

Mobile Application Development-LAB

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

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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 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:id="@+id/main"
    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" />

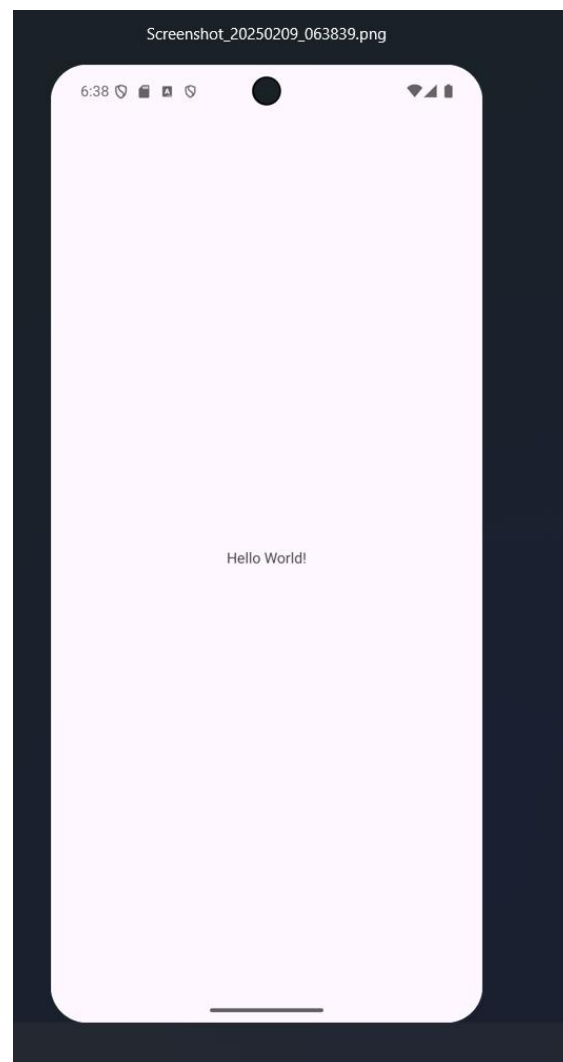
</androidx.constraintlayout.widget.ConstraintLayout>
```

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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);  
    }  
}  
}
```

Output:



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

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```
        android:screenOrientation="landscape" />
    <activity
        android:name=".MainActivity"
        android:exported="true"
        android:screenOrientation="portrait" >
        <intent-filter>
            <action android:name="android.intent.action.MAIN" />
            <category android:name="android.intent.category.LAUNCHER" />
        </intent-filter>
    </activity>
</application>
</manifest>
```

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/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"
```

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```
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="22sp"
    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.example.screenorientation;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
public class MainActivity extends AppCompatActivity
{
    @Override protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
```

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```
        setContentView(R.layout.activity_main);
    }
    public void onClick(View v)
    {
        Intent intent = new Intent(MainActivity.this,MainActivity2.class);
        startActivity(intent);
    }
}
```

activity_main2.xml

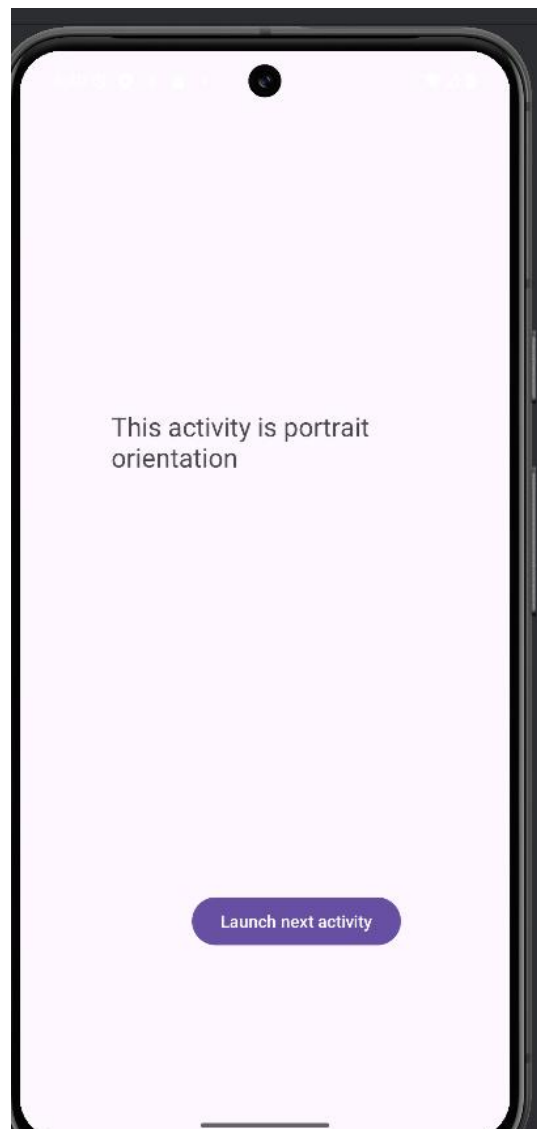
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".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="22sp"
        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>
```

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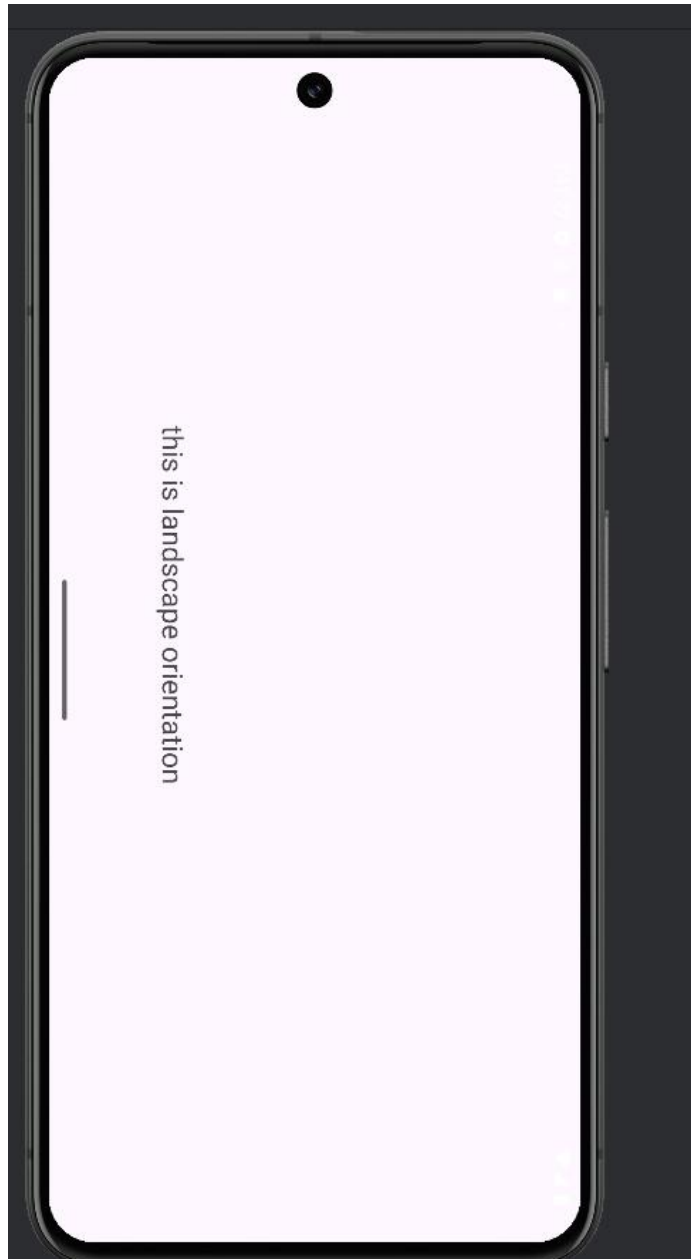
MainActivity2.java

```
package com.example.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:



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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 **drawable>New 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 **drawable>New 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="utf-8"?>
<RelativeLayout
    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: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"
```

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```
android:gravity="center"
android:layout_centerInParent="true"
android:orientation="vertical"
android:background="@drawable/bg_inner"
android:padding="30dp">
<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_marginBottom="16dp"
    android:inputType="textPassword"/>
<Button
    android:id="@+id/buttonLogin"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Login"/> </LinearLayout></RelativeLayout>
```

