## Mobile Application Lab Programs
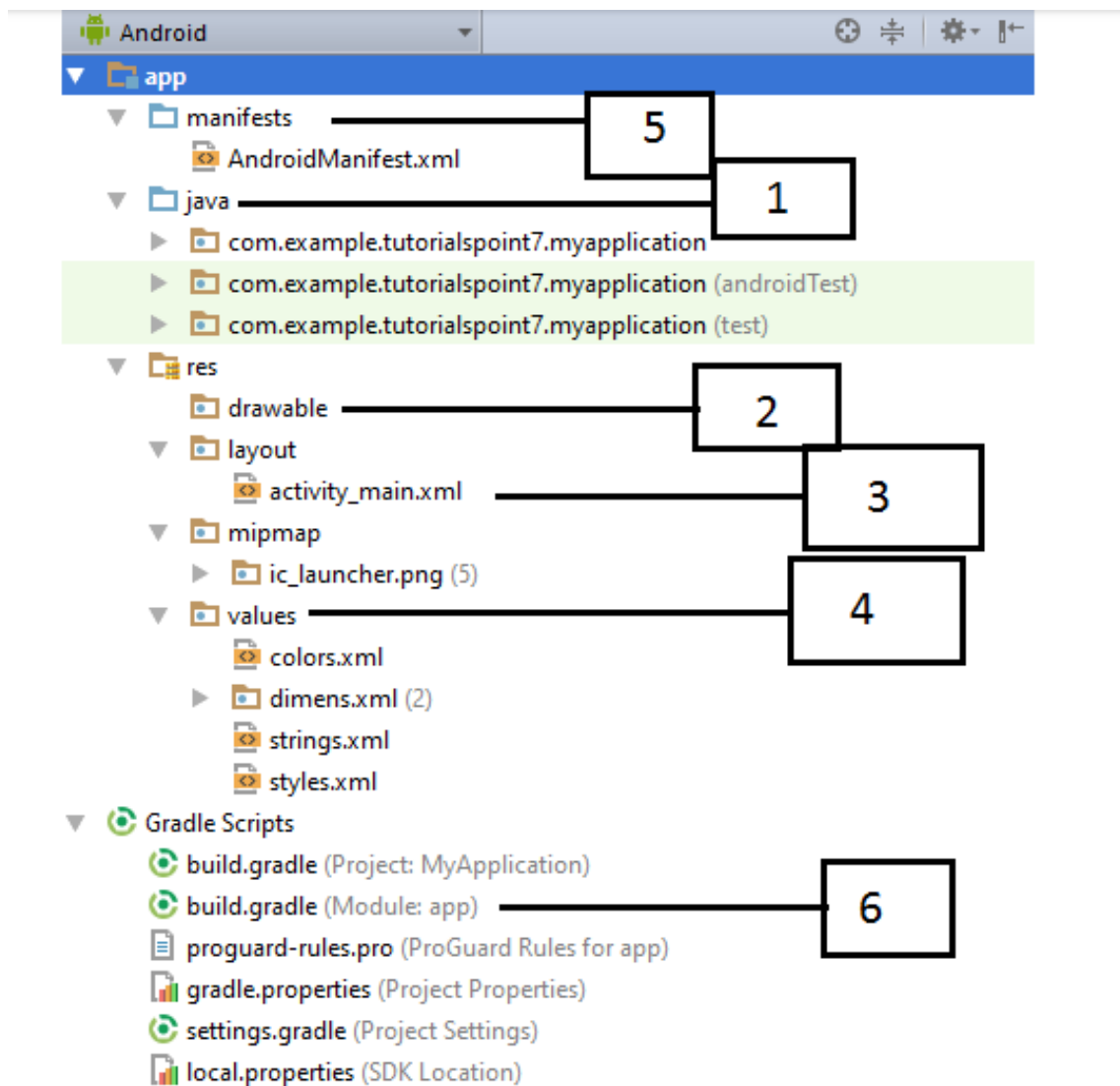
1. Creating "Hello world" Application.

2. Creating an application that displays message based on the screen orientation.

3. Create an application to develop Login window using UI controls.

4. Create an application to implement new activity using explicit intent, implicit intent and content provider.

5. Create an application that displays custom designed Opening Screen.

6. Create an UI with all views.

7. Create menu in Application

8. Read/ write the Local data.

9. Create / Read / Write data with database (SQLite).

10. Create an application to send SMS and receive SMS

11. Create an application to send an email.

12. Display Map based on the Current/given location.

13. Create a sample application with login module (check user name and password) On successful login change Textview "Login Successful". On login fail alert using Toast "login fail"

14. Learn to deploy Android applications

**Basic Android Application Structure**



**Program 1**

**Creating "Hello world" Application.**

**Steps:**

1. Click **Start-** Android **Studio**, a **Welcome to Android Studio** dialog box will appear. Click **New Project**, the **New Project Dialog box** appears.

2. Choose **Empty Views Activity** then click **Next**.

3. Specify the **Name** of your project, Select the **Language** as **Java**, and Select the **SDK as API 24("Nougat",Android 7.0).**Click **Finish** Button.

4. Update the following code **in activity_main.xml and MainActivity.java**

5. Click **Run app** or **shift+F10** to execute the application.

**activity_main.xml**

```xml
<?xml version="1.0" encoding="utf8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/resauto"
    xmlns:tools="http://schemas.android.com/tools"
    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_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        android:textSize="30sp"/>

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

**MainActivity.java**

```java
package com.bca.helloworld;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity

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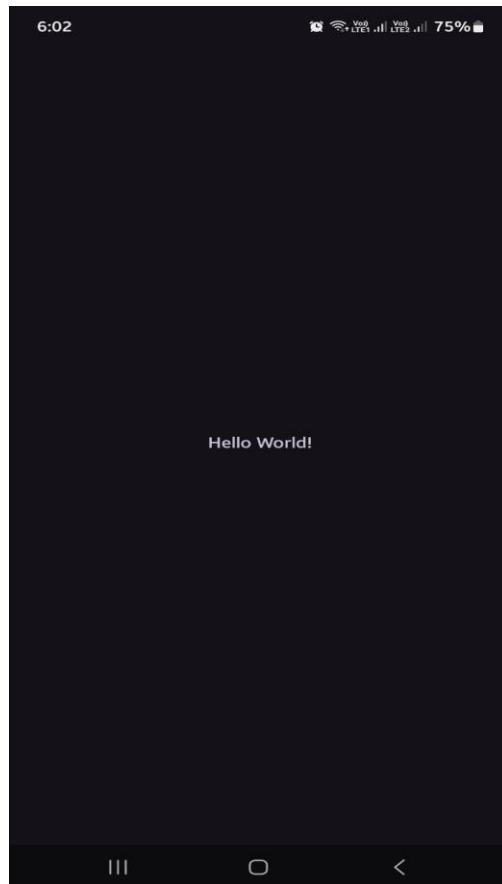
```
    }
}
```

**Output:**



**Program 2**

**Creating an application that displays message based on the screen orientation.**

**Steps:**

1. Click **Start - Android Studio**, a **Welcome to Android Studio** dialog box will appear.

Click **New Project**, the **New Project Dialog box** appears.

2. Choose **Empty Views Activity** then click **Next**.

3. Specify the **Name** of your project, Select the **Language** as **Java**, and Select the **SDK as API 24("Nougat",Android 7.0).**Click **Finish** Button.

4. Update the following code **in activity_main.xml, activity_main2.xml, MainActivity.java and MainActivity2.java**

5. Update the following code **in app manifests AndroidManifest.xml**

6. To Create another activity **right click on app – new activity-Empty views Activity.**

7. Update the following code **in activity_main2.xml and MainActivity2.java.**

8. **Click Run App or Shift+F10** to execute the application.

**AndroidManifest.xml**

```xml
<?xml version="1.0" encoding="utf8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.ScreenOrientation"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity2"
            android:exported="false"
            android:screenOrientation="landscape"/>
        <activity
            android:name=".MainActivity"
```

```
            android:exported="true"

            android:screenOrientation="portrait">

            <intentfilter>

                <action android:name="android.intent.action.MAIN" />


                <category android:name="android.intent.category.LAUNCHER" />

            </intentfilter>

        </activity>

    </application>


</manifest>
```

**Activity_main.xml**

```
<?xml version="1.0" encoding="utf8"?>


<androidx.constraintlayout.widget.ConstraintLayout

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


    xmlns:app="http://schemas.android.com/apk/resauto"

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

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    tools:context=".MainActivity">


    <Button


        android:id="@+id/button1"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"


        android:layout_marginBottom="8dp"

        android:layout_marginTop="112dp"

        android:onClick="onClick"
```

```
        android:text="Launch next activity"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.612"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editText1"
        app:layout_constraintVertical_bias="0.613" />


    <TextView

        android:id="@+id/editText1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_marginEnd="8dp"
        android:layout_marginStart="8dp"
        android:layout_marginTop="124dp"
        android:ems="10"
        android:textSize="22dp"
        android:text="This activity is portrait orientation"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.502"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

**MainActivity.java**

```
package com.bca.screenorientation;

import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
```

```java
import android.os.Bundle;
import android.view.View;

public class MainActivity extends AppCompatActivity {

    @Override

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

    }

    public void onClick(View v) {

        Intent intent = new Intent(MainActivity.this,MainActivity2.class);
            startActivity(intent);
    }

}
```

**activity_main2.xml**

```xml
<?xml version="1.0" encoding="utf8"?>

<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/resauto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity2">
```

```
<TextView

    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginEnd="8dp"
    android:layout_marginStart="8dp"
    android:layout_marginTop="180dp"
    android:text="this is landscape orientation"
    android:textSize="22dp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.502"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

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

**MainActivity2.java**

```
package com.bca.screenorientation;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;

public class MainActivity2 extends AppCompatActivity {

    @Override

    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main2);
    }
```
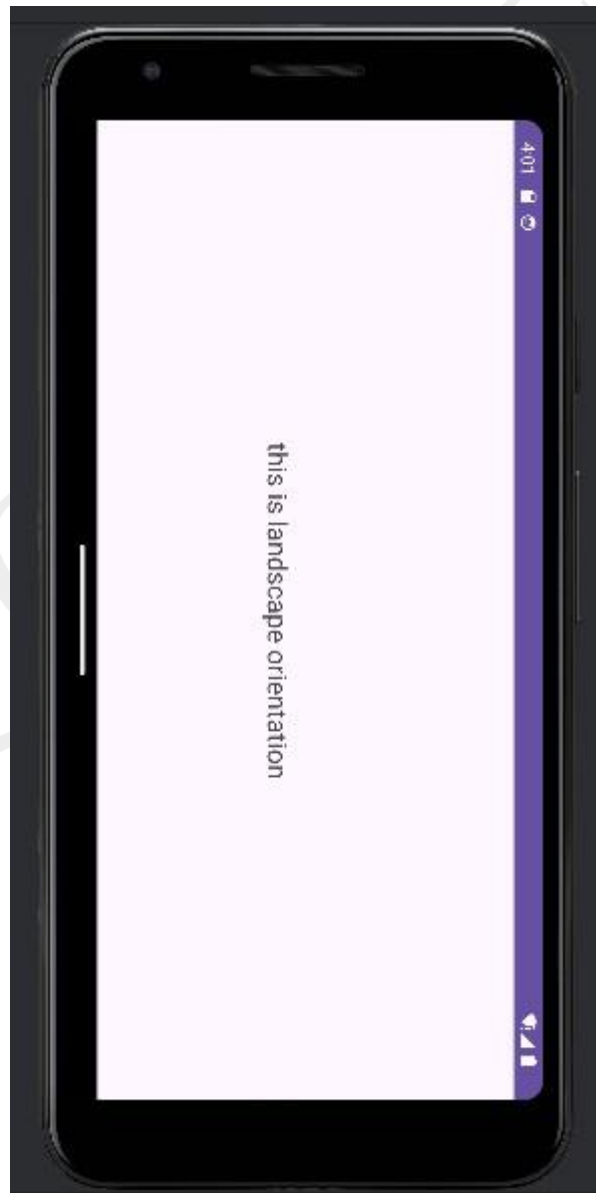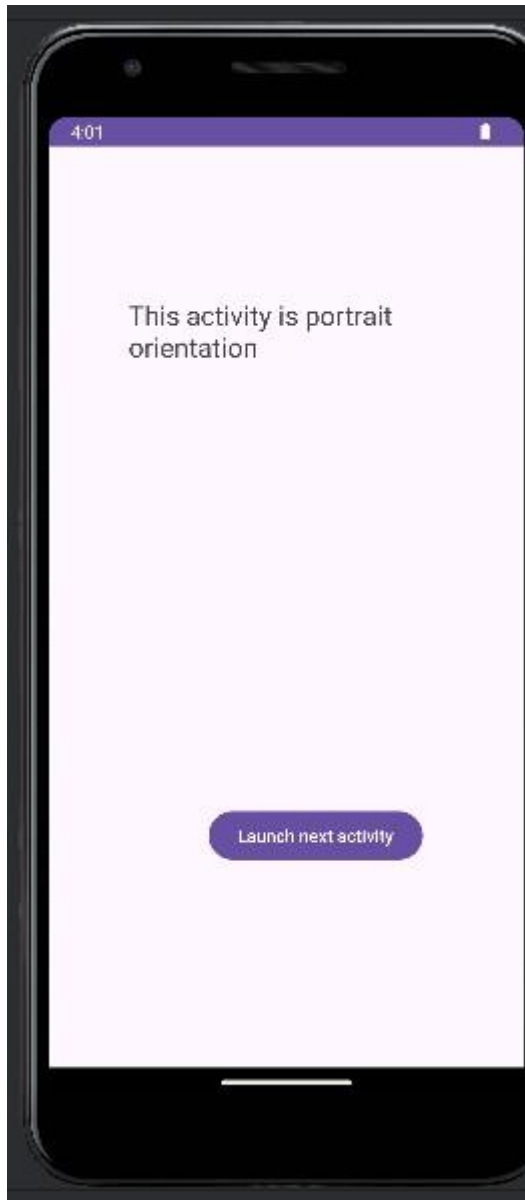
}

