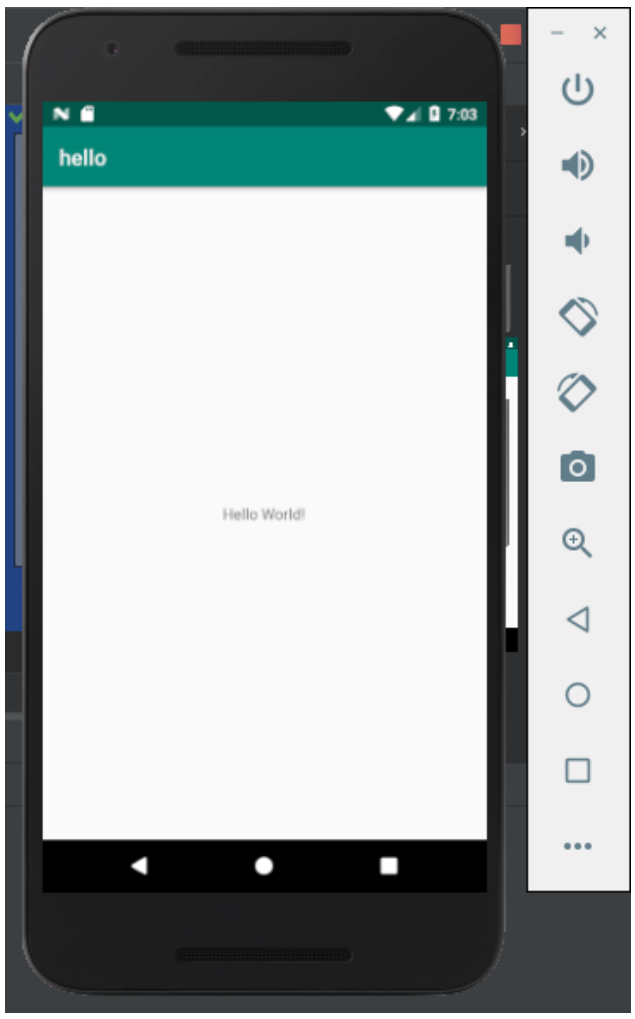
```kotlin
package com.rohit.hello

import android.support.v7.app.AppCompatActivity
import android.os.Bundle

class MainActivity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
    }
}
```

Activity_Main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>

<android.support.constraint.ConstraintLayout

        xmlns:android="http://schemas.android.com/apk/res/android"

        xmlns:tools="http://schemas.android.com/tools"

        xmlns:app="http://schemas.android.com/apk/res-auto"

        android:layout_width="match_parent"
```

```
        android:layout_height="match_parent"
        tools:context=".MainActivity">

    <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Hello World!"
            app:layout_constraintBottom_toBottomOf="parent"
            app:layout_constraintLeft_toLeftOf="parent"
            app:layout_constraintRight_toRightOf="parent"
            app:layout_constraintTop_toTopOf="parent"/>