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bg_inner.xml

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

```
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;
```

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

public class MainActivity extends AppCompatActivity{

    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,"Loginsuccessful",Toast.LENGTH_SHORT).show();

                }

                else

                {

                    Toast.makeText(MainActivity.this, "Invalid username or password",

                    Toast.LENGTH_SHORT).show();

                }

            }

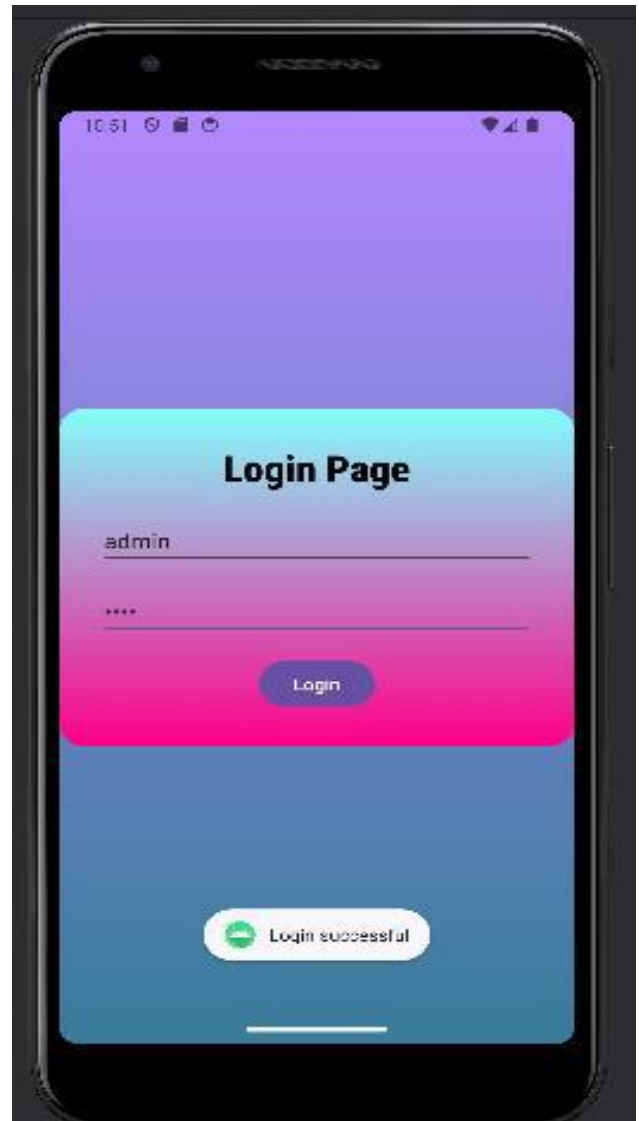
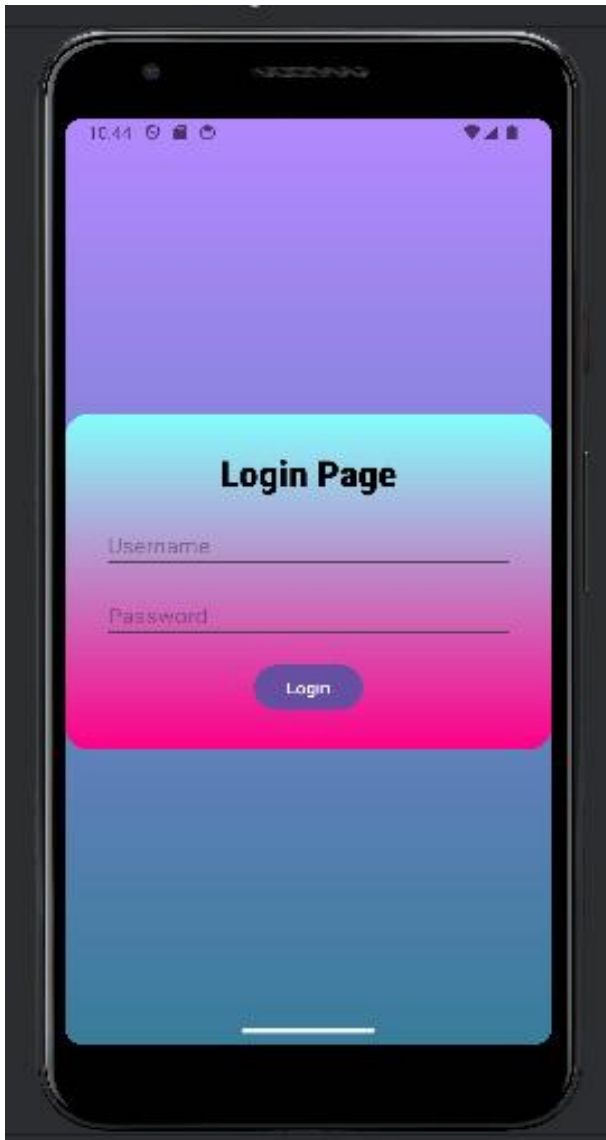
        });

    }

}
```

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Output:



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Program 4

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

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 codes.
5. To create new activity java file: **Right click on com.bca.intent(which is under Java folder)**, then click on **New>Java class-** give class name as **NewActivity>**Click enter.
6. To create new activity xml file: **Go to res>layout**, right click on **layout**, click **New>Layout Resource File**, then give file name as **activity_new** and click ok.

activity_new.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:id="@+id/main"
    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"
```

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```
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.bca.intent;
import android.content.Intent;
import com.bca.intent.NewActivity;
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
    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);
    }
}
```


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```
}  
  
public void onExplicitButtonClicked(View view)  
{  
    Intent i=new Intent(MainActivity.this, NewActivity.class);  
    startActivity(i);  
}  
}
```

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: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>
```

NewActivity.java

```
package com.bca.intent;  
  
import android.os.Bundle;
```

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

public class NewActivity extends AppCompatActivity {

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_new);

    }

}
```