**OUTPUT**



**Program 3**

**Create an application to develop Login window using UI controls.**

1. Click **New Project**, the **New Project Dialog box** appears.

2. Choose **Empty Views Activity** then click **Next**.

3. Specify the **Name** of your project, Select the **Language** as **Java**, and Select the **SDK as API 24("Nougat",Android 7.0).**Click **Finish** Button.

4. Create **background** resources (**bg_outer.xml**)

   a. To create resource file, click **appresdrawable.** Right click **drawableNew Drawable Resource File.** The **New Resource File** dialog box appears.

   b. Set **filename** as **bg_outer.xml**, **root element** as **shape** and then click **ok.** Modify the **bg_outer.xml** file

5. Create **background** resources (**bg_inner.xml**)

   a. To create resource file, click **appresdrawable.** Right click **drawableNew Drawable Resource File.** The **New Resource File** dialog box appears.

   b. Set **filename** as **bg_inner.xml**, **root element** as **shape** and then click **ok.** Modify the **bg_inner.xml** file

9. Click **Run App or Shift+F10** to execute the application.

**activity_main.xml**

```
<?xml version="1.0" encoding="utf8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/resauto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:background="@drawable/bg_outer">
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:gravity="center"
    android:layout_centerInParent="true"
    android:orientation="vertical"
    android:background="@drawable/bg_inner"
    android:padding="30dp"
```

```xml
    >
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Login Page"
        android:textSize="32sp"
        android:textStyle="bold"
        android:fontFamily="sansserifcondensedmedium"
        android:textColor="@color/black"
        android:paddingBottom="20dp"
        />
    <EditText
        android:id="@+id/editTextUsername"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Username"
        android:layout_marginBottom="16dp"/>
    <EditText
        android:id="@+id/editTextPassword"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Password"
        android:layout_below="@id/editTextUsername"
        android:layout_marginBottom="16dp"
        android:inputType="textPassword"/>
    <Button
        android:id="@+id/buttonLogin"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Login"
        android:layout_below="@id/editTextPassword"/>
    </LinearLayout>
</RelativeLayout>
```

**bg_inner.xml**

```xml
<?xml version="1.0" encoding="utf8"?>
<shape xmlns:android="http://schemas.android.com/apk/res/android">
    <gradient
        android:startColor="#84FFFF"
        android:endColor="#f08"
        android:angle="100"/>
    <corners android:radius="20dp"/>
</shape>
```

**bg_outer.xml**

```xml
<?xml version="1.0" encoding="utf8"?>
<shape xmlns:android="http://schemas.android.com/apk/res/android">
    <corners android:radius="12dp" />
    <gradient
        android:startColor="#B388FF"
        android:endColor="#397C9A"
        android:angle="100"/>
</shape>
```

**MainActivity.java**

```java
package com.bca.loginprgm;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
```

```java
    private EditText editTextUsername,editTextPassword;
    private Button buttonLogin;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        editTextUsername = findViewById(R.id.editTextUsername);
        editTextPassword = findViewById(R.id.editTextPassword);
        buttonLogin = findViewById(R.id.buttonLogin);
        buttonLogin.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String username = editTextUsername.getText().toString().trim();
                String password = editTextPassword.getText().toString().trim();
                if(username.equals("admin") && password.equals("pass")){
                    Toast.makeText(MainActivity.this, "Login successful",
                        Toast.LENGTH_SHORT).show();
                } else {
                    Toast.makeText(MainActivity.this, "Invalid username or password",
                        Toast.LENGTH_SHORT).show();
                }
            }
        });
    }
}
```

**OUTPUT**

**Program 4**

**Create an application to implement new activity using explicit intent, implicit intent and content provider.**

activity_new.xml

```
<?xml version="1.0" encoding="utf8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/resauto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
```

```xml
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".NewActivity">


    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Welcome to Explicit Intent"
        android:textSize="28sp"
        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

```java
package com.bca.intent;

import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
public class MainActivity extends AppCompatActivity {


    @Override
```

```java
protected void onCreate(Bundle savedInstanceState)
{
    super.onCreate(savedInstanceState);
    EdgeToEdge.enable(this);
    setContentView(R.layout.activity_main);


}
public void onImplicitButtonClicked(View view)
{
    Uri url=Uri.parse("https://www.google.com");
    Intent i=new Intent(Intent.ACTION_VIEW, url);
    startActivity(i);
}
public void onExplicitButtonClicked(View view )
{
    Intent i=new Intent(MainActivity.this, NewActivity.class);
    startActivity(i);
}
}
```

activity_main.xml

```xml
<?xml version="1.0" encoding="utf8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/resauto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center" tools:context=".MainActivity">
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
        android:text="Implicit Intent"

        android:onClick="onImplicitButtonClicked"

        />

    <Button

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:text="Explicit Intent"

        android:onClick="onExplicitButtonClicked"/>


</LinearLayout>
```

Output

**Program 5**

**Create an application that displays custom designed Opening Screen.**

1. Click **New Project**, the **New Project Dialog box** appears.

2. Choose **Empty Views Activity** then click **Next**.

3. Specify the **Name** of your project, Select the **Language** as **Java**, and Select the **SDKas API 24("Nougat",Android 7.0).**Click **Finish** Button.

4. To create another activity for **Home Page,** Right Click **AppNewActivity Empty Views Activity.** A **New Android Activity** dialog box appears, Specify the **Name** of the activity as **mainScreen** then click **Finish**.

5. Create one **TextView** resource in **activity_mainScreen.xml** and update the following code

**Activity_main.xml**

```xml
<?xml version="1.0" encoding="utf8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/resauto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:gravity="center">
    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:src="@drawable/img"/>

</RelativeLayout>
```

Activity_mainscreen.xml

```xml
<?xml version="1.0" encoding="utf8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/resauto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".Mainscreen"
    android:gravity="center"
    android:background="#7E6C29">
    <TextView android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Welcome to home Page"
        android:textStyle="bold"
        android:textSize="32sp"
        android:textColor="@color/black"/>
</RelativeLayout>
```

Mainactivity.java

```java
package com.bca.openingscreen;
import android.content.Intent;
import android.os.Bundle;
import android.os.Handler;
import android.view.WindowManager;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;


public class MainActivity extends AppCompatActivity {
    private static final int SPLASH_SCREEN_TIME_OUT = 10000;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    { super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        getWindow().setFlags(WindowManager.LayoutParams.FLAG_FULLSCREEN,
WindowManager.LayoutParams.FLAG_FULLSCREEN);
        new Handler().postDelayed(new Runnable()
        { @Override
        public void run()
        {
            Intent i = new Intent(MainActivity.this, Mainscreen.class);
            startActivity(i);
            finish();
        }
        }, SPLASH_SCREEN_TIME_OUT);
    }
}
```

**Mainscreen.java**

package com.bca.openingscreen;

import android.os.Bundle;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class Mainscreen extends AppCompatActivity {

   @Override
   protected void onCreate(Bundle savedInstanceState)
   {
     super.onCreate(savedInstanceState);
     EdgeToEdge.*enable*(this);
     setContentView(R.layout.*activity_mainscreen*);
     ViewCompat.*setOnApplyWindowInsetsListener*(findViewById(R.id.*main*), (v, insets) > {
       Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.*systemBars*());
       v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);
       return insets;
     });
   }
}

**Output**
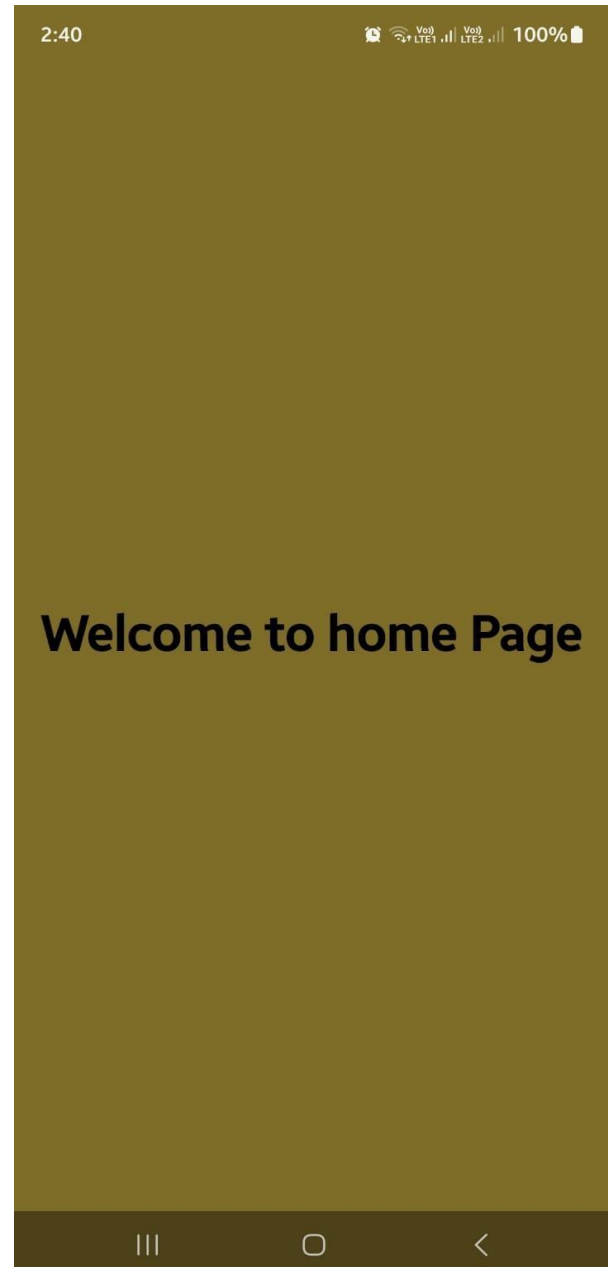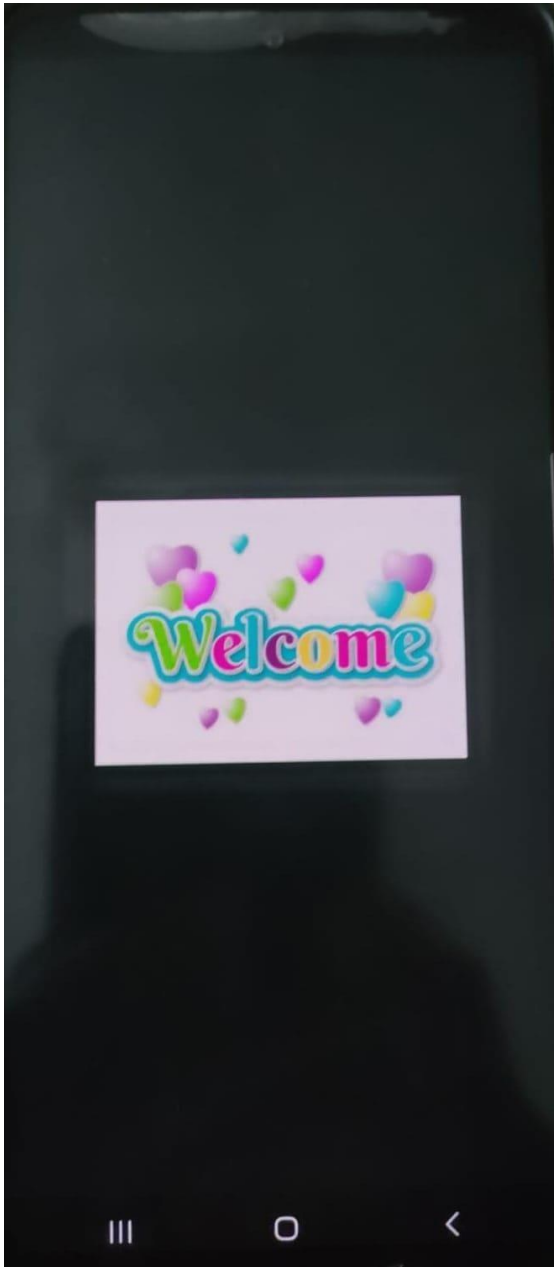
**Program 6**

Create an UI with all views.

1. Click **New Project**, the **New Project Dialog box** appears.

2. Choose **Empty Views Activity** then click **Next**.

3. Specify the **Name** of your project, Select the **Language** as **Java**, and Select the **SDK as API 24("Nougat",Android 7.0).**Click **Finish** Button.

4. Create **background** resources(**bg_outer.xml**, **bg_inner.xml, bg.xml**)

   a. To create resource file click **appresdrawable.** Right click **drawableNew Drawable Resource File.** The **New Resource File** dialog box appears.

**b.** Set **filename** as **bg_outer.xml**, **root element** as **shape** and then click **ok.** Modify the bg_outer.xml file