</android.support.constraint.ConstraintLayout>
```

Apk in avd:



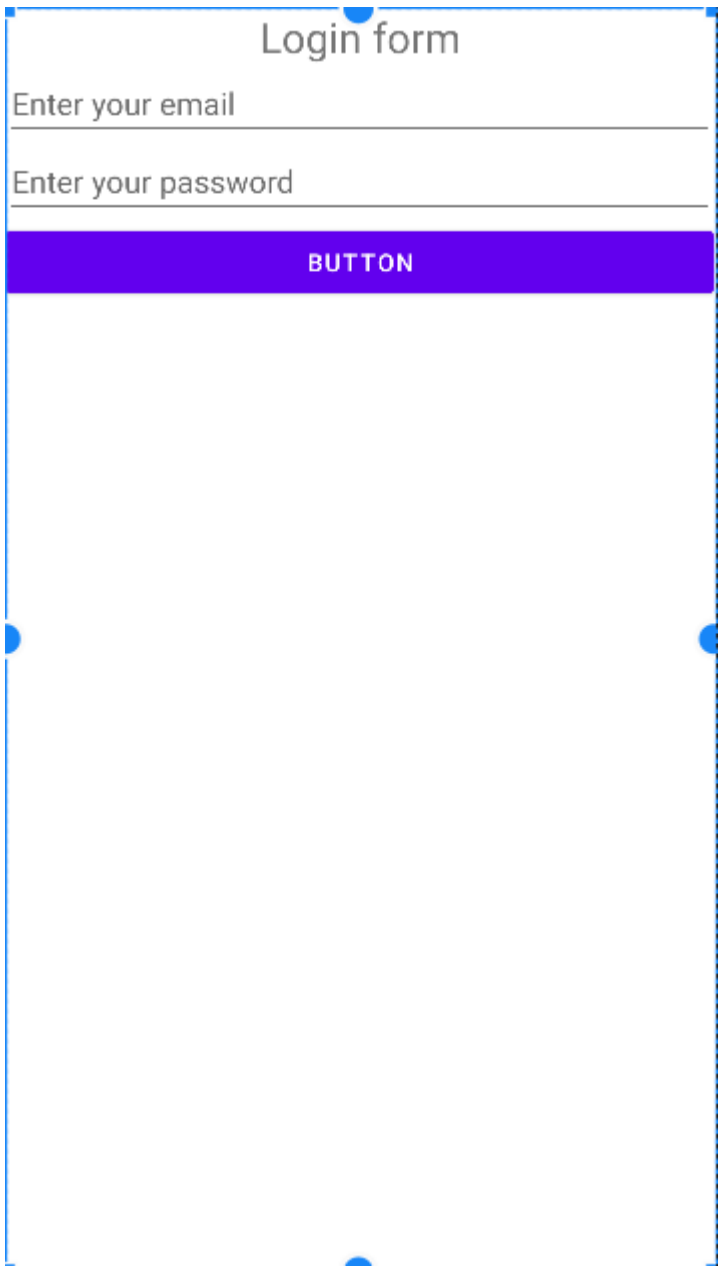
2. create an android app with intereactive user interface using layouts

Solution:

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    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">

    <LinearLayout
        android:layout_width="409dp"
        android:layout_height="729dp"
        android:orientation="vertical"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
```

```
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent">

        <TextView
            android:id="@+id/textView"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:gravity="center"
            android:text="Login form"
            android:textSize="24sp" />

        <EditText
            android:id="@+id/editTextText"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:ems="10"
            android:inputType="text"
            android:hint="Enter your email" />

        <EditText
            android:id="@+id/editTextText2"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:ems="10"
            android:hint="Enter your password"
             />

        <Button
            android:id="@+id/button"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Button" />
    </LinearLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output :



3. Create an android app that demonstrate the working with TextView elements.

Solution :

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    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"
    android:foregroundTint="#984E4E"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/name"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:gravity="center"
        android:text="Welcome page"
        android:textColor="#A80606"
        android:textSize="32sp"
        android:background="#DCABAB"
        android:textStyle="bold|italic"
        app:layout_constraintBottom_toBottomOf="parent"
```

```
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output :

4. Create an android app that demonstrate the activity life cycle and instance state

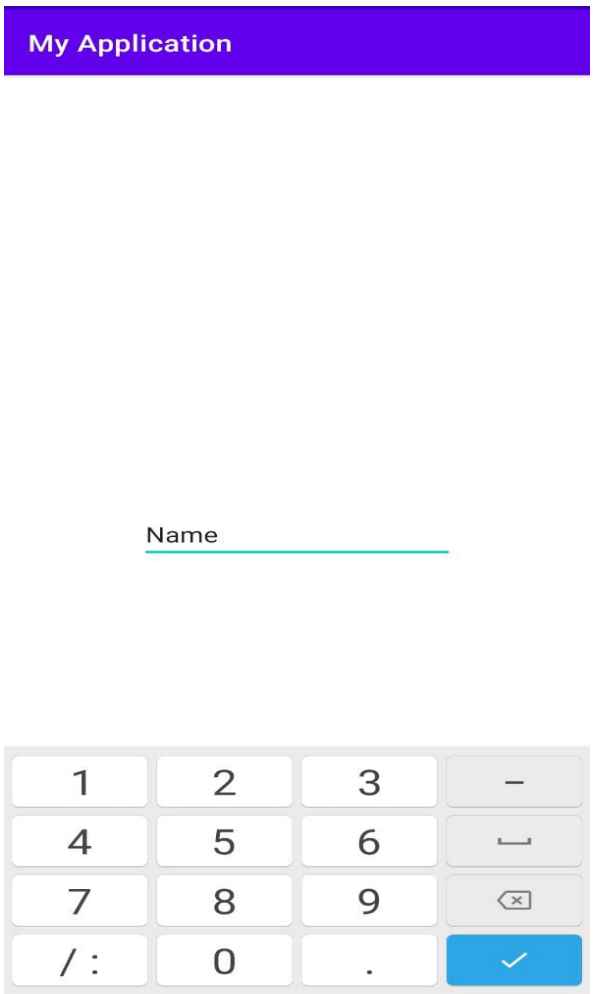
Solution :