AndroidManifest.xml

```
<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:supportRtl="true"
        android:theme="@style/Theme.Intent"
        tools:targetApi="31">

        <activity android:name=".MainActivity"
            android:exported="true">

            <intent-filter>

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

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

            </intent-filter>

        </activity>

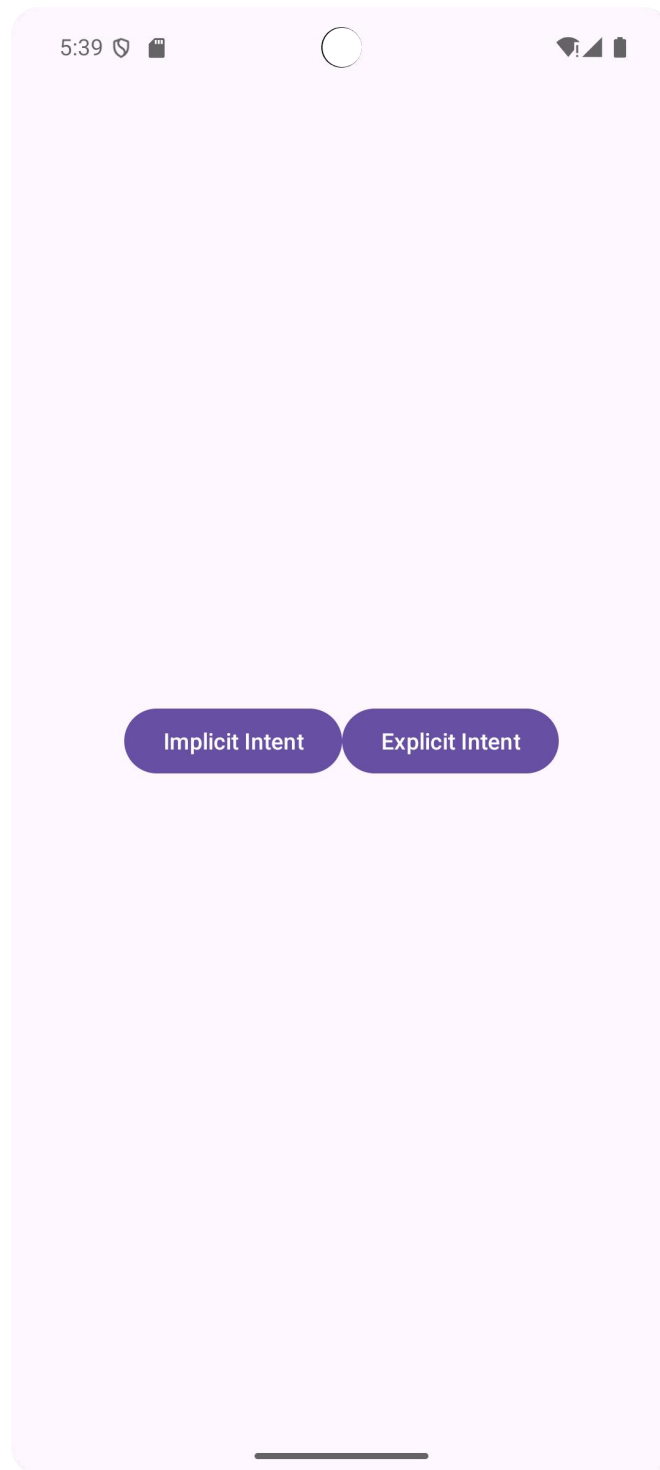
        <activity android:name=".NewActivity"/>

    </application>

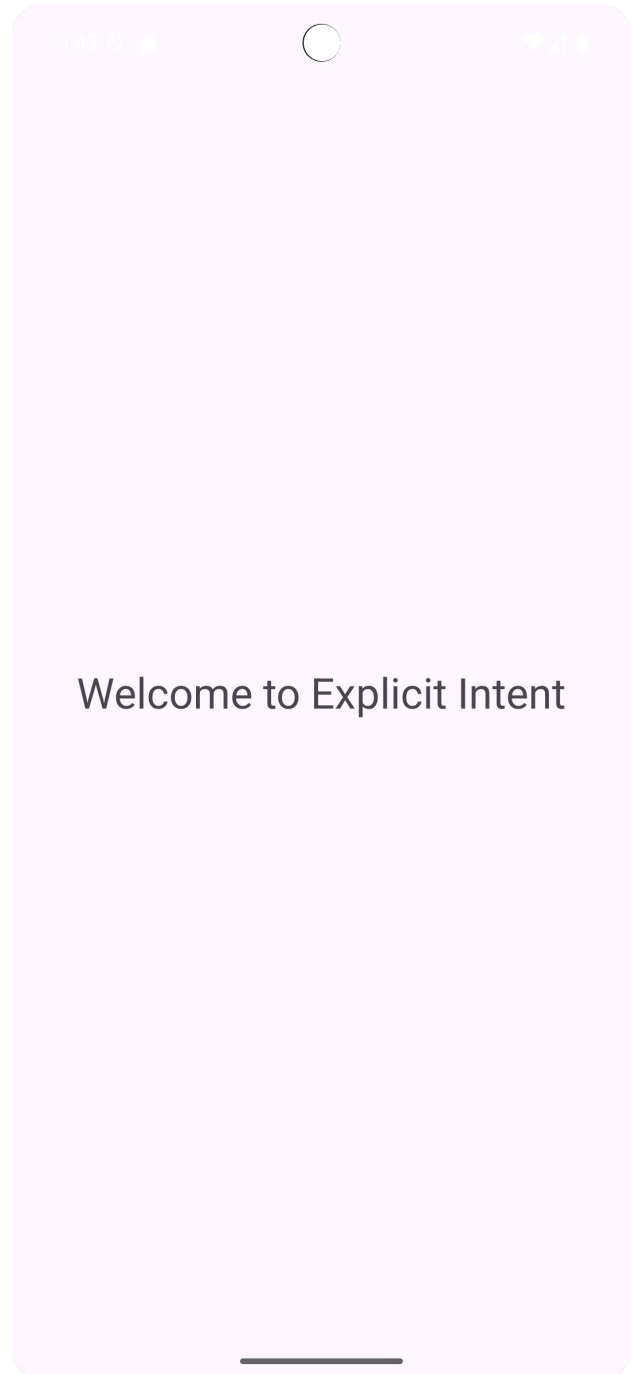
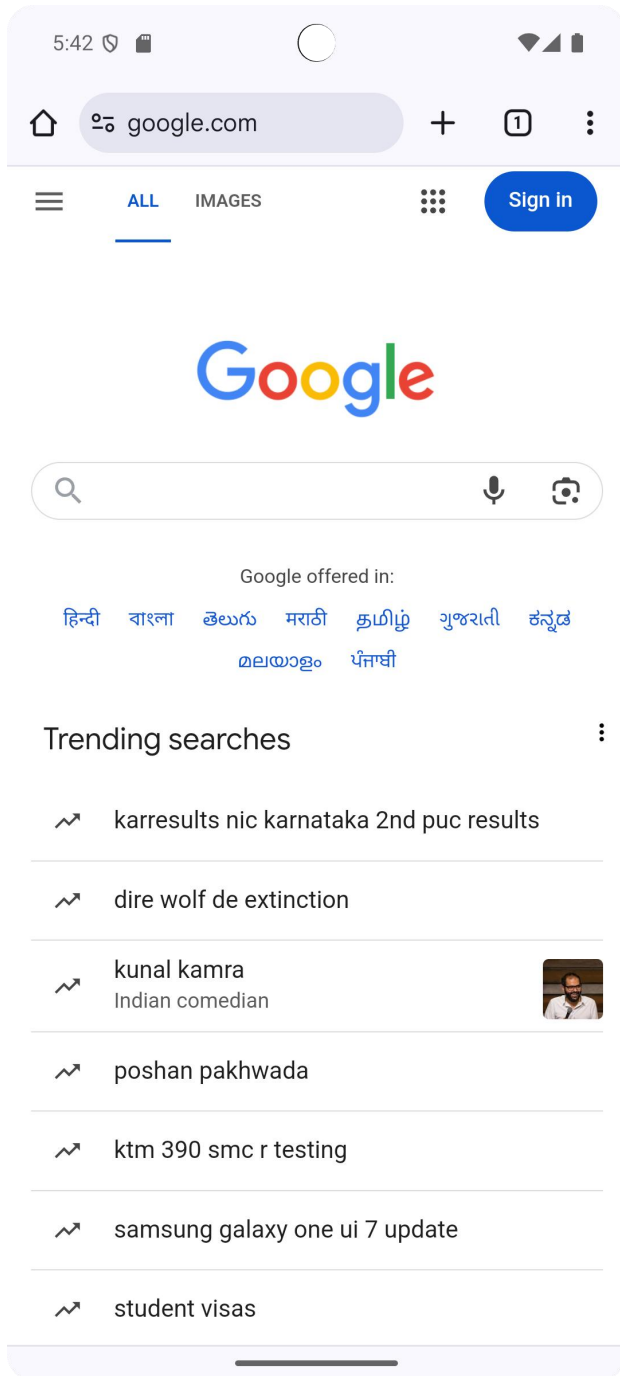
</manifest>
```

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Output:



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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 SDK as API 24("Nougat",Android 7.0).Click Finish Button.
4. Update the following codes.