```xml
<?xml version="1.0" encoding="utf8"?>
<shape xmlns:android="http://schemas.android.com/apk/res/android">
   <gradient android:startColor="#64EFAE"
      android:endColor="#84FFFF"
      android:angle="120"
      android:gradientRadius="5dp"/>
   <corners android:radius="20dp"/>
</shape>
```

a. Create another background resource for inner layout. Set **filename** as **bg_inner.xml**, **root element** as **shape** and then click **ok.** Modify the bg_inner.xml file

```xml
<?xml version="1.0" encoding="utf8"?>
<shape xmlns:android="http://schemas.android.com/apk/res/android">
   <gradient android:startColor="#64F194"
      android:endColor="#B242C5"
      android:angle="120"
      android:gradientRadius="5dp"/>
   <corners android:radius="20dp"
      android:topLeftRadius="70dp"
      android:bottomRightRadius="70dp"/>
</shape>
```

b. Likewise, create another background resource for view. Set **filename** as **bg.xml**, **root element** as **shape** and then click **ok.** Modify the bg..xml file

```xml
<?xml version="1.0" encoding="utf8"?>
<shape xmlns:android="http://schemas.android.com/apk/res/android">
<solid android:color="#2860F367"/>
   <corners android:radius="30dp" />
   <stroke android:color="#00BFA5"
      android:width="2dp"/>
</shape>
```

5. Create a **TextView, EditText, ToggleButton, ImageView, RadioGroup, RadioButton, spinner** and **a Button** resource in **activity_main.xml** and update the following code.

```xml
<?xml version="1.0" encoding="utf8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/resauto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:gravity="center"
    android:orientation="vertical"
    android:padding="30dp"
    android:background="@drawable/bg_outer">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="User Information"
        android:textSize="30sp"
        android:textStyle="bold"
        android:textColor="#26389C"/>
    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:src="@drawable/img"/>
    <ToggleButton
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textOn="Active"
        android:textOff="Inactive"/>
    <View
        android:layout_width="match_parent"
```

```xml
        android:layout_height="40dp"/>
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:paddingTop="30dp"
        android:paddingBottom="30dp"
        android:paddingLeft="5dp"
        android:paddingRight="5dp"
        android:orientation="vertical"
        android:background="@drawable/bg_inner">
            <LinearLayout
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:orientation="horizontal"
                android:padding="5dp">
                    <TextView
                            android:layout_width="wrap_content"
                            android:layout_height="wrap_content"
                            android:text="Name"
                            android:textSize="20sp"
                            android:textStyle="bold"
                            android:textColor="#26389C"
                            android:padding="15dp"/>
                <EditText
                            android:layout_width="match_parent"
                            android:layout_height="60dp"
                            android:id="@+id/name"
                            android:background="@drawable/bg"
                            android:padding="15dp"/>

            </LinearLayout>

            <LinearLayout
                android:layout_width="match_parent"
```

```
                android:layout_height="wrap_content"
                android:orientation="horizontal"
                android:padding="5dp">
                    <TextView
                            android:layout_width="wrap_content"
                            android:layout_height="wrap_content"
                            android:text="Email"
                            android:textSize="20sp"
                            android:textStyle="bold"
                android:textColor="#26389C"
                android:padding="15dp"/>


            <EditText
                android:id="@+id/email"
                android:layout_width="match_parent"
                android:layout_height="60dp"
                android:ems="10"
                android:inputType="textEmailAddress"
                android:background="@drawable/bg"
                android:padding="15dp"/>
    </LinearLayout>
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:padding="5dp">
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Sex"
            android:textSize="20sp"
            android:textStyle="bold"
            android:textColor="#26389C"
            android:padding="15dp"
```

```xml
        android:paddingEnd="40dp"
        />


    <RadioGroup
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:background="@drawable/bg"
        android:orientation="horizontal"
        android:id="@+id/sex">

        <RadioButton
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/male"
            android:padding="15dp"
            android:text="Male"
            android:textColor="#26389C"
            android:textSize="20sp"
            android:textStyle="bold" />

        <RadioButton
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/female"
            android:padding="15dp"
            android:text="Female"
            android:textColor="#26389C"
            android:textSize="20sp"
            android:textStyle="bold" />

    </RadioGroup>
</LinearLayout>

<LinearLayout
```

```xml
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:padding="5dp">
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Country"
            android:textSize="20sp"
            android:textStyle="bold"
            android:textColor="#26389C"
            android:padding="15dp"
            android:paddingEnd="5dp" />
        <Spinner
            android:layout_width="match_parent"
            android:layout_height="60dp"
            android:id="@+id/country"
            android:padding="15dp"
            android:background="@drawable/bg"/>
    </LinearLayout>
</LinearLayout>
<View
    android:layout_width="match_parent"
    android:layout_height="40dp"/>

<Button
    android:layout_width="210dp"
    android:layout_height="wrap_content"
    android:id="@+id/submit"
    android:background="@drawable/bg"
    android:padding="15dp"
    android:text="Submit"
    android:textColor="#26389C"
    android:textSize="20sp"
```

android:textStyle="bold" />

</LinearLayout>

The following figure illustrates the design view of the application.
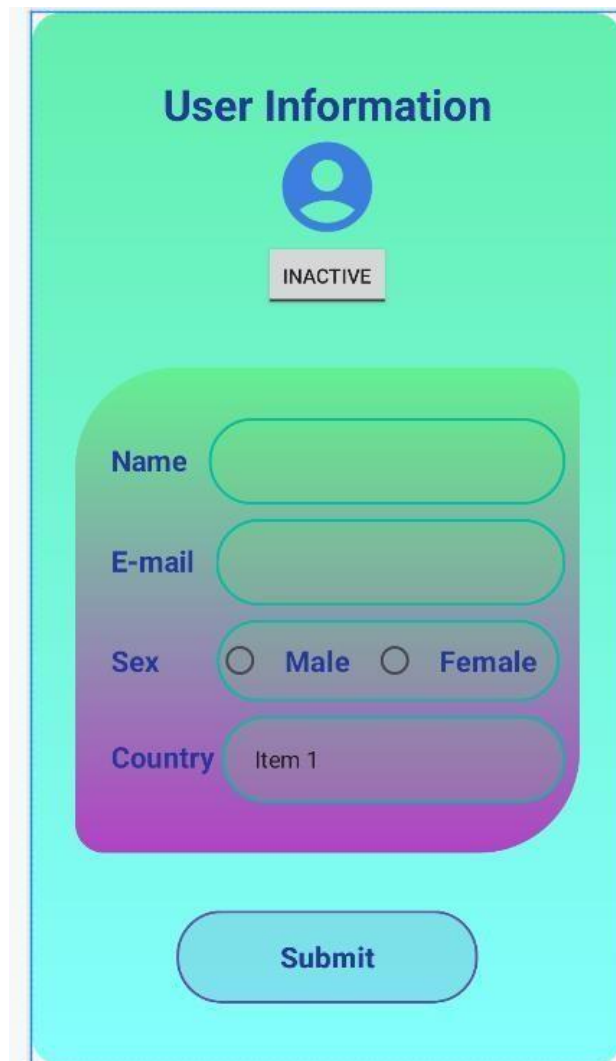


6. Create two **EditText** and a **Button** object, create **clickListener**, **onClick** event for button object and update the following code in **MainActivity.java**

```java
package com.bca.userinterface;

import android.app.Dialog;
import android.content.Context;
import android.content.DialogInterface;
import android.os.Bundle;
import android.view.View;
import android.view.ViewGroup;
```

```java
import android.widget.ArrayAdapter;
import android.widget.Button;

import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.Spinner;
import android.widget.Toast;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
public class MainActivity extends AppCompatActivity { Button sub;

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        Button sub=findViewById(R.id.submit);

        sub.setOnClickListener(new View.OnClickListener()
        {
            @Override
        public void onClick(View v)
            { showMessage(MainActivity.this,"User Information","Successfully completed\");
completed");
        }
        });
        String[] item=new String[]{"India", "Pakisthan", "China", "America", "England"};
        ArrayAdapter adapter = new ArrayAdapter<>(this,
android.R.layout.simple_spinner_item, item);

        adapter.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);
```

```java
    Spinner spinner = findViewById(R.id.country);
    spinner.setAdapter(adapter);
}
public void showMessage(Context con,String t, String msg)
{
    AlertDialog.Builder builder = new AlertDialog.Builder(con);
    builder.setTitle(t);
    builder.setMessage(msg);
    builder.setPositiveButton("OK", new DialogInterface.OnClickListener()
    { @Override
    public void onClick(DialogInterface dialog, int which)
    { dialog.dismiss();
    }
    });
    builder.show();