```
package com.example.myapplication;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
```

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

    @Override
    protected void onStart() {
        super.onStart();
        Toast.makeText(getApplicationContext(), "onStart method", Toast.LENGTH_SHORT).show();
    }

    @Override
    protected void onResume() {
        super.onResume();
        Toast.makeText(getApplicationContext(), "onResume method", Toast.LENGTH_SHORT).show();
    }

    @Override
    protected void onPause() {
        super.onPause();
        Toast.makeText(getApplicationContext(), "onPause method", Toast.LENGTH_SHORT).show();
    }

    @Override
    protected void onStop() {
        super.onStop();
        Toast.makeText(getApplicationContext(), "onStop method", Toast.LENGTH_SHORT).show();
    }

    @Override
    protected void onDestroy() {
        super.onDestroy();
        Toast.makeText(getApplicationContext(), "onDestroy method", Toast.LENGTH_SHORT).show();
    }
}
```

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    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">

    <EditText
        android:id="@+id/editTextText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="datetime"
        android:text="Name"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

Output :



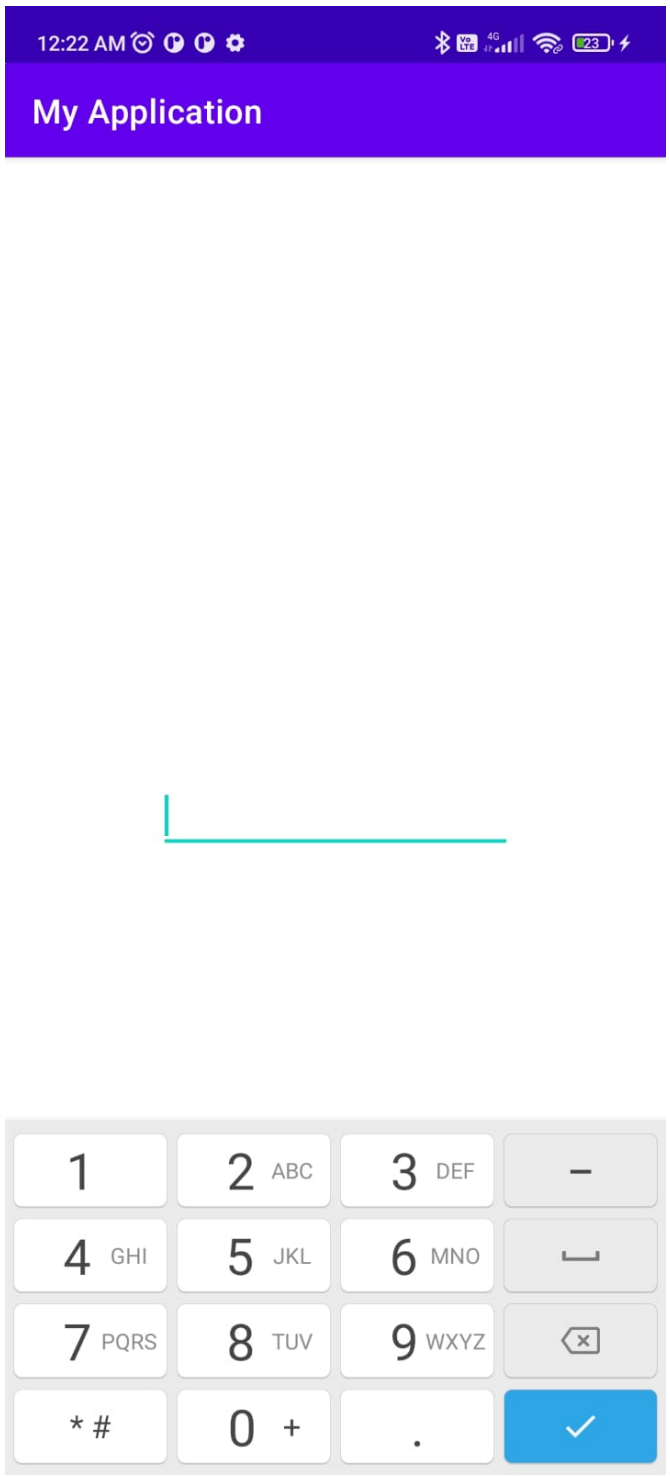
5. create an android app that demonstrate the use of keyboards, Input controls, Alert, and pickers.