MainActivity.java

```
package com.example.labprogram5;

import android.os.Bundle;
import android.os.Handler;
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 {

    private static final int SPLASH_DISPLAY_LENGTH = 10000; // Duration of splash
    screen in milliseconds

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        final View splashScreen = findViewById(R.id.splash_screen);
        final View mainContent = findViewById(R.id.main_content);
        new Handler().postDelayed(new Runnable() {
            @Override
            public void run() {
                // Hide the splash screen and show the main content after the splash duration
            }
        }, SPLASH_DISPLAY_LENGTH);
    }
}
```

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```
splashScreen.setVisibility(View.GONE);
mainContent.setVisibility(View.VISIBLE);
    }
}, SPLASH_DISPLAY_LENGTH);
}
}
```

activity_main.xml

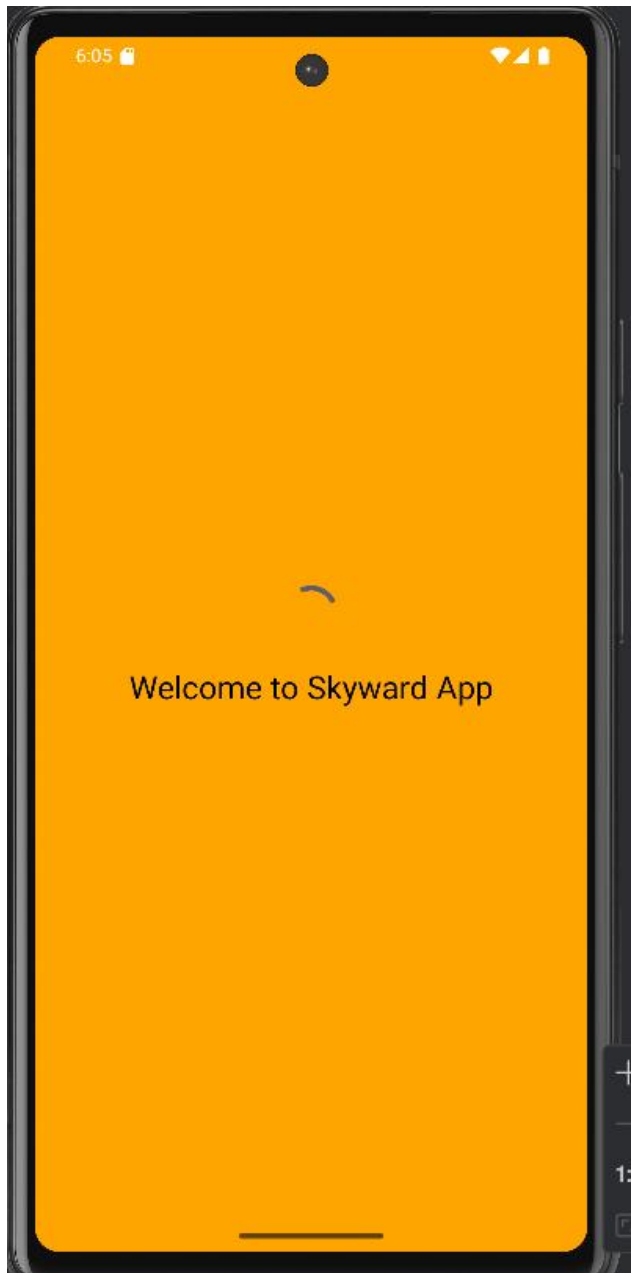
```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <RelativeLayout
        android:id="@+id/splash_screen"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:background="#FFA500"
        android:padding="16dp"
        android:gravity="center">
        <ProgressBar
            android:id="@+id/progress_bar"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_centerHorizontal="true"
            android:indeterminate="true" />
        <TextView
            android:id="@+id/app_name"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Welcome to Skyward App"
            android:textSize="24sp"
            android:textColor="#FF000000"
```

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```
        android:layout_below="@id/progress_bar"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="16dp"/>
</RelativeLayout>
<!-- Main Content Layout -->
<LinearLayout
    android:id="@+id/main_content"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp"
    android:gravity="center"
    android:visibility="gone">
    <TextView
        android:id="@+id/welcome_text"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Welcome to the Main Activity Screen"
        android:textSize="18sp"
        android:textColor="#000000" />
    </LinearLayout>
</FrameLayout>
```

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Output:



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Program 6

Create an UI with all views.

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**

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<ScrollView xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        android:padding="16dp">
        <TextView
            android:id="@+id/textView"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="This is a TextView"
            android:textSize="18sp"
            android:layout_marginBottom="16dp"/>
        <EditText
            android:id="@+id/editText"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="Enter your text here"
```

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```
android:layout_marginBottom="16dp"/>
```

```
<Button
```

```
android:id="@+id/button"
```

```
android:layout_width="wrap_content"
```

```
android:layout_height="wrap_content"
```

```
android:text="Click Me"
```

```
android:layout_marginBottom="16dp"/>
```

```
<CheckBox
```

```
android:id="@+id/checkBox"
```

```
android:layout_width="wrap_content"
```

```
android:layout_height="wrap_content"
```

```
android:text="Check Me"
```

```
android:layout_marginBottom="16dp"/>
```

```
<RadioGroup
```

```
android:id="@+id/radioGroup"
```

```
android:layout_width="wrap_content"
```

```
android:layout_height="wrap_content"
```

```
android:orientation="vertical"
```

```
android:layout_marginBottom="16dp">
```

```
<RadioButton
```

```
    android:id="@+id/radioButton1"
```

```
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="Option 1"/>
```

```
<RadioButton
```

```
    android:id="@+id/radioButton2"
```

```
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="Option 2"/>
```

```
</RadioGroup>
```

```
<Switch
```

```
    android:id="@+id/switch1"
```

Mobile Application Development-LAB

```
android:layout_width="wrap_content"
android:layout_height="wrap_content"
    android:text="Switch"
android:layout_marginBottom="16dp"/>
<Spinner
    android:id="@+id/spinner"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" android:layout_marginBottom="16dp"/>
<ProgressBar
    android:id="@+id/progressBar"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="16dp"/>
<DatePicker
    android:id="@+id/datePicker"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="16dp"/>
<TimePicker
    android:id="@+id/timePicker"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="16dp"/>
<NumberPicker
    android:id="@+id/numberPicker"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="16dp"/>
</LinearLayout>
</ScrollView>
```

Mobile Application Development-LAB

MainActivity.java

```
package com.example.labprogram6;

import android.os.Bundle;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.DatePicker;
import android.widget.EditText;
import android.widget.NumberPicker;
import android.widget.ProgressBar;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.Spinner;
import android.widget.Switch;
import android.widget.TextView;
import android.widget.TimePicker;
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 {

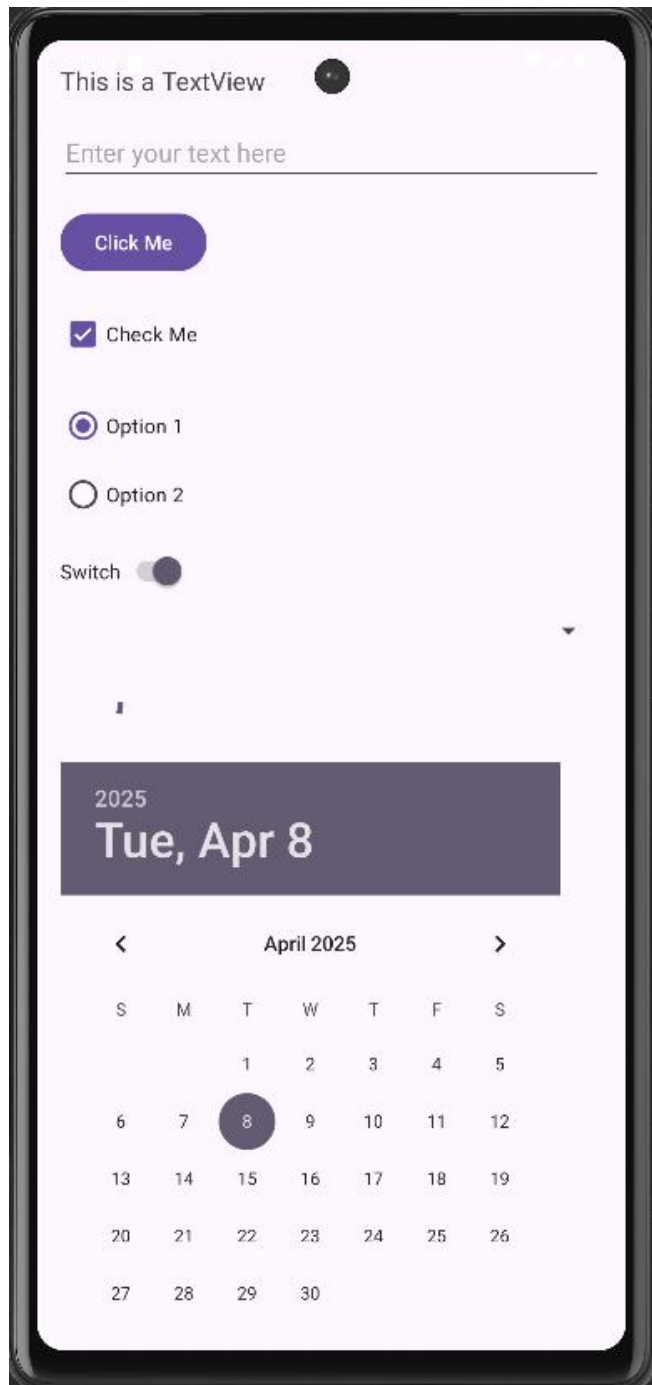
    private TextView textView;
    private EditText editText;
    private Button button;
    private CheckBox checkBox;
    private RadioGroup radioGroup;
    private RadioButton radioButton1;
    private RadioButton radioButton2;
    private Switch switch1;
    private Spinner spinner;
    private ProgressBar progressBar;
    private DatePicker datePicker;
```