}
}
```

Output

## Screen 1 (left)

# User Information



INACTIVE

| | |
|---|---|
| Name | vm |
| E-mail | vm@gmail.com |
| Sex | ⦿ Male ◯ Female |
| Country | India |

**Submit**

## Screen 2 (right)
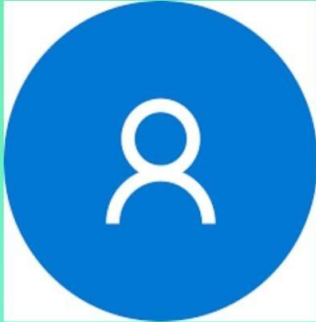
# User Information



INACTIVE

| | |
|---|---|
| Name | |
| E-mail | |
| Sex | ◯ Male ◯ Female |
| Country | India |

**Submit**
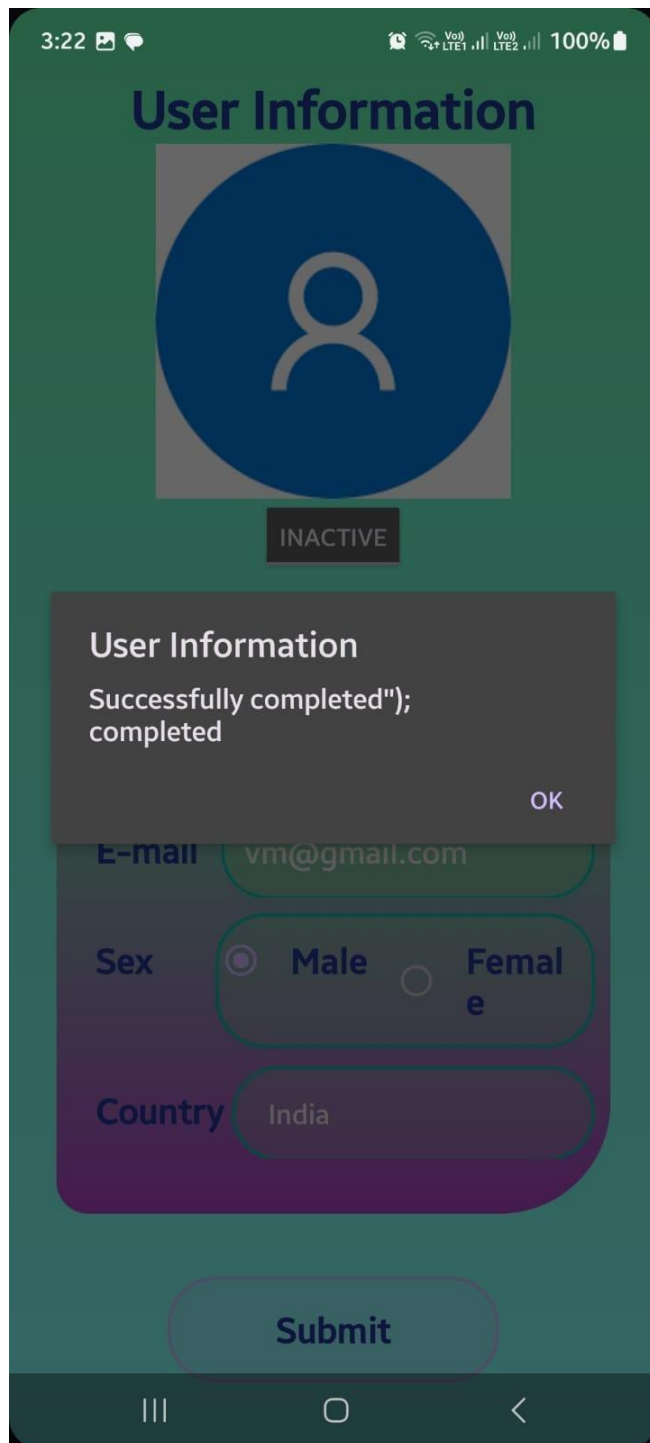
**Program 7**

**Create menu in Application**

1. Click **New Project**, the **New Project Dialog box** appears.

2. Choose **Empty Views Activity** then click **Next**.

3. Specify the **Name** of your project, Select the **Language** as **Java**, and Select the **SDK**

as API 24(**"Nougat",Android 7.0).**Click **Finish** Button.

4. To create another activity for **Home Page,** Right Click **AppNewActivity Empty Views Activity.** A **New Android Activity** dialog box appears, Specify the **Name** of the activity as **HomeScreen** then click **Finish**.

5. **To create a Menu Resource File:**

   Rightclick on the **res** directory in your Android project, navigate to **New Android Resource File**, and **name** the file **menus.xml**, Root element as **Menu** and update the following content.

```xml
<?xml version="1.0" encoding="utf8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">
  <item android:id="@+id/php"
    android:title="PHP"/>
  <item android:id="@+id/java"
    android:title="JAVA"/>
  <item android:id="@+id/csharp"
    android:title="C#"/>
</menu>
```

Update the following code in **MainActivity.java**

```java
package com.bca.homescreen;

import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.widget.Toast;
import androidx.activity.EdgeToEdge;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
 import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
```

```java
import  androidx.core.view.WindowInsetsCompat;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState)
    { super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);


        setContentView(R.layout.activity_main);
    }


    @Override
    public boolean onCreatePanelMenu(int featureId, @NonNull Menu menu)
    { MenuInflater inflater=getMenuInflater(); inflater.inflate(R.menu.menus,menu);
        return true;


    }


    @Override
    public boolean onOptionsItemSelected(@NonNull MenuItem item)
    { if(item.getItemId()==R.id.php) {
        Toast.makeText(this, "Php Page", Toast.LENGTH_SHORT).show();
    }
        if(item.getItemId()==R.id.java) {
            Toast.makeText(this, "Java Page", Toast.LENGTH_SHORT).show();
        }
        if(item.getItemId()==R.id.csharp) {
            Toast.makeText(this, "C# Page", Toast.LENGTH_SHORT).show();
        }
        return super.onOptionsItemSelected(item);
    }
}
```

Set the **UsesPermission** in **AndroidManifest.xml**

```xml
<?xml version="1.0" encoding="utf8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">
    <usespermission
        android:name="android.permission.INTERNET" />
    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.AppCompat.Light" tools:targetApi="31">
        <activity android:name=".MainActivity"
            android:exported="true">
            <intentfilter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intentfilter>
        </activity>
    </application>
</manifest>
```

**Activity_main.xml**

```xml
<?xml version="1.0" encoding="utf8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/resauto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
```

android:layout_width="match_parent"

android:layout_height="match_parent"

tools:context=".MainActivity">

</androidx.constraintlayout.widget.ConstraintLayout>

**Output**
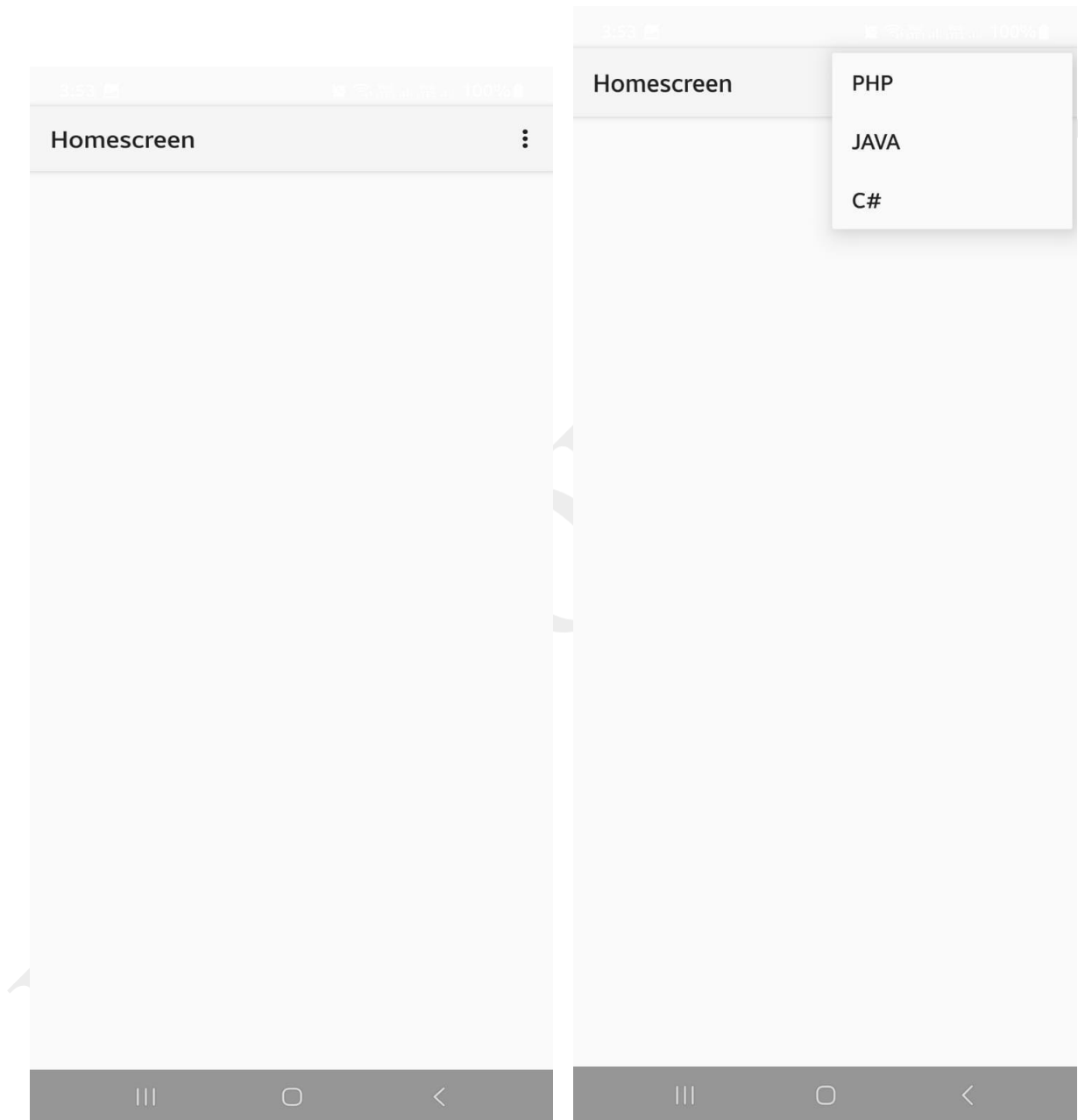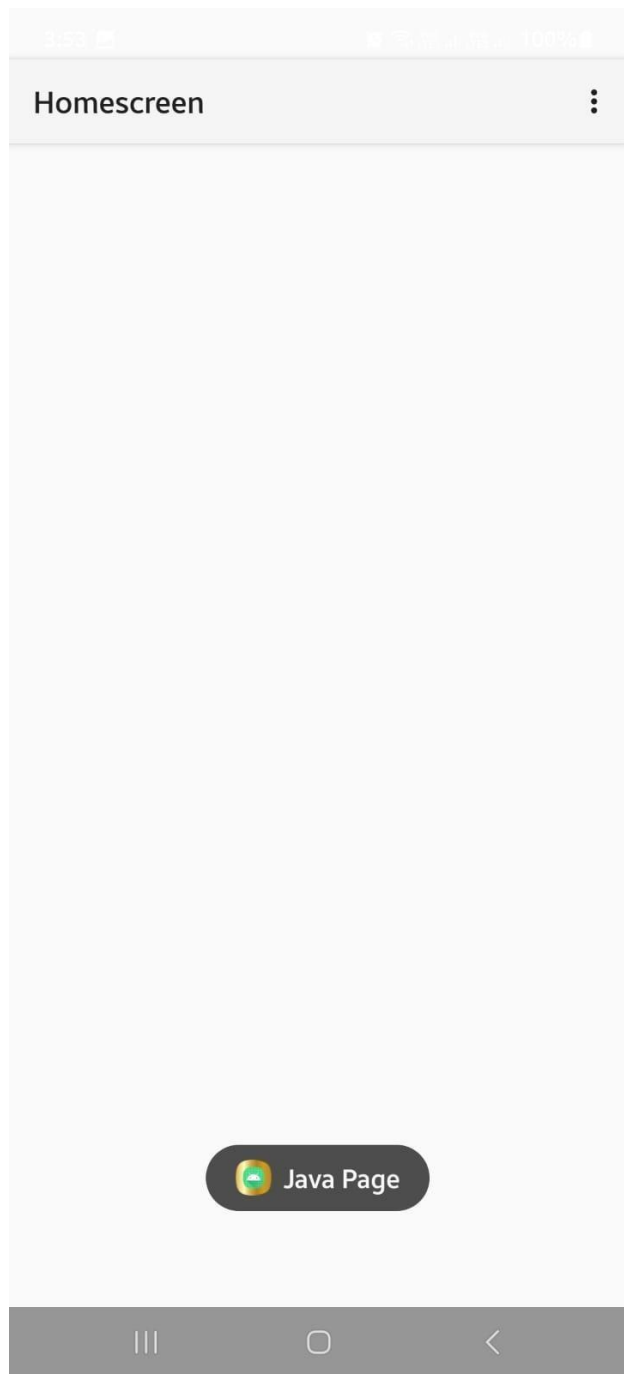
**Program 8**

**Read/ write the Local data**

**activity_main.xml**

<?xml version="1.0" encoding="utf8"?>