1. Keyboards:

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    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">


    <EditText
        android:id="@+id/editTextText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="number|text"
        android:text="Name"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output :



2. Input controls :

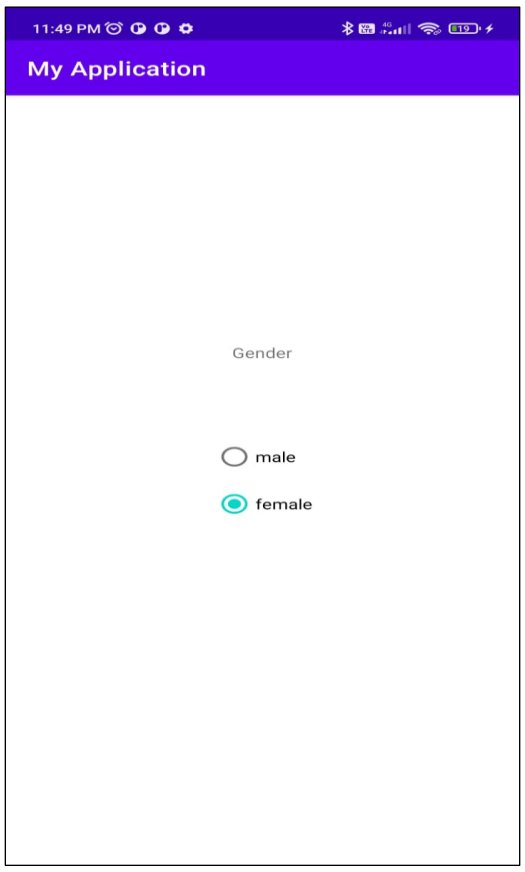
radio button :

Main.xml file

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    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">

    <RadioGroup
        android:id="@+id/radiogrp"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent">

        <RadioButton
            android:id="@+id/radioButton"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="male" />

        <RadioButton
            android:id="@+id/radioButton2"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="female" />
    </RadioGroup>
```

```
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="252dp"
        android:text="Gender"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output :



3. Alert:

Solution :

activity_main.xml

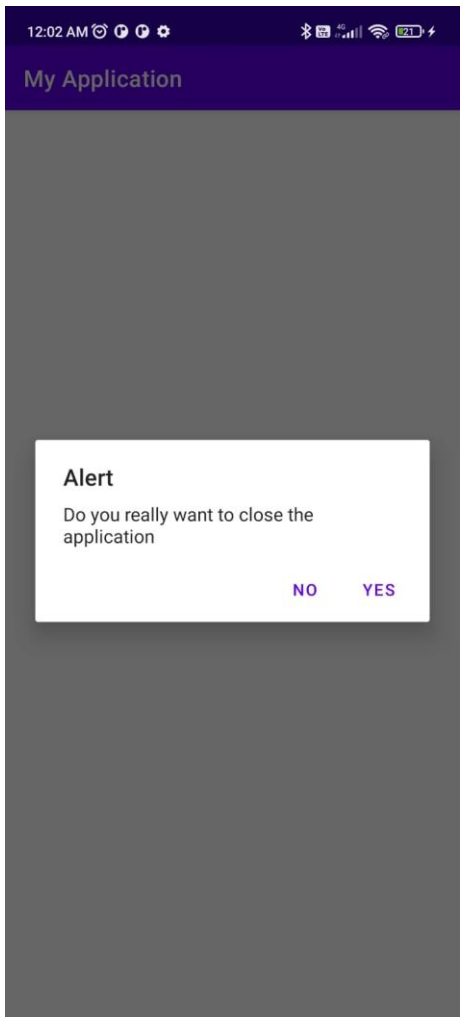
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.myapplication;

import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;
```

```
import android.content.DialogInterface;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {

    Button alertBtn;
    AlertDialog.Builder builder;

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

        alertBtn = findViewById(R.id.button);
        builder = new AlertDialog.Builder(this);

        alertBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                builder.setTitle("Alert")
                        .setMessage("Do you really want to close the application")
                        .setCancelable(true)
                        .setPositiveButton("yes", new DialogInterface.OnClickListener() {
                            @Override
                            public void onClick(DialogInterface dialog, int which) {
                                finish();
                            }
                        })
                        .setNegativeButton("no", new DialogInterface.OnClickListener() {
                            @Override
                            public void onClick(DialogInterface dialog, int which) {
                                dialog.cancel();
                            }
                        })
                        .show();

            }
        });
    }
}
```

Output :



4. Pickers :

Datepicker:

Activity_main.xml

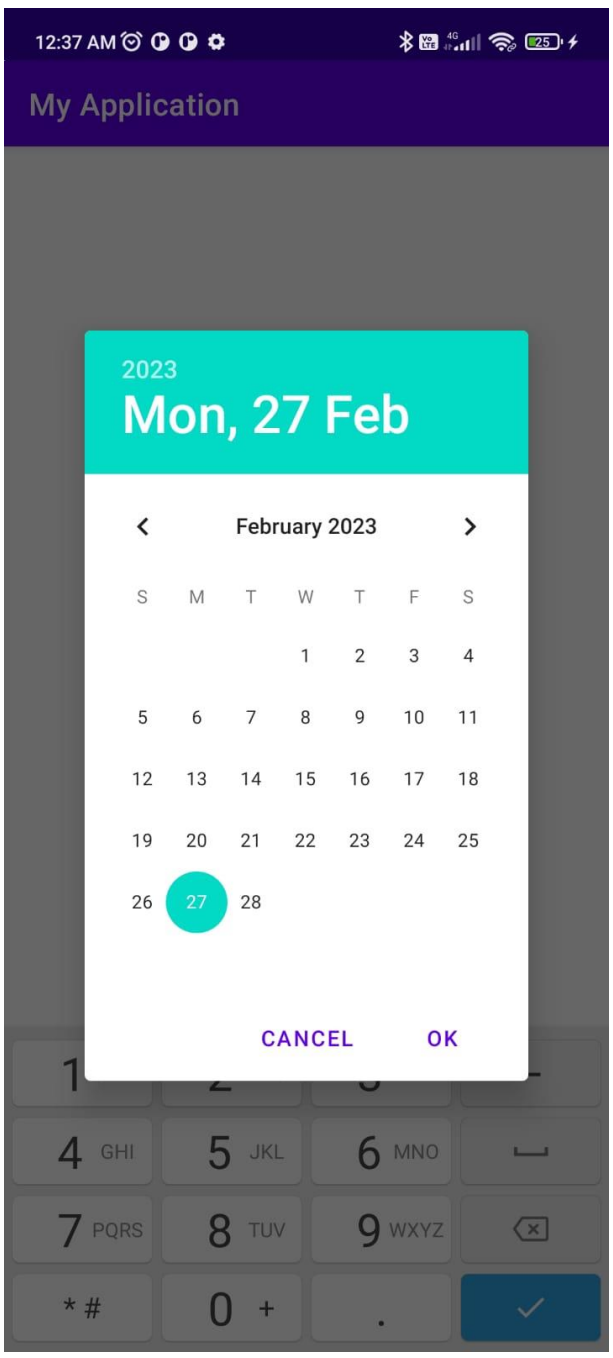
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">


    <EditText
        android:id="@+id/dateEditText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="number|text"
        android:hint="datepicker"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.myapplication;

import androidx.appcompat.app.AppCompatActivity;

import android.app.DatePickerDialog;
import android.os.Bundle;
import android.view.View;
import android.widget.DatePicker;
import android.widget.EditText;

import java.text.SimpleDateFormat;
import java.util.Calendar;

public class MainActivity extends AppCompatActivity {
    EditText editText;
```

```
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        editText = findViewById(R.id.dateEditText);
        editText.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Calendar calendar = Calendar.getInstance();
                int year = calendar.get(Calendar.YEAR);
                int month = calendar.get(Calendar.MONTH);
                int day = calendar.get(Calendar.DAY_OF_MONTH);

                DatePickerDialog datePicker = new DatePickerDialog(MainActivity.this, new
DatePickerDialog.OnDateSetListener() {
                    @Override
                    public void onDateSet(DatePicker view, int year, int month, int dayOfMonth) {
                        editText.setText(SimpleDateFormat.getDateInstance().format(calendar.getTime()));
                    }
                },year, month, day);
                datePicker.show();
            }
        });

    }
}
```