Mobile Application Development-LAB

```
private TimePicker timePicker;
private NumberPicker numberPicker;
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
// Link UI components
    textView = findViewById(R.id.textView);
    editText = findViewById(R.id.editText);
    button = findViewById(R.id.button);
    checkBox = findViewById(R.id.checkBox);
    radioGroup = findViewById(R.id.radioGroup);
    radioButton1 = findViewById(R.id.radioButton1);
    radioButton2 = findViewById(R.id.radioButton2);
    switch1 = findViewById(R.id.switch1);
    spinner = findViewById(R.id.spinner);
    progressBar = findViewById(R.id.progressBar);
    datePicker = findViewById(R.id.datePicker);
    timePicker = findViewById(R.id.timePicker);
    numberPicker = findViewById(R.id.numberPicker);
// Additional configurations if needed
    numberPicker.setMinValue(0);
    numberPicker.setMaxValue(100);
}
}
```

Mobile Application Development-LAB

Output:



Mobile Application Development-LAB

Program 7

Create menu in 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**, **MainActivity.java**, **Strings.xml**

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:id="@+id/main"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="match_parent"
```

```
    android:orientation="vertical"
```

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

```
    <TextView
```

```
        android:id="@+id/languageLabel"
```

```
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
```

```
        android:text="Select Language!" />
```

```
    <Spinner
```

```
        android:id="@+id/languageSpinner"
```

```
        android:layout_width="match_parent"
```

```
        android:layout_height="wrap_content"
```

```
        android:entries="@array/language"/>
```

```
    <TextView
```

Mobile Application Development-LAB

```
        android:id="@+id/notificationLabel"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:text="Enable Notification"/>
    <Switch
        android:id="@+id/notificationSwitch"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>
    <Button
        android:id="@+id/saveButton"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:text="Save Preference"/>
    <TextView
        android:id="@+id/preferencesTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:padding="16dp"
        android:text="Preference will be displayed here"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.program9;
import android.content.Context;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.Spinner;
import android.widget.Switch;
import android.widget.TextView;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
```


Mobile Application Development-LAB

```
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
public class MainActivity extends AppCompatActivity {
    private Spinner languageSpinner;
    private Switch notificationsSwitch;
    private TextView preferencesTextView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        languageSpinner = findViewById(R.id.languageSpinner);
        notificationsSwitch = findViewById(R.id.notificationSwitch);
        preferencesTextView = findViewById(R.id.preferencesTextView);
        Button saveButton = findViewById(R.id.saveButton);
        loadUserPreferences();
        saveButton.setOnClickListener(v -> saveUserPreference());
    }
    private void saveUserPreference() {
        String language = languageSpinner.getSelectedItem().toString();
        boolean notificationsEnabled = notificationsSwitch.isChecked();
        SharedPreferences sharedPreferences = getSharedPreferences("UserPreferences",
Context.MODE_PRIVATE);
        SharedPreferences.Editor editor = sharedPreferences.edit();
        editor.putString("language", language);
        editor.putBoolean("notificationEnabled", notificationsEnabled);
        editor.apply();

        preferencesTextView.setText(String.format("Language:%s\nNotificationEnabled%b",
language, notificationsEnabled));
    }
    private void loadUserPreferences() {
```

Mobile Application Development-LAB

```
SharedPreferences sharedPreferences = getSharedPreferences("UserPreferences",
Context.MODE_PRIVATE);

String language = sharedPreferences.getString("language", "English");

boolean notificationsEnabled =
sharedPreferences.getBoolean("notificationEnabled", false);

ArrayAdapter<CharSequence> adapter = ArrayAdapter.createFromResource(this,
R.array.language, android.R.layout.simple_spinner_dropdown_item);

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

languageSpinner.setAdapter(adapter);

int spinnerPosition = adapter.getPosition(language);

languageSpinner.setSelection(spinnerPosition);

notificationsSwitch.setChecked(notificationsEnabled);

preferencesTextView.setText(String.format("Language:%s\nNotifications
Enabled:%b", language, notificationsEnabled));
}
}
```

strings.xml

```
<resources>

<string name="app_name">Program9</string>

<string-array name="language">

<item>English</item>

<item>spanish</item>

<item>French</item>

<item>German</item>

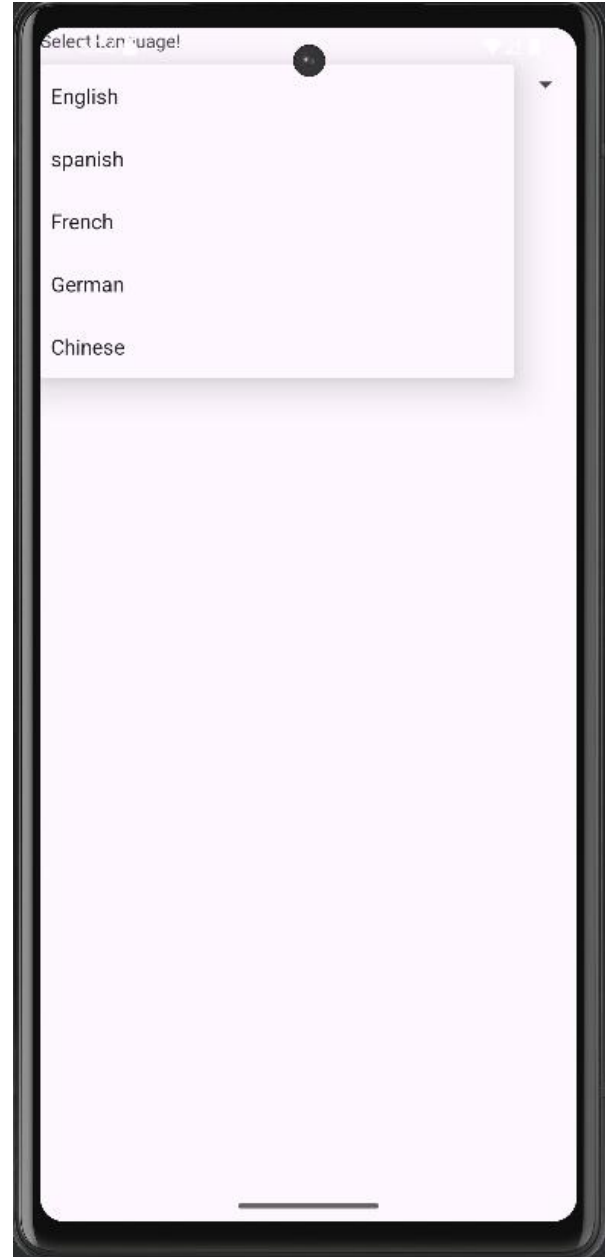
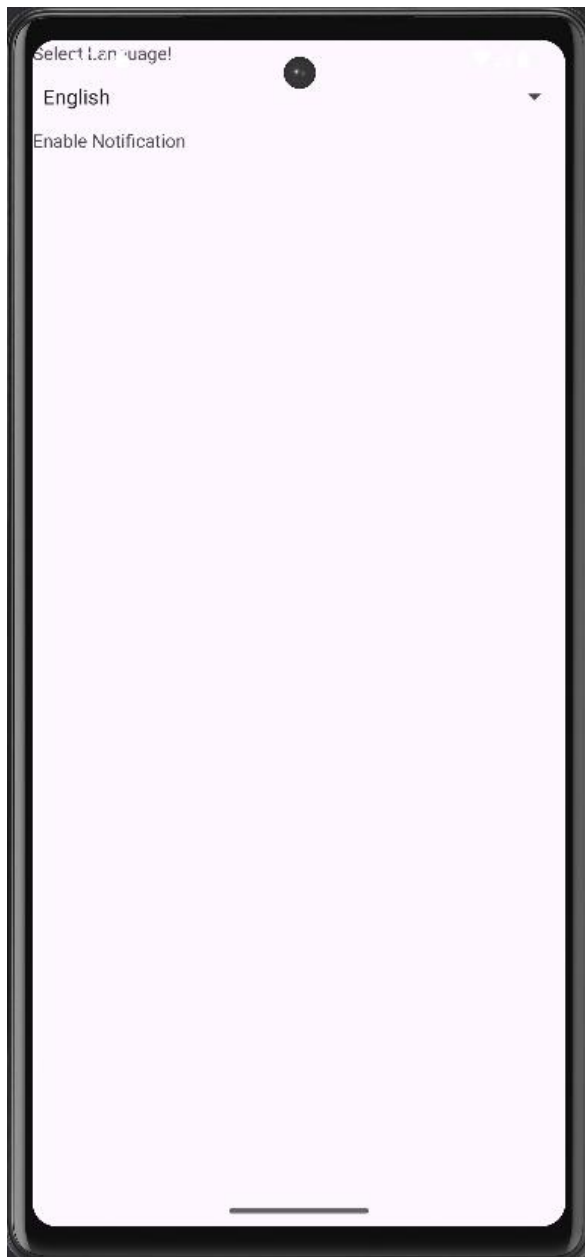
<item>Chinese</item>