```xml
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/resauto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:orientation="vertical">
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="User Name"></TextView>
    <EditText
        android:id="@+id/etUserName"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        ></EditText>
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Password"></TextView>
    <EditText
        android:id="@+id/etPassword"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        ></EditText>
    <Button
        android:id="@+id/btnsave"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Save" />
    <Button
        android:id="@+id/btnnext"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
                    android:text="Next" />
```

</LinearLayout>

**MainActivity.java**

```java
package com.bca.localdata;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Context;
import android.content.Intent;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    Button btnsave,btnnext;
    EditText etUserName,etPassword;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btnsave=(Button) findViewById(R.id.btnsave);
        btnnext = (Button) findViewById(R.id.btnnext);
        etUserName = (EditText)findViewById(R.id.etUserName);
        etPassword = (EditText)findViewById(R.id.etPassword);
        btnsave.setOnClickListener(new View.OnClickListener() { @Override
        public void onClick(View view) {
// Writing data to SharedPreferences
   SharedPreferences sharedPreferences = getSharedPreferences("MyPrefs",
Context.MODE_PRIVATE);
            SharedPreferences.Editor editor = sharedPreferences.edit();
            editor.putString("username",
                etUserName.getText().toString());
            editor.putString("password",
```

```java
                etPassword.getText().toString());
            editor.apply();
            Toast.makeText(getApplicationContext(),"Saved
successfully",Toast.LENGTH_LONG).show();


        }


    });


    btnnext.setOnClickListener(new View.OnClickListener() { @Override
    public void onClick(View view) {


        Intent intent = new
            Intent(getApplicationContext(),MainActivity2.class);


        startActivity(intent);
    }


    });
}


}
```

**activity_main2.xml**

```xml
<?xml version="1.0" encoding="utf8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/resauto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity2"
    android:orientation="vertical">
```

```xml
<Button android:id="@+id/btnFetch"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Fetch" />
<TextView
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="User Name"></TextView>
<EditText
    android:id="@+id/etUserName"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    ></EditText>
<TextView
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Password"></TextView>
<EditText
    android:id="@+id/etPassword"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    ></EditText>
</LinearLayout>
```

**MainActivity2.java**

```java
package com.bca.localdata;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Context;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.view.View;
```

```java
import android.widget.Button;
import android.widget.EditText;
public class MainActivity2 extends AppCompatActivity {

    Button btnFetch;
    EditText etUserName,etPassword;

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main2);

        btnFetch = (Button) findViewById(R.id.btnFetch);
        etUserName = (EditText)findViewById(R.id.etUserName);
        etPassword = (EditText)findViewById(R.id.etPassword);
        btnFetch.setOnClickListener(new View.OnClickListener()
        { @Override
        public void onClick(View view)
        {
// Reading data from SharedPreferences
            SharedPreferences sharedPreferences = getSharedPreferences("MyPrefs",
Context.MODE_PRIVATE);
            String username = sharedPreferences.getString("username", "");
String password = sharedPreferences.getString("password", "");
            etUserName.setText(username);
etPassword.setText(password);
    }
        });
    }
}
```

**Output**

**Program 9**

**Create / Read / Write data with database (SQL Lite)**

**Steps:**

1. Click **Start - Android Studio**, a **Welcome to Android Studio** dialog box will appear. Click **New Project**, the **New Project Dialog box** appears.

2. Choose **Empty Views Activity** then click **Next**.

3. Specify the **Name** of your project, Select the **Language** as **Java**, and Select the **SDK as API 24("Nougat",Android 7.0).**Click **Finish** Button.

4. Update the following code **in activity_main.xml, activity_view.xml, MainActivity.java and ViewActivity.java**

5. Create a class file **right click app- new- java class name it as student and update** the following code in student.java

6. To Create another activity **right click on app – new activity-Empty views Activity.**

7. Update the following code **in activity_edit.xml and EditActivity.java.**

8. **Click Run App or Shift+F10** to execute the application.

**activity_main.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:orientation="vertical"android:gravity="center"
tools:context=".MainActivity">

<LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:orientation="vertical" android:gravity="center">
<TextView

android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Course
Registation" android:textColor="@color/colorAccent"
android:textSize="30dp"
/>

</LinearLayout>

<LinearLayout
android:layout_width="wrap_content"
```

```xml
android:layout_height="wrap_content"
android:orientation="horizontal" android:gravity="center">

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"android:text="Name"
/>

<EditText
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="1" android:ems="10"
android:id="@+id/name"
android:textAlignment="center"
/>

</LinearLayout>

<LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:orientation="horizontal" android:gravity="center">


<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Course"
/>

<EditText
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="1" android:ems="10"
android:id="@+id/course"
android:textAlignment="center"
/>
```

```xml
</LinearLayout>

<LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:orientation="horizontal" android:gravity="center">

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"android:text="Fee"
/>

<EditText
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="1" android:ems="10"
android:id="@+id/fee"
android:textAlignment="center"
/>

</LinearLayout>

<LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:orientation="horizontal" android:gravity="center">
<Button
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="1" android:id="@+id/bt1"
android:text="Ok"
android:background="@color/colorPrimary"
/>

<Button
android:layout_width="wrap_content"
android:layout_height="wrap_content"
```

android:layout_weight="1" android:id="@+id/bt2"

android:text="View"

android:background="@color/colorAccent"

/>

</LinearLayout>

</LinearLayout>

**MainActivity.java**

package com.bca.sqlite;

**import** androidx.appcompat.app.AppCompatActivity;

**import** android.content.Context;

**import** android.content.Intent;

**import** android.database.sqlite.SQLiteDatabase;

**import** android.database.sqlite.SQLiteStatement

;**import** android.os.Bundle;

**import** android.view.View;

**import** android.widget.Button;

**import** ndroid.widget.EditText;

**import** android.widget.Toast;

**public class** MainActivity **extends** AppCompatActivity {

EditText **ed1,ed2,ed3**;

Button **b1,b2**;

@Override

**protected void** onCreate(Bundle savedInstanceState)

{**super**.onCreate(savedInstanceState);

setContentView(R.layout.*activity_main*);

**ed1** = findViewById(R.id.*name*);

**ed2** = findViewById(R.id.*course*);

```java
ed3 = findViewById(R.id.fee);

b1 = findViewById(R.id.bt1);

b2 = findViewById(R.id.bt2);

b2.setOnClickListener(new View.OnClickListener()

{@Override

public void onClick(View v)

{

Intent i = new Intent(getApplicationContext(),ViewActivity.class);

startActivity(i);

}

});

b1.setOnClickListener(new View.OnClickListener() {@Override

public void onClick(View v) {

insert();

}

});

}

public void insert()

{

try

{

String name = ed1.getText().toString();

String course = ed2.getText().toString();

String fee = ed3.getText().toString();
```

```java
SQLiteDatabase db = openOrCreateDatabase("SliteDb",
Context.MODE_PRIVATE, null);

db.execSQL("CREATE TABLE IF NOT EXISTS records(id INTEGER
PRIMARY KEY AUTOINCREMENT,name VARCHAR,course
VARCHAR,fee VARCHAR)");

String sql = "insert into records(name,course,fee)values('" +name + "','" +
course + "','" + fee + "')";

SQLiteStatement statement = db.compileStatement(sql);

statement.execute();

Toast.makeText(this,"Record addded",Toast.LENGTH_LONG).show();

ed1.setText("");

ed2.setText("");

ed3.setText("");

ed1.requestFocus();

}

catch (Exception ex)

{

Toast.makeText(this,"Record Fail",Toast.LENGTH_LONG).show();

}

}

}

/* Add Student.class file (Right click on  package name */

Student.class

package com.bca.sqlite;

public class Student {

String id;
```

String **name**;

String **course**;

String **fee**;

String **titles**;

}

**activity_view.xml**

*<?*xml version="1.0" encoding="utf-8"*?>*
<LinearLayout 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=".ViewActivity"
android:orientation="vertical">

<ListView
android:layout_width="match_parent"
android:layout_height="match_parent"android:id="@+id/lst1"
/>

</LinearLayout>

**ViewActivity.java**

**package** com.bca.sqlite;

**import** androidx.appcompat.app.AppCompatActivity;

**import** ndroid.content.Context;
**import** android.content.Intent;

 **import** ndroid.database.Cursor;

**import** android.database.sqlite.SQLiteDatabase;

**import** android.os.Bundle;

**import** android.view.View;

```java
import  ndroid.widget.AdapterView;

import ndroid.widget.ArrayAdapter;

import android.widget.ListView;

import java.util.ArrayList;

public class ViewActivity extends AppCompatActivity {

ListView lst1;

ArrayList<String> titles = new ArrayList<String>();

ArrayAdapter arrayAdapter;

@Override

protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_view);

SQLiteDatabase db = openOrCreateDatabase("SliteDb",Context.MODE_PRIVATE,null);

lst1 = findViewById(R.id.lst1);

final Cursor c = db.rawQuery("select * from records",null);

int id = c.getColumnIndex("id");

int name = c.getColumnIndex("name");

int course = c.getColumnIndex("course");

int fee = c.getColumnIndex("fee");

titles.clear();

arrayAdapter = new ArrayAdapter(this,
androidx.appcompat.R.layout.support_simple_spinner_dropdown_item,titles);


lst1.setAdapter(arrayAdapter);

final  ArrayList<Student> stud = new ArrayList<Student>();

if(c.moveToFirst())
```

```java
{
do {
Student stu = new Student();

stu.id = c.getString(id);

stu.name = c.getString(name);

stu.course = c.getString(course)

;stu.fee = c.getString(fee);

stud.add(stu);

titles.add(c.getString(id) + " \t " + c.getString(name) + "

\t " + c.getString(course) + " \t "  + c.getString(fee) );

} while(c.moveToNext());

arrayAdapter.notifyDataSetChanged();

lst1.invalidateViews();

}

lst1.setOnItemClickListener(new AdapterView.OnItemClickListener()

{@Override

public void onItemClick(AdapterView parent, View view, int position, long id) {

String aa = titles.get(position).toString();

Student stu = stud.get(position);

Intent i = new

Intent(getApplicationContext(),EditActivity.class);

i.putExtra("id",stu.id);

 i.putExtra("name",stu.name);
i.putExtra("course",stu.course);

i.putExtra("fee",stu.fee);
```

```
 startActivity(i);

}




});

}

}
```

**activity_edit.xml**

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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=".EditActivity" android:orientation="vertical">

<LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:orientation="vertical"
android:gravity="center">
<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Course Registation"
android:textColor="@color/colorAccent"
android:textSize="30dp"
/>

</LinearLayout>


<LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
```

```xml
android:orientation="horizontal" android:gravity="center">
<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="ID"
/>

<EditText
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="1" android:ems="10"
android:id="@+id/id"
android:textAlignment="center"
/>

</LinearLayout>
<LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:orientation="horizontal" android:gravity="center">
<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Name"
/>

<EditText
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="1" android:ems="10"
android:id="@+id/name"
android:textAlignment="center"
/>

</LinearLayout>
```

```xml
<LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:orientation="horizontal" android:gravity="center">
<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Course"/>
<EditText
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="1" android:ems="10"
android:id="@+id/course"
android:textAlignment="center"
/>

</LinearLayout>
<LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:orientation="horizontal"
android:gravity="center">
<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Fee"
/>

<EditText
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="1"
android:ems="10"
android:id="@+id/fee"
android:textAlignment="center"
```

```xml
/>

</LinearLayout>
<LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:orientation="horizontal" android:gravity="center">
<Button
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="1" android:id="@+id/bt1"
android:text="Edit"
android:background="@color/colorPrimary"
/>

<Button
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="1" android:id="@+id/bt2"
android:text="Delete"
android:background="@color/colorAccent"
/>

<Button
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="1" android:id="@+id/bt3"
android:text="Back"
android:background="@color/colorPrimaryDark"
/>

</LinearLayout>
</LinearLayout>
```

**EditActivity.java**

```java
package com.bca.sqlite;
```

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

import android.content.Context;

import android.content.Intent;

import android.database.sqlite.SQLiteDatabase;

import android.database.sqlite.SQLiteStatement;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;
import android.widget.Toast;

public class EditActivity extends AppCompatActivity {

EditText ed1,ed2,ed3,ed4;

Button b1,b2,b3;

@Override

protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_edit);

ed1 = findViewById(R.id.name);

ed2 = findViewById(R.id.course);

ed3 = findViewById(R.id.fee);

ed4 = findViewById(R.id.id);

b1 = findViewById(R.id.bt1);

b2 = findViewById(R.id.bt2);

b3 = findViewById(R.id.bt3);
```

```java
Intent i = getIntent();

String t1 = i.getStringExtra("id").toString();

String t2 = i.getStringExtra("name").toString();

String t3 = i.getStringExtra("course").toString();

String t4 = i.getStringExtra("fee").toString();

ed4.setText(t1);

ed1.setText(t2);
ed2.setText(t3);
ed3.setText(t4);

b2.setOnClickListener(new View.OnClickListener()

{@Override

public void onClick(View v) {

try
{

String id = ed4.getText().toString();SQLiteDatabase db =

openOrCreateDatabase("SliteDb",Context.MODE_PRIVATE,null);

String sql = "delete from records where id = " + id + "";
SQLiteStatement statement = db.compileStatement(sql);

statement.execute();

Toast.makeText(EditActivity.this,"RecordDeleted",Toast.LENGTH_LONG).show();

ed1.setText("");

ed2.setText("");

ed3.setText("");

ed1.requestFocus();

}
```

```java
catch (Exception ex)

{

Toast.makeText(EditActivity.this,"Record Fail",Toast.LENGTH_LONG).show();

}

}

});

b3.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View v) {

Intent i = new Intent(getApplicationContext(),ViewActivity.class);

startActivity(i);

}

});

b1.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View v) {

try {
String name = ed1.getText().toString();

String course = ed2.getText().toString();

String fee = ed3.getText().toString();

String id = ed4.getText().toString();

SQLiteDatabase db = openOrCreateDatabase("SliteDb",Context.MODE_PRIVATE, null);

String sql = "update records set name = '" + name + "',course='" +course +
"',fee='" + fee + "' where id= " + id + "";

SQLiteStatement statement = db.compileStatement(sql);

statement.execute();

Toast.makeText(EditActivity.this, "Record Updated",
```

```
Toast.LENGTH_LONG).show();

ed1.setText("");

ed2.setText("");

ed3.setText("");

ed1.requestFocus();

} catch (Exception ex) {

Toast.makeText(EditActivity.this, "Record Fail",

Toast.LENGTH_LONG).show();

}

}

});

} }
```
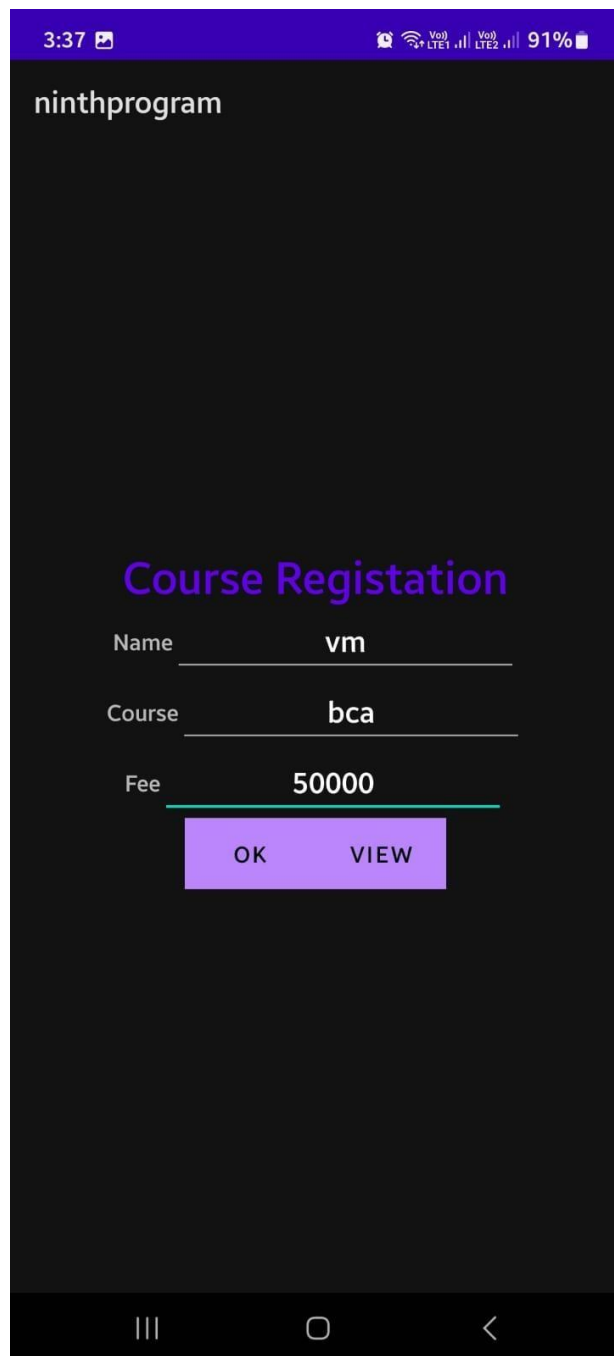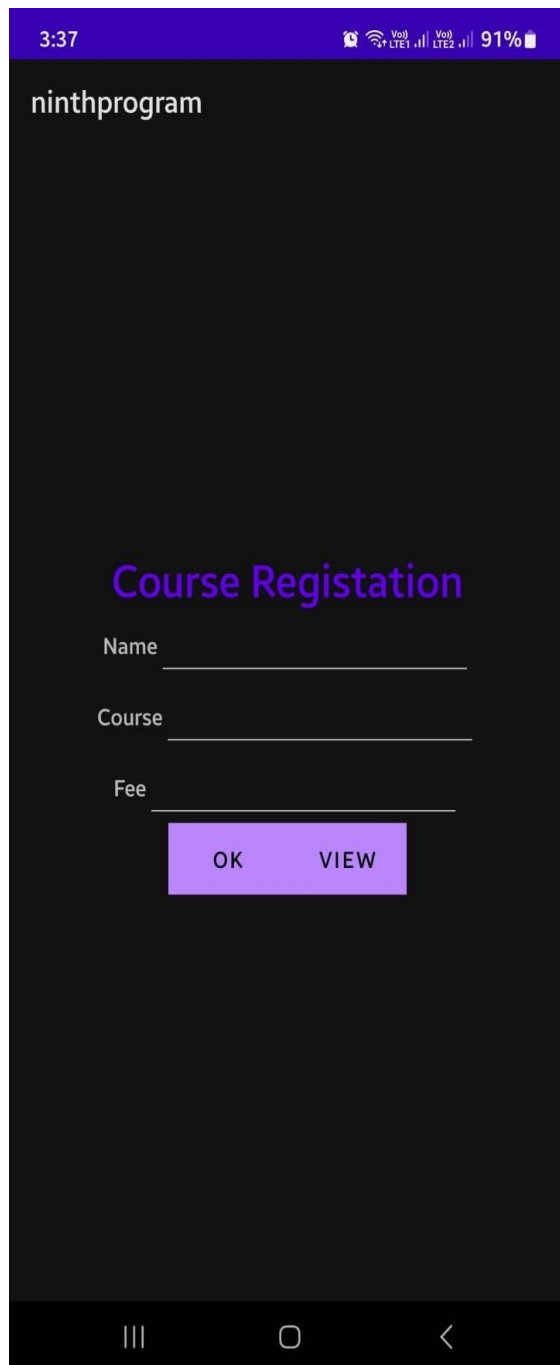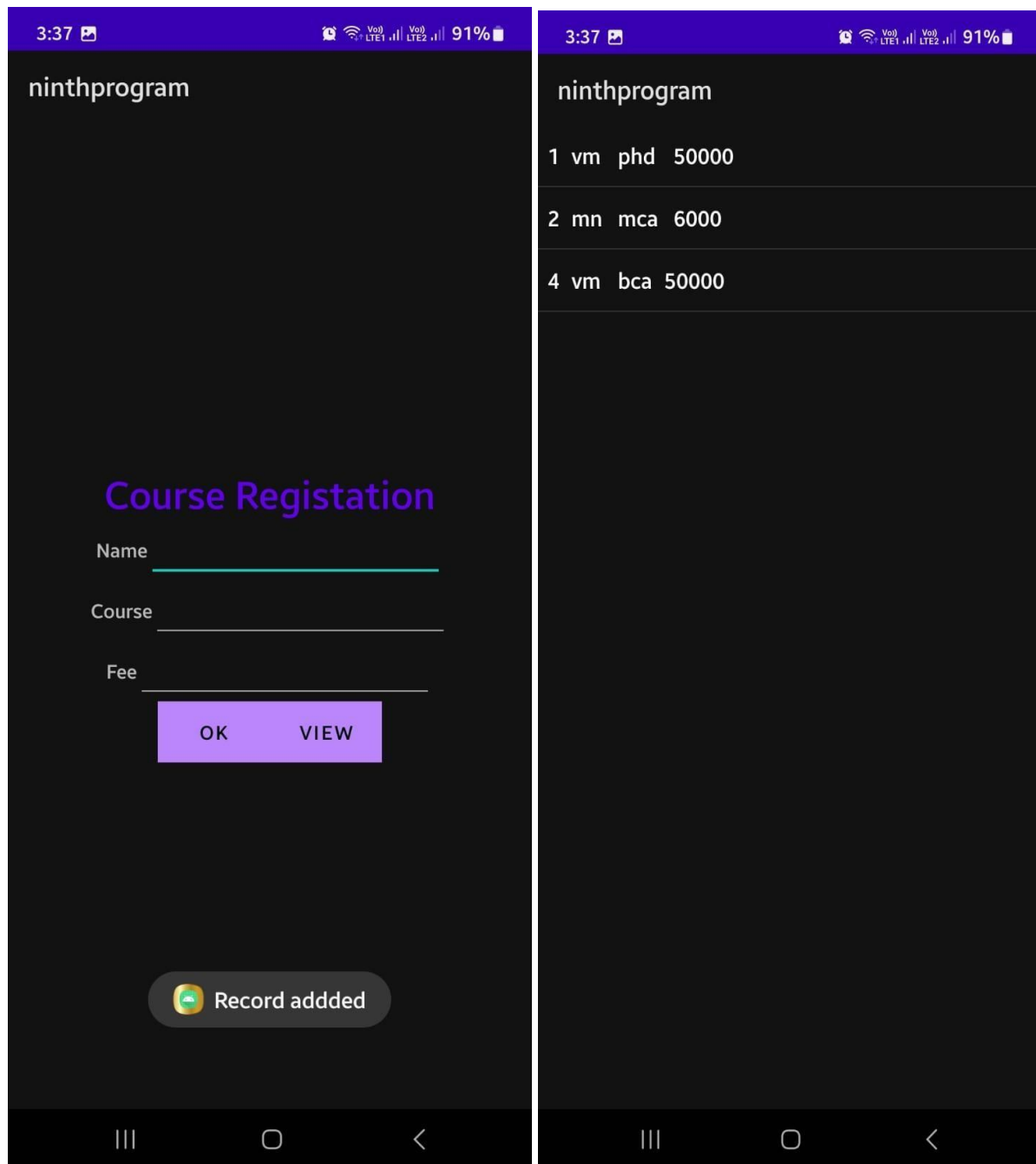
**Output**

ninthprogram

**Course Registation**

Name _____

Course _____

Fee _____

| OK | VIEW |
|---|---|

ninthprogram

**Course Registation**

Name **vm**

Course **bca**

Fee **50000**

| OK | VIEW |
|---|---|

**Program 10**

**Create an application to send SMS and receive SMS**

**Steps:**

1. Click **Start-** Android **Studio**, a **Welcome to Android Studio** dialog box will appear.
   Click **New Project**, the **New Project Dialog box** appears.

2. Choose **Empty Views Activity** then click **Next**.

3. Specify the **Name** of your project, Select the **Language** as **Java**, and Select the

**SDK as API 24("Nougat",Android 7.0).**Click **Finish** Button.

**4.** Update the following code **in activity_main.xml and MainActivity.java**

5. Click **Run app** or **shift+F10** to execute the application.

**activity_main.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="@color/white" tools:context=".MainActivity">
    <EditText
        android:id="@+id/editTextPhoneNumber"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter phone number"
        android:layout_margin="16dp"/>
    <EditText
        android:id="@+id/editTextMessage"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter message"
        android:layout_below="@id/editTextPhoneNumber"
        android:layout_margin="16dp"/>
    <Button
        android:id="@+id/buttonSend"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Send"
        android:layout_below="@id/editTextMessage"
        android:layout_alignParentEnd="true"
        android:layout_marginEnd="16dp"
        android:onClick="sendMessage" tools:ignore="UsingOnClickInXml" />
```

```xml
    <TextView
        android:id="@+id/textViewReceivedMessages"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/buttonSend"
        android:layout_marginStart="16dp"
        android:layout_marginTop="16dp"
        android:layout_marginEnd="16dp"
        android:layout_marginBottom="16dp"
        android:textColor="@color/black" />
</RelativeLayout>
```

**MainActivity.java**

```java
package com.bca.sms;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.telephony.SmsManager;
import android.telephony.SmsMessage;
import android.view.View;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
import android.Manifest;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity
{
```

```java
    private static final int SMS_PERMISSION_CODE = 101;
    private EditText editTextPhoneNumber;
    private EditText editTextMessage;
    private TextView textViewReceivedMessages;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        editTextPhoneNumber = findViewById(R.id.editTextPhoneNumber);
        editTextMessage = findViewById(R.id.editTextMessage);
        textViewReceivedMessages = findViewById(R.id.textViewReceivedMessages);
// Request SMS permissions if not granted

        if (!checkSMSPermission())
        {
            requestSMSPermission();
        }
// Register SMS receiver
IntentFilter intentFilter = new IntentFilter();
        intentFilter.addAction("android.provider.Telephony.SMS_RECEIVED");
        registerReceiver(smsReceiver, intentFilter);
    }
    @Override
    protected void onDestroy()
    {
        super.onDestroy();
        unregisterReceiver(smsReceiver);
    }
    // Button click listener for sending SMS
    public void sendMessage(View view) { String phoneNumber =
        editTextPhoneNumber.getText().toString().trim();
        String message = editTextMessage.getText().toString();
        if (phoneNumber.isEmpty())
```

```java
        {
            Toast.makeText(this, "Please enter a valid phone number",
Toast.LENGTH_SHORT).show();
            return;
        }
        try {
            SmsManager smsManager = SmsManager.getDefault();
            smsManager.sendTextMessage(phoneNumber, null, message, null, null);
            Toast.makeText(this, "Message sent", Toast.LENGTH_SHORT).show();
        }
        catch (IllegalArgumentException e)
        {
            Toast.makeText(this, "Invalid phone number format",
Toast.LENGTH_SHORT).show();
        } catch (Exception e) {
            Toast.makeText(this, "Failed to send message", Toast.LENGTH_SHORT).show();
            e.printStackTrace();
        }
    }


// Check if SMS permission is granted
    private boolean checkSMSPermission() {
        return ContextCompat.checkSelfPermission(this, Manifest.permission.SEND_SMS) ==
PackageManager.PERMISSION_GRANTED;
    }
    // Request SMS permission
    private void requestSMSPermission() { ActivityCompat.requestPermissions(this, new
        String[]{Manifest.permission.SEND_SMS}, SMS_PERMISSION_CODE);
    }
// SMS receiver
    private final BroadcastReceiver smsReceiver = new BroadcastReceiver()
    { @Override
    public void onReceive(Context context, Intent intent) { Bundle bundle = intent.getExtras();
        if (bundle != null)
```

```
{
        Object[] pdus = (Object[]) bundle.get("pdus");
        if (pdus != null) {
           for (Object pdu : pdus)
 {

              SmsMessage smsMessage = SmsMessage.createFromPdu((byte[]) pdu);
              String senderPhoneNumber = smsMessage.getDisplayOriginatingAddress();
String messageBody = smsMessage.getMessageBody();
              textViewReceivedMessages.append("From: " + senderPhoneNumber + "\n");
              textViewReceivedMessages.append("Message: " +
                 messageBody + "\n\n");
           }
        }
     }
     };
}
```
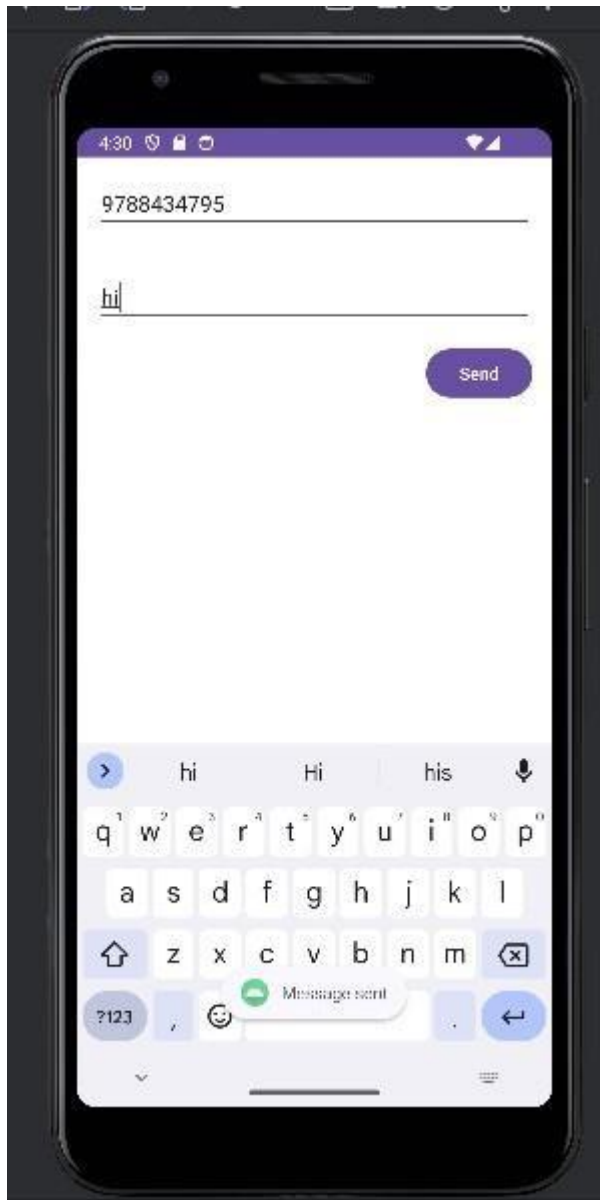
**Output**
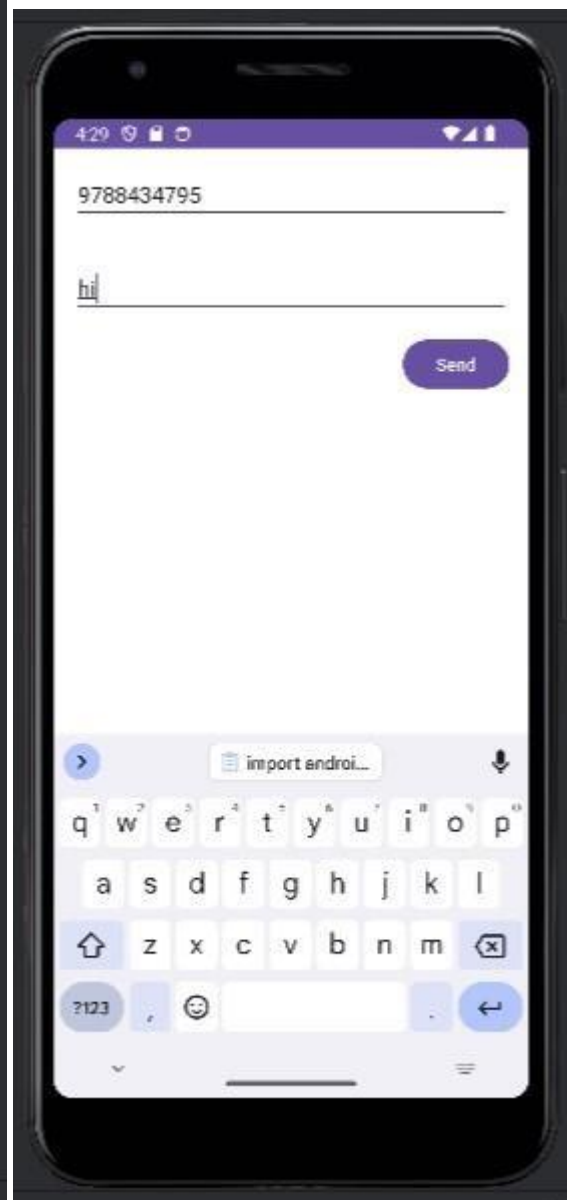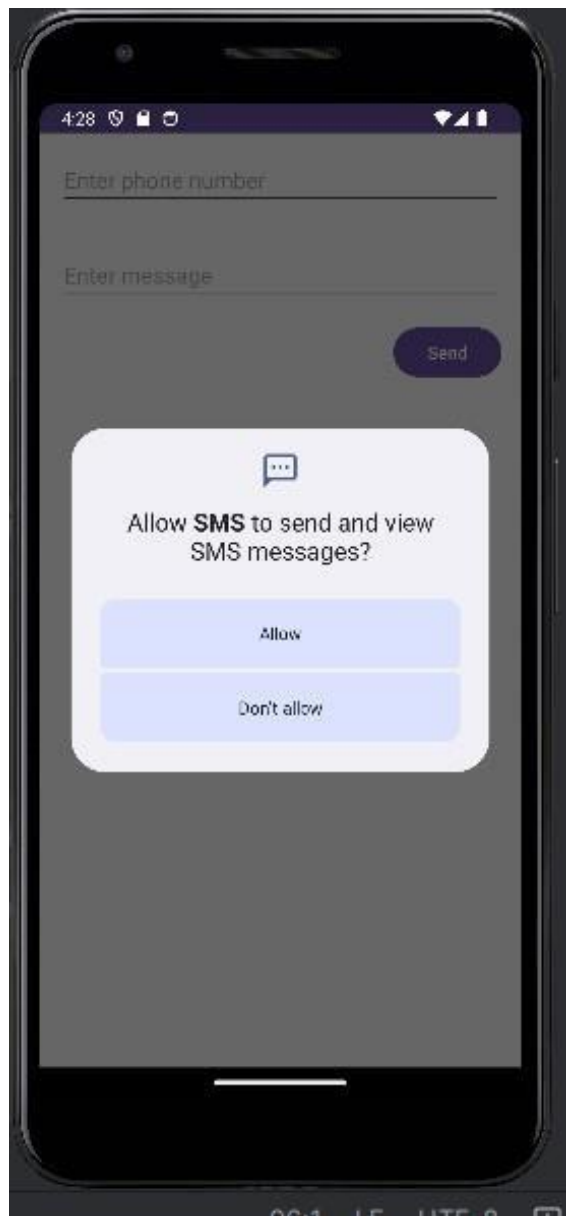
**Program 11**

Create an application to send an Email.

**Steps:**

1. Click **Start-** Android **Studio**, a **Welcome to Android Studio** dialog box will appear. Click **New Project**, the **New Project Dialog box** appears.

2. Choose **Empty Views Activity** then click **Next**.

3. Specify the **Name** of your project, Select the **Language** as **Java**, and Select the **SDK as API 24("Nougat",Android 7.0).**Click **Finish** Button.

4. Update the following code **in activity_main.xml and MainActivity.java**

5. Click **Run app** or **shift+F10** to execute the application.

**activity_main.xml**

```xml
<?xml version="1.0" encoding="utf8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/editTextTo"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="To"/>
    <EditText
        android:id="@+id/editTextSubject"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/editTextTo"
        android:hint="Subject"/>
    <EditText
        android:id="@+id/editTextMessage"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/editTextSubject"
        android:hint="Message"/>
    <Button
        android:id="@+id/buttonSend"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@id/editTextMessage"
```

```
        android:text="Send"/>
</RelativeLayout>
```

**Mainactivity.java**

```java
package com.bca.email;

import androidx.appcompat.app.AppCompatActivity;
import android.annotation.SuppressLint;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
public class MainActivity extends AppCompatActivity {
    EditText editTextTo, editTextSubject, editTextMessage;
    Button buttonSend;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        editTextTo = findViewById(R.id.editTextTo);
        editTextSubject = findViewById(R.id.editTextSubject);
        editTextMessage = findViewById(R.id.editTextMessage);
        buttonSend = findViewById(R.id.buttonSend);
        buttonSend.setOnClickListener(new View.OnClickListener()
        {
            @Override
        public void onClick(View v)
            {
                sendEmail();
            }
        });
    }
```
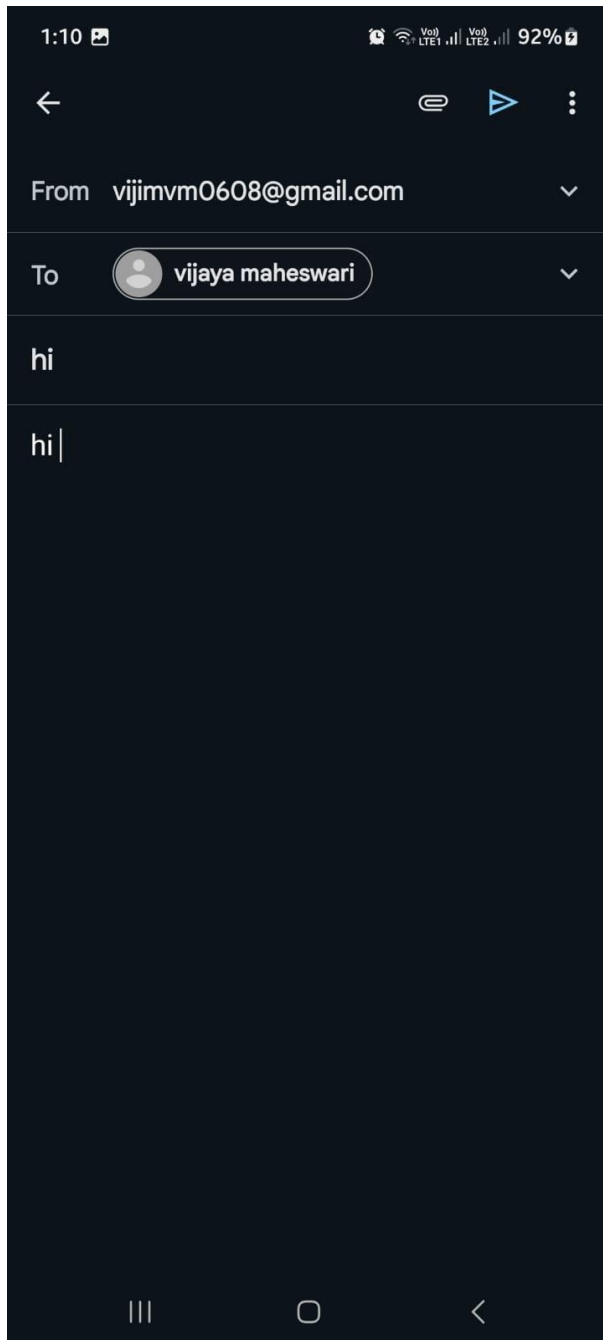
```java
    @SuppressLint("QueryPermissionsNeeded")
    private void sendEmail() {
        String to = editTextTo.getText().toString().trim();
        String subject = editTextSubject.getText().toString().trim();
        String message = editTextMessage.getText().toString().trim();
        Intent intent = new Intent(Intent.ACTION_SEND);
        intent.setType("text/plain");
        intent.putExtra(Intent.EXTRA_EMAIL, new String[]{to});
        intent.putExtra(Intent.EXTRA_SUBJECT, subject);
        intent.putExtra(Intent.EXTRA_TEXT, message);
        if (intent.resolveActivity(getPackageManager()) != null)
        {
            startActivity(Intent.createChooser(intent, "Choose an email client"));
        }
    }
}
```

**OUTPUT**

**Left screen:**

1:09

To

Subject

Message

Send

**Right screen:**

1:10

vijimvm0608@gmail.com

hi

hi

Send

**Program 12**

Display Map based on the Current/given location.

**Steps:**

1.  Click **Start-** Android **Studio**, a **Welcome to Android Studio** dialog box will appear. Click **New Project**, the **New Project Dialog box** appears.

2.  Choose **Empty Views Activity** then click **Next**.

3.  Specify the **Name** of your project, Select the **Language** as **Java**, and Select the

**SDK as API 24("Nougat",Android 7.0).**Click **Finish** Button.

**4.** Update the following code **in activity_main.xml, Androidmanifest.xml and MainActivity.java**

5. Click **Run app** or **shift**+**F10** to execute the application.

**MainActivity.java**

```java
import android.os.Bundle;

import android.widget.Toast;

import androidx.annotation.NonNull;

import androidx.appcompat.app.AppCompatActivity;

import com.google.android.gms.maps.CameraUpdateFactory;

import com.google.android.gms.maps.GoogleMap;

import com.google.android.gms.maps.OnMapReadyCallback;

import com.google.android.gms.maps.SupportMapFragment;

import com.google.android.gms.maps.model.LatLng;

import com.google.android.gms.maps.model.MarkerOptions;

public class MainActivity extends AppCompatActivity implements OnMapReadyCallback {

    private GoogleMap mMap;

    private double latitude = 0.0;

    private double longitude = 0.0;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        // Obtain the SupportMapFragment and get notified when the map is ready to be used.
```

```java
        SupportMapFragment mapFragment = (SupportMapFragment)
getSupportFragmentManager()

                .findFragmentById(R.id.map);

        if (mapFragment != null) {

            mapFragment.getMapAsync(this);

        } else {

            Toast.makeText(this, "Map Fragment Not Found", Toast.LENGTH_SHORT).show();

        }

    }

    @Override

    public void onMapReady(@NonNull GoogleMap googleMap) {

        mMap = googleMap;

        // Add a marker at current or given location and move the camera

        LatLng location = new LatLng(latitude, longitude);

        mMap.addMarker(new MarkerOptions().position(location).title("Marker"));

        mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(location, 15));

    }

}
```

**activity_main.xml**

```xml
<?xml version="1.0" encoding="utf8"?>

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

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

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    tools:context=".MainActivity">
```

```xml
    <fragment

        android:id="@+id/map"

        android:name="com.google.android.gms.maps.SupportMapFragment"

        android:layout_width="match_parent"

        android:layout_height="match_parent"

        android:layout_alignParentTop="true"

        android:layout_alignParentBottom="true"

        android:layout_alignParentStart="true"

        android:layout_alignParentEnd="true" />

</RelativeLayout>
```

**AndroidManifest.xml**

```xml
<?xml version="1.0" encoding="utf8"?>

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

    package="com.yourpackage.yourappname">

    <usespermission android:name="android.permission.ACCESS_FINE_LOCATION" />

    <usespermission android:name="android.permission.ACCESS_COARSE_LOCATION" />

    <usespermission android:name="android.permission.INTERNET" />

    <application

        android:allowBackup="true"

        android:icon="@mipmap/ic_launcher"

        android:label="@string/app_name"

        android:roundIcon="@mipmap/ic_launcher_round"

        android:supportsRtl="true"

        android:theme="@style/AppTheme">
```

```
<! Google Maps API Key >

<metadata

    android:name="com.google.android.geo.API_KEY"

    android:value="YOUR_API_KEY_HERE" />

<activity android:name=".MainActivity">

  <intentfilter>

    <action android:name="android.intent.action.MAIN" />

    <category android:name="android.intent.category.LAUNCHER" />

  </intentfilter>

</activity>

    </application>

</manifest>
```

**Program 13**

Create a sample application with login module (check user name and password) On successful login change Textview "Login Successful". On login fail alert using Toast "login fail"

**Steps:**

1. Click **Start-** Android **Studio**, a **Welcome to Android Studio** dialog box will appear. Click **New Project**, the **New Project Dialog box** appears.

2. Choose **Empty Views Activity** then click **Next**.

3. Specify the **Name** of your project, Select the **Language** as **Java**, and Select the **SDK as API 24("Nougat",Android 7.0).**Click **Finish** Button.

**4.** Update the following code **in activity_main.xml and MainActivity.java**

5. Click **Run app** or **shift+F10** to execute the application.


**activity_main.xml**

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
 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"
        android:orientation="vertical"
        android:padding="16dp">
        <TextView android:id="@+id/tvTitle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="24sp"
        android:text="Login Form"
        android:layout_gravity="center"/>
        <TextView android:id="@+id/tvUserName"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="20sp"
        android:text="User Name" />
    <EditText
        android:id="@+id/etUsername"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Username"
        android:inputType="text"
        android:padding="8dp"
        android:layout_marginTop="16dp"
        android:layout_marginBottom="30dp"/>
        <TextView android:id="@+id/tvPassword"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="20sp"
```

```
        android:text="Password" />
        <EditText
        android:id="@+id/etPassword"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Password"
        android:inputType="textPassword"
        android:padding="8dp"
        android:layout_marginTop="16dp"
        android:layout_marginBottom="30dp"/>
        <Button
        android:id="@+id/btnLogin"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Login"
        android:textSize="18sp"
        android:layout_marginTop="16dp"/>
        <TextView android:id="@+id/tvMessage"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="20sp"
        android:text="Password" />
    </LinearLayout>
```

**Mainactivity.java**

```
package com.bca.loginprgrm;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity {
    EditText etUsername,etPassword; Button btnLogin;
```

```java
    TextView tvMessage;
    @Override
    protected void onCreate(Bundle savedInstanceState)
{

        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btnLogin = (Button) findViewById(R.id.btnLogin);
      etUsername = (EditText) findViewById(R.id.etUsername);
      etPassword = (EditText) findViewById(R.id.etPassword);
        tvMessage = (TextView) findViewById(R.id.tvMessage);
        btnLogin.setOnClickListener(new View.OnClickListener()
        { @Override
        public void onClick(View view)
        {
          if(etUsername.getText().toString().isEmpty())
          {
            etUsername.setError("Enter User name");
          } else if (etPassword.getText().toString().isEmpty()) {
            etPassword.setError("Enter Password");
          }
          else if(etUsername.getText().toString().equals("isbr") &&
                etPassword.getText().toString().equals("isbr"))
          {
            tvMessage.setText("Valid Login");
          }
          else
          {
            tvMessage.setText("Invalid login");
          }
        }
        });
    }
  }
```

**OUTPUT**



**Login Form**

User Name

Username

Password

Password

Login

Password

**Login Form**

User Name

isbr

Password

••••

Login

Password

**Program 14**

Learn to deploy Android applications

**Steps to Deploy an Android Application**

1. **Prepare App** (use Program 1 Hello world for this program)
   - Optimize performance and test thoroughly.

- Ensure compatibility with various devices.

**activity_main.xml**

```
<?xml version="1.0" encoding="utf8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/resauto"
    xmlns:tools="http://schemas.android.com/tools"
    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_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        android:textSize="30sp"/>

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

**MainActivity.java**

```
package com.bca.helloworld;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity

{
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
```

```
        setContentView(R.layout.activity_main);

    }

}
```

## 2. **Generate Signed APK (Android Package Kit**):

- In Android Studio, navigate to Build > Generate Signed Bundle/APK.

- Follow the prompts to create a new keystore or use an existing one. A keystore is a binary file that contains a set of private keys.

- Configure the build type (release) and signing configuration.

- Generate the signed APK file.

## 3. **Test Your Signed APK**:

- Before distributing your app, test the signed APK to ensure that the signing process didn't introduce any issues.

- Install the APK on various devices and perform thorough testing.

- Release on Google Play Console:

- Sign in to the Google Play Console (https://play.google.com/apps/publish).

- Create a new app entry if this is your first release or select an existing app.

- Complete all the required information for the app listing, including the title, description, screenshots, and categorization.

- Upload your signed APK file.

- Set pricing and distribution options.

- Optimize your store listing for search and conversion.

- Once everything is set, click the "Publish" button to release your app to the Google Play Store.

## 5. **Other Distribution Channels (Optional):**

- Besides Google Play, you can distribute your app through other channels such as Amazon Appstore, Samsung Galaxy Store, or thirdparty app marketplaces.

- Each distribution channel may have its own requirements and submission process, so be sure to follow their guidelines.

6. **Monitor and Update**:

- Keep an eye on user feedback and app performance metrics through the Google Play Console.
- Regularly update your app to fix bugs, add new features, and improve user experience based on feedback.