output :



5. create an android application that demonstrate the use of dropdown menu

step 1 :

create android resource directory(menu) by right clicking on “res” folder, select menu as a resource directory and directory name

step 2:

right click on menu folder create new “menu resource file”. Give any name to the file, click on ok.

Menu file:

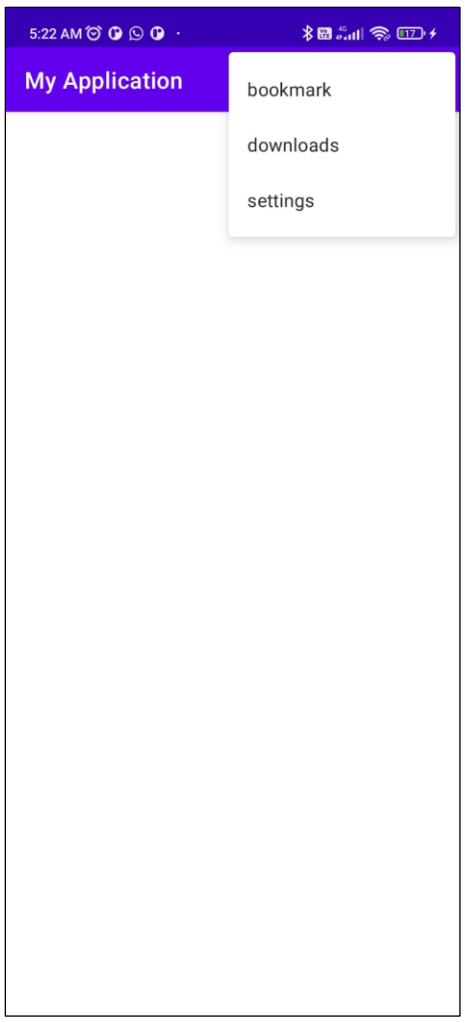
Example_menu.xml:

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

    <item
        android:id="@+id/bookmark"
        android:title="bookmark"/>

    <item android:id="@+id/downloads"
        android:title="downloads"/>

    <item android:id="@+id/settings"
        android:title="settings"/>
</menu>
```

MainActivity.java:

```
package com.example.myapplication;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {


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

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        MenuInflater inflater= getMenuInflater();
        inflater.inflate(R.menu.example_menu, menu);

        return true;

    }

    @Override
    public boolean onOptionsItemSelected(@NonNull MenuItem item) {
        switch (item.getItemId()){
            case R.id.bookmark:
                Toast.makeText(getApplicationContext(), "you clicked on bookmark option",
Toast.LENGTH_SHORT).show();
                return true;

            case R.id.downloads:
                Toast.makeText(getApplicationContext(), "You clicked on downloads option",
Toast.LENGTH_SHORT).show();
                return true;

            case R.id.settings:
                Toast.makeText(getApplicationContext(), "You clicked on settings option",
Toast.LENGTH_SHORT).show();
        }
        return true;
    }
}
```

output :


5:22 AM
My Application
bookmark
downloads
settings