</string-array>

</resources>
```

Mobile Application Development-LAB

Output:



Mobile Application Development-LAB

Program 8

Read/ write the Local data

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. Create **MainActivity2.java** and **activity_main2.xml**
 - To Create another activity **right click on app – new activity-Empty views Activity**.
5. Update the following code in **activity_main.xml**, **MainActivity.java**, **activity_main2.xml** and **MainActivity2.java**

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"
    tools:context=".MainActivity"
    android:orientation="vertical">
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="UserName">
    </TextView>
    <EditText
        android:id="@+id/etUserName"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >
```

Mobile Application Development-LAB

</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

```
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;
```

Mobile Application Development-LAB

```
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", 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);
```

Mobile Application Development-LAB

```
startActivity(intent);  
}); } }
```

activity_main2.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=".MainActivity2"  
    android:orientation="vertical">  
    <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>
```

Mobile Application Development-LAB

```
<EditText
    android:id="@+id/etPassword"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" >
</EditText>
</LinearLayout>
```

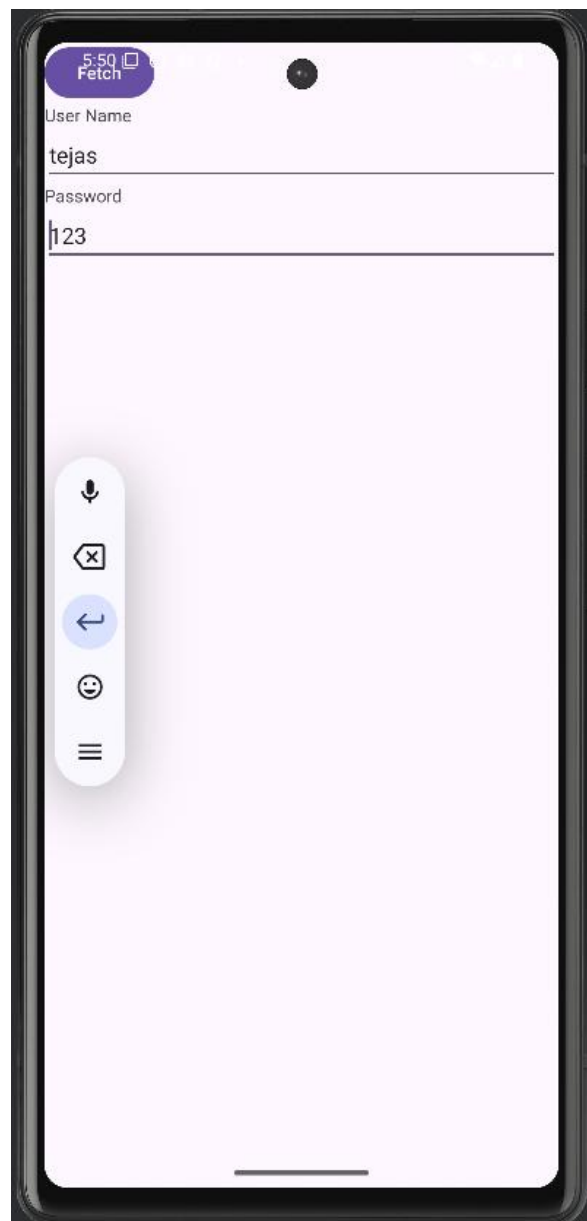
MainActivity2.java

```
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;
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);
```


Mobile Application Development-LAB

```
String username = sharedPreferences.getString("username", "");  
String password = sharedPreferences.getString("password", "");  
etUserName.setText(username);  
etPassword.setText(password);  
}); }
```

Output:



Mobile Application Development-LAB

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. Create **ViewActivity.java** and **activity_view.xml**

- To Create another activity **right click on app – new activity- Empty views Activity**.
- Give Activity Name as **ViewActivity** and Layout Name as **activity_view**

5. Create **EditActivity2.java** and **activity_edit.xml**

- To Create another activity **right click on app – new activity- Empty views Activity**.
- Give Activity Name as **EditActivity** and Layout Name as **activity_edit**

6. Create a class file

- Go To **app>java> Right click on com.bca.sqlite , Click on new > java class**
- Give name as **Student**

Update the following codes.

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
```

Mobile Application Development-LAB

```
    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 Registration"
        android:textSize="30dp"/>
</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>
<LinearLayout
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:gravity="center">
```

Mobile Application Development-LAB

<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" />
```

</LinearLayout>

<LinearLayout

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

Mobile Application Development-LAB

```
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" />
<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:id="@+id/bt2"
    android:text="View" />
```

```
</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 android.widget.EditText;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    EditText ed1,ed2,ed3;
    Button b1,b2;
    @Override
```

Mobile Application Development-LAB

```
protected void onCreate(Bundle savedInstanceState)
{
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    ed1 = findViewById(R.id.name);
    ed2 = findViewById(R.id.course);
    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();
        SQLiteDatabase db = openOrCreateDatabase("SliteDb",
            Context.MODE_PRIVATE, null);
        db.execSQL("CREATE TABLE IF NOT EXISTS records(" +
```

Mobile Application Development-LAB

```
"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 added",Toast.LENGTH_LONG).show();
ed1.setText("");
ed2.setText("");
ed3.setText("");
ed1.requestFocus();
}
catch (Exception ex)
{
    Toast.makeText(this,"Record Fail",Toast.LENGTH_LONG).show();
}
}
}
```

Student.java

```
package com.bca.sqlite;

public class Student {

    String id;

    String name;

    String course;

    String fee;

    String titles;

}
```

Mobile Application Development-LAB

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 android.content.Context;
import android.content.Intent;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.AdapterView;
import android.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
```


Mobile Application Development-LAB

```
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,  
        android.support.design.widget.support_simple_spinner_dropdown_item,titles);  
    lst1.setAdapter(arrayAdapter);  
    final ArrayList<Student> stud = new ArrayList<Student>();  
    if(c.moveToFirst())  
    {  
        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
```

Mobile Application Development-LAB

```
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 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"  
    tools:context=".EditActivity">  
    <LinearLayout  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"  
        android:gravity="center"  
        android:orientation="vertical">  
        <TextView  
            android:layout_width="wrap_content"  
            android:layout_height="wrap_content"  
            android:text="Course Registration"
```

Mobile Application Development-LAB

```
        android:textSize="30dp" />
</LinearLayout>
<LinearLayout
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:gravity="center"
    android:orientation="horizontal">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="ID" />
    <EditText
        android:id="@+id/id"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:ems="10"
        android:textAlignment="center" />
</LinearLayout>
<LinearLayout
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:gravity="center"
    android:orientation="horizontal">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Name" />
    <EditText
        android:id="@+id/name"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

Mobile Application Development-LAB

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

Mobile Application Development-LAB

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:ems="10"
        android:textAlignment="center" />
</LinearLayout>
<LinearLayout
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:gravity="center"
    android:orientation="horizontal">
    <Button
        android:id="@+id/bt1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Edit" />
    <Button
        android:id="@+id/bt2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Delete" />
    <Button
        android:id="@+id/bt3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Back" />
</LinearLayout>
</LinearLayout>
```

Mobile Application Development-LAB

EditActivity.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 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);
        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);
```

Mobile Application Development-LAB

```
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,"Record
Deleted",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();
    }
}
});
b3.setOnClickListener(new View.OnClickListener() { @Override
public void onClick(View v) {
    Intent i = new Intent(getApplicationContext(),ViewActivity.class);
    startActivity(i);
}
});
```

Mobile Application Development-LAB

```
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();
    }
}
});
}}
```


Mobile Application Development-LAB

Output:

Course Registration

Name _____

Course _____

Fee _____

Ok View

Course Registration

Name Tejas

Course BCA

Fee 1,00,000

Ok View

- (Similarly add few more records)

6	Tejas	BCA	1,00,000
7	Vinod	BCA	1,00,000
8	Rajath	BBA	80,000
9	Amith	Bcom	85,000
10	Chinmay	Bcom	90,000

Mobile Application Development-LAB

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**, **MainActivity.java** and **AndroidManifest.xml**

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp" >
    <EditText
        android:id="@+id/phone_number"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Number"
        android:inputType="phone" />
    <EditText
        android:id="@+id/message"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Message"
        android:inputType="textMultiLine" />
    <Button
        android:id="@+id/send_sms"
```

Mobile Application Development-LAB

```
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Send SMS" />
</LinearLayout>
```

MainActivity.java

```
package com.example.program10;
import android.Manifest;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.telephony.SmsManager;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
public class MainActivity extends AppCompatActivity
{
    private static final int PERMISSION_REQUEST_CODE = 1;
    private EditText phoneNumberEditText;

    private EditText messageEditText;
    private Button sendSmsButton;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        phoneNumberEditText = findViewById(R.id.phone_number);
```

Mobile Application Development-LAB

```
messageEditText = findViewById(R.id.message);
sendSmsButton = findViewById(R.id.send_sms);
sendSmsButton.setOnClickListener(new View.OnClickListener()
{
    @Override
    public void onClick(View v)
    {
        if (ContextCompat.checkSelfPermission (MainActivity.this,
            Manifest.permission.SEND_SMS) !=
PackageManager.PERMISSION_GRANTED)
        {
            ActivityCompat.requestPermissions (MainActivity.this, new String[]
                {Manifest.permission.SEND_SMS}
                , PERMISSION_REQUEST_CODE);
        }
        else
        {
            sendSms();
        }
    }
});
}

private void sendSms()
{
    String phoneNumber = phoneNumberEditText.getText().toString();
    String message = messageEditText.getText().toString();
    try
    {
        SmsManager smsManager = SmsManager.getDefault();
        smsManager.sendTextMessage(phoneNumber, null, message, null, null);
        Toast.makeText(this, "SMS Sent", Toast.LENGTH_SHORT).show();
    }
}
```

Mobile Application Development-LAB

```
catch (Exception e)
{
    Toast.makeText(this,"SMS Failed to Send", Toast.LENGTH_SHORT).show();
    e.printStackTrace();
}
}

@Override
public void onRequestPermissionsResult(int requestCode, @NonNull String[]
    permissions, @NonNull int[] grantResults)
{
    super.onRequestPermissionsResult(requestCode, permissions, grantResults);
    if (requestCode == PERMISSION_REQUEST_CODE)
    {
        if (grantResults.length > 0 && grantResults[0] == PackageManager.
PERMISSION_GRANTED)
        {
            sendSms();
        }
        else
        {
            Toast.makeText(this, "Permission Denied", Toast.LENGTH_SHORT).show();
        }
    }
}
}
```

Mobile Application Development-LAB

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    package="com.example.program10">
    <uses-feature
        android:name="android.hardware.telephony"
        android:required="false" />
    <uses-permission android:name="android.permission.SEND_SMS"/>
    <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.Program10"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
</manifest>
```

Mobile Application Development-LAB

Output:



Mobile Application Development-LAB

Program 11

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**, **MainActivity.java** and **AndroidManifest.xml**

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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp">
    <EditText
        android:id="@+id/email_address"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Email Adress"
        android:inputType="textEmailAddress"/>
    <EditText
        android:id="@+id/email_subject"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Subject"
```


Mobile Application Development-LAB

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

```
<EditText
```

```
    android:id="@+id/email_message"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"
```

```
    android:hint="Message"
```

```
    android:inputType="textMultiLine"/>
```

```
<Button
```

```
    android:id="@+id/send_email"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="Send Email"/>
```

```
</LinearLayout>
```

MainActivity.java

```
package com.example.program11;
```

```
import android.content.Intent;
```

```
import android.net.Uri;
```

```
import android.os.Bundle;
```

```
import android.view.View;
```

```
import android.widget.Button;
```

```
import android.widget.EditText;
```

```
import android.widget.Toast;
```

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

```
public class MainActivity extends AppCompatActivity
```

```
{
```

```
    private EditText emailAddressEditText;
```

```
    private EditText emailSubjectEditText;
```

```
    private EditText emailMessageEditText;
```

```
    private Button sendEmailButton;
```

```
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
```

```
        super.onCreate(savedInstanceState);
```

Mobile Application Development-LAB

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

emailAddressEditText = findViewById(R.id.email_address);
emailSubjectEditText = findViewById(R.id.email_subject);
emailMessageEditText = findViewById(R.id.email_message);
sendEmailButton = findViewById(R.id.send_email);
sendEmailButton.setOnClickListener(new View.OnClickListener() {

    @Override
    public void onClick(View v) {
        sendEmail();
    }
});
}

private void sendEmail(){
    String emailAddress=emailAddressEditText.getText().toString();
    String subject=emailSubjectEditText.getText().toString();
    String message=emailMessageEditText.getText().toString();
    Intent emailIntent = new Intent(Intent.ACTION_SEND);
    emailIntent.setType("message/rfc822");
    emailIntent.putExtra(Intent.EXTRA_EMAIL, new String[]{emailAddress});
    emailIntent.putExtra(Intent.EXTRA_SUBJECT, subject);
    emailIntent.putExtra(Intent.EXTRA_TEXT, message);
    if (emailIntent.resolveActivity(getPackageManager()) != null)
    {
        startActivity(emailIntent);
    }
    else
    {
        Toast.makeText(this, "Email Client Not Installed",
            Toast.LENGTH_SHORT).show();
    }
}
}
```

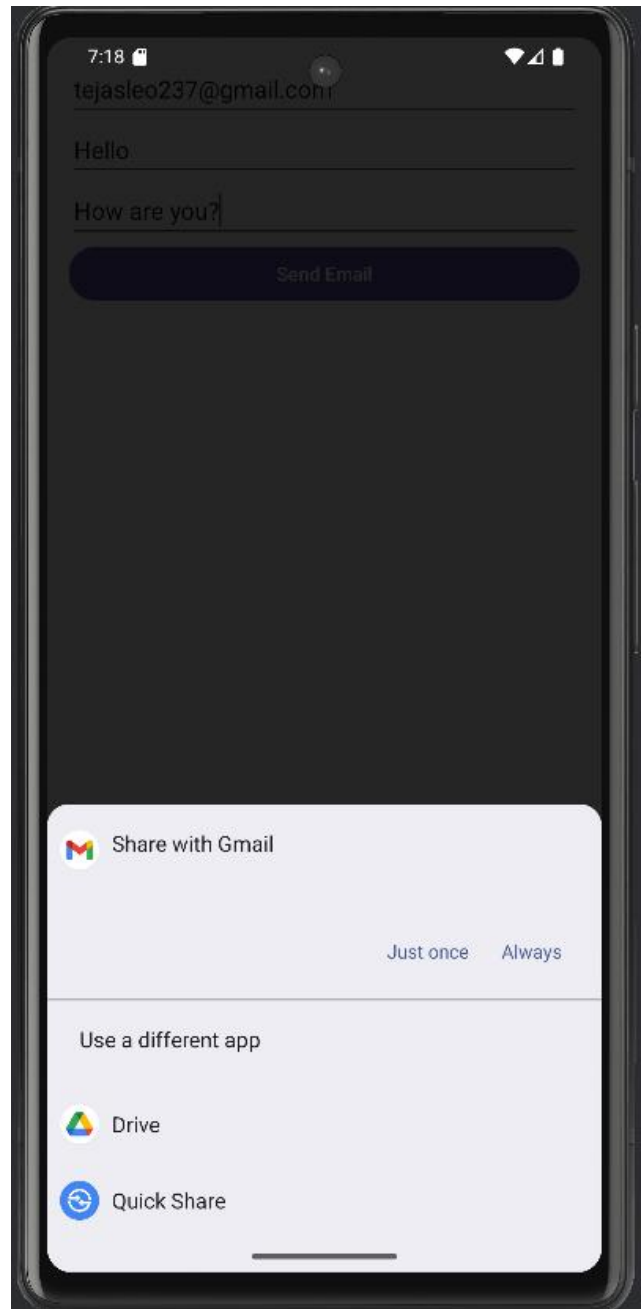
Mobile Application Development-LAB

AndroidManifest.xml

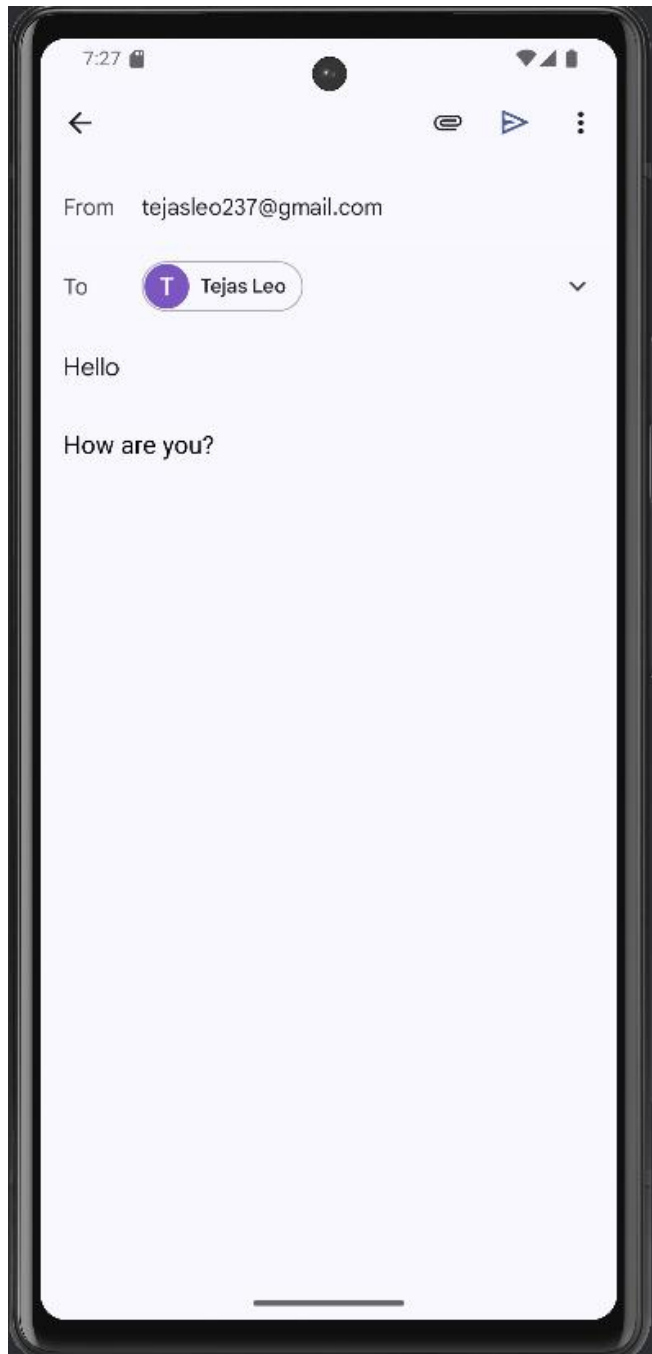
```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">
    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Program11"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
</manifest>
```

Mobile Application Development-LAB

Output:



Mobile Application Development-LAB



Mobile Application Development-LAB

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. Create an **API Key**

- <https://console.cloud.google.com/> (open this link and login/signup)
- Click on **Select a Project**, then click **New Project**, give project name and click on **create**.
- Now select the created project.
- Go to **Navigation menu** (on the top left) > **APIs & Services** > **Library**
- Search “**Maps SDK for Android**” and click on **enable**.
- Go to **Navigation menu** (on the top left) > **APIs & Services** > **Credentials**. Copy the **API Key**

5. Update the following code in **activity_main.xml**, **MainActivity.java** and **AndroidManifest.xml**, **colors.xml**, **themes.xml**, **themes.xml(night)**

MainActivity.java

```
package com.example.program12;

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;
```

Mobile Application Development-LAB

```
public class MainActivity extends AppCompatActivity implements
OnMapReadyCallback {

    private GoogleMap mMap;

    private double latitude = 37.7749; // Example: San Francisco

    private double longitude = -122.4194;

    @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.

        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));

    }

}
```

Mobile Application Development-LAB

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"
    tools:context=".MainActivity">
    <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 version="1.0" encoding="utf-8"?>
<manifest
    xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.program12">
    <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"
/>
    <uses-permission
android:name="android.permission.ACCESS_COARSE_LOCATION" />
    <uses-permission 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"
```


Mobile Application Development-LAB

```
android:supportsRtl="true"
android:theme="@style/Theme.Program12">
<meta-data
    android:name="com.google.android.geo.API_KEY"
    android:value="AIzaSyDQ3HdygB-FIRiTIuOYfKwTPwoLWL8GFT8" />
<activity android:name=".MainActivity" android:exported="true">
    <intent-filter>
        <action android:name="android.intent.action.MAIN" />
        <category android:name="android.intent.category.LAUNCHER" />
    </intent-filter>
</activity>
</application>
</manifest>
```

Colors.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="purple_500">#6200EE</color> <!-- You can change this value to your
    preferred purple color -->
    <color name="purple_700">#3700B3</color>
    <color name="teal_200">#03DAC5</color>
</resources>
```

Themes.xml

```
<resources xmlns:tools="http://schemas.android.com/tools">
    <!-- Base application theme. -->
    <style name="Base.Theme.Program12"
        parent="Theme.AppCompat.Light.DarkActionBar">
        <!-- Customize your light theme here. -->
        <item name="colorPrimary">@color/purple_500</item>
        <item name="colorPrimaryDark">@color/purple_700</item>
        <item name="colorAccent">@color/teal_200</item>
    </style>
```

Mobile Application Development-LAB

```
<style name="Theme.Program12" parent="Base.Theme.Program12" />
</resources>
```

Themes.xml (night)

```
<resources xmlns:tools="http://schemas.android.com/tools">
    <!-- Base application theme. -->
    <style name="Base.Theme.Program12"
parent="Theme.AppCompat.DayNight.DarkActionBar">
        <!-- Customize your dark theme here. -->
        <item name="colorPrimary">@color/purple_500</item>
        <item name="colorPrimaryDark">@color/purple_700</item>
        <item name="colorAccent">@color/teal_200</item>
    </style>
</resources>
```

Under Gradle Scripts update-build.gradle.kts(Project: Program12)

build.gradle.kts(Module: app)

settings.gradle.kts

build.gradle.kts(Project: Program12) - add following code

```
allprojects {
    repositories {
        google()
        mavenCentral()
    }
}
```

build.gradle.kts(Module: app)

```
implementation("com.google.android.gms:play-services-maps:18.2.0")
implementation("com.google.android.gms:play-services-location:18.0.0")
```

- Add the above lines in - dependencies { }

settings.gradle.kts

In- dependencyResolutionManagement { ... }

Update - repositoriesMode.set(RepositoriesMode.FAIL_ON_PROJECT_REPOS) to
repositoriesMode.set(RepositoriesMode.PREFER_SETTINGS)

Mobile Application Development-LAB

Output:

