

Practical No 1

Create an application with following functionalities: Print and show a simple message e.g. Hello Word

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>
```

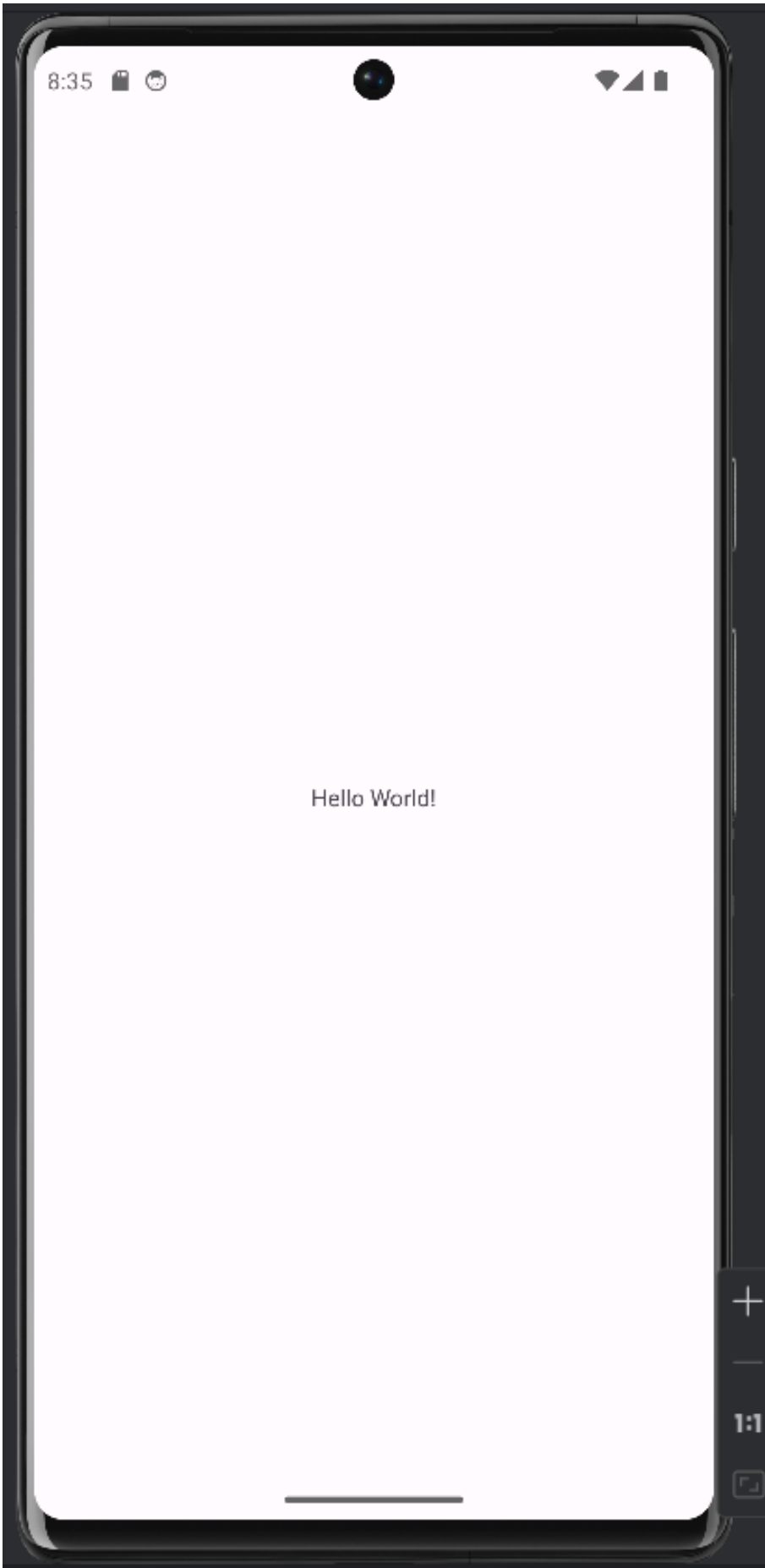
MainActivity.kt

```
package com.example.practical1

import android.os.Bundle
import androidx.activity.enableEdgeToEdge
import androidx.appcompat.app.AppCompatActivity
import androidx.core.view.ViewCompat
import androidx.core.view.WindowInsetsCompat

class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        enableEdgeToEdge()
        setContentView(R.layout.activity_main)

        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main)) { v,
insets ->
            val systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars())
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom)
            insets
        }
    }
}
```



Practical No 2

Android button & Toggle button from this create 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"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerInParent="true"
        android:text="Click Me" />

    <ToggleButton
        android:id="@+id/toggleButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@id/button"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="20dp"
        android:textOff="OFF"
        android:textOn="ON" />

</RelativeLayout>
```

MainActivity.kt

```
package com.example.practical2

import android.os.Bundle
import android.widget.Button
import android.widget.Toast
import android.widget.ToggleButton
import androidx.appcompat.app.AppCompatActivity

class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        val button = findViewById<Button>(R.id.button)
        val toggleButton = findViewById<ToggleButton>(R.id.toggleButton)

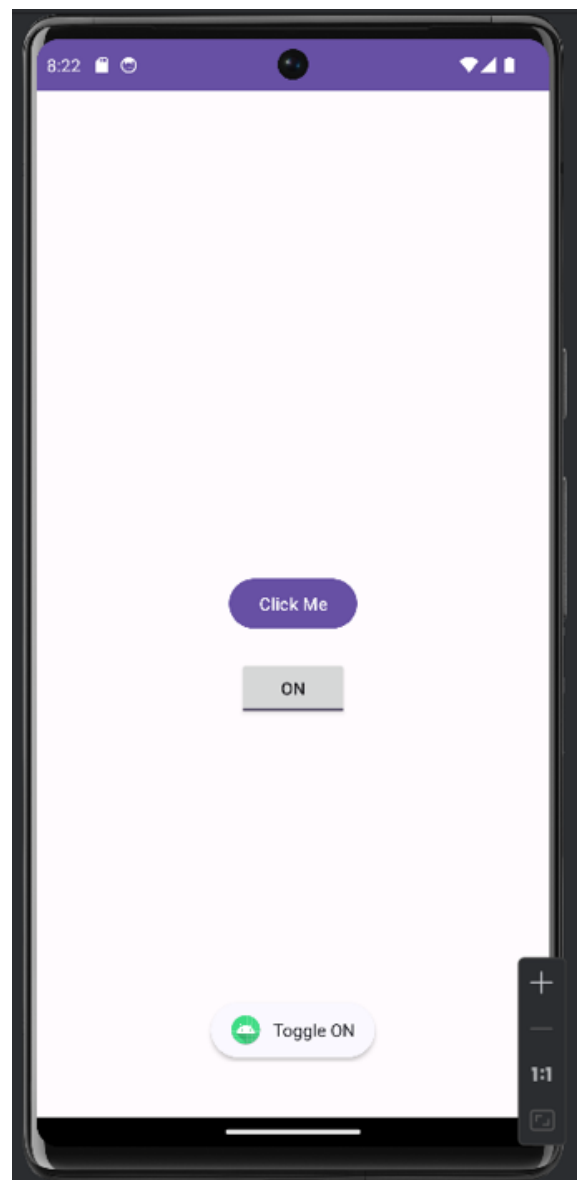
        button.setOnClickListener {
            // Handle button click
            Toast.makeText(this@MainActivity, "Button Clicked",
                Toast.LENGTH_SHORT).show()
        }
    }
}
```

```

    }

    toggleButton.setOnCheckedChangeListener { _, isChecked ->
        // Handle toggle button state change
        if (isChecked) {
            Toast.makeText(this@MainActivity, "Toggle ON",
                Toast.LENGTH_SHORT).show()
        } else {
            Toast.makeText(this@MainActivity, "Toggle OFF",
                Toast.LENGTH_SHORT).show()
        }
    }
}
}
}

```



Practical no 3

Use of Toast & Custom Toast creates android 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"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/buttonShowToast"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerInParent="true"
        android:text="Show Toast" />

</RelativeLayout>
```

MainActivity.kt

```
package com.example.practical3

import android.graphics.Color
import android.graphics.Typeface
import android.os.Bundle
import android.view.Gravity
import android.widget.Button
import android.widget.TextView
import android.widget.Toast
import androidx.appcompat.app.AppCompatActivity

class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        val buttonShowToast = findViewById<Button>(R.id.buttonShowToast)

        buttonShowToast.setOnClickListener {
            // Show standard Toast message
            showToast("This is a standard Toast")

            // Show custom Toast message
            showCustomToast("Custom Toast Example")
        }
    }

    private fun showToast(message: String) {
        Toast.makeText(this, message, Toast.LENGTH_SHORT).show()
    }
}
```

```

}

private fun showCustomToast(message: String) {
    val toast = Toast(this)
    toast.duration = Toast.LENGTH_SHORT
    val textView = TextView(this)
    textView.text = message
    textView.setBackgroundColor(Color.BLACK)
    textView.setTextColor(Color.WHITE)
    textView.gravity = Gravity.CENTER
    textView.setPadding(20, 20, 20, 20)
    textView.setTextSize(20F)
    textView.setTypeface(null, Typeface.BOLD)
    toast.view = textView
    toast.setGravity(Gravity.CENTER, 0, 0)
    toast.show()
}
}

```



Activity life cycle

MainActivity.kt

```
package com.example.lifecycle

import android.os.Bundle
import android.widget.Toast
import androidx.activity.enableEdgeToEdge
import androidx.appcompat.app.AppCompatActivity
import androidx.core.view.ViewCompat
import androidx.core.view.WindowInsetsCompat

class MainActivity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        Toast.makeText(this, "In onCreate", Toast.LENGTH_LONG).show()
        enableEdgeToEdge()
        setContentView(R.layout.activity_main)
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main))
    }

    { v, insets ->
        val systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars())
        v.setPadding(systemBars.left, systemBars.top, systemBars.right,
systemBars.bottom)
        insets
    }

    }
    override fun onStart()
    {
        super.onStart()
        Toast.makeText(this, "In onStart", Toast.LENGTH_LONG).show()
    }
    override fun onStop()
    {
        super.onStop()
        Toast.makeText(this, "In onStop", Toast.LENGTH_LONG).show()
    }
    override fun onPause()
    {
        super.onPause()
        Toast.makeText(this, "In onPause", Toast.LENGTH_LONG).show()
    }
    override fun onResume()
    {
        super.onResume()
        Toast.makeText(this, "In onResume", Toast.LENGTH_LONG).show()
    }
    override fun onDestroy()
    {
        super.onDestroy()
        Toast.makeText(this, "In onDestroy", Toast.LENGTH_LONG).show()
    }
}
```



Menu

MainActivity.kt

```
package com.example.menu
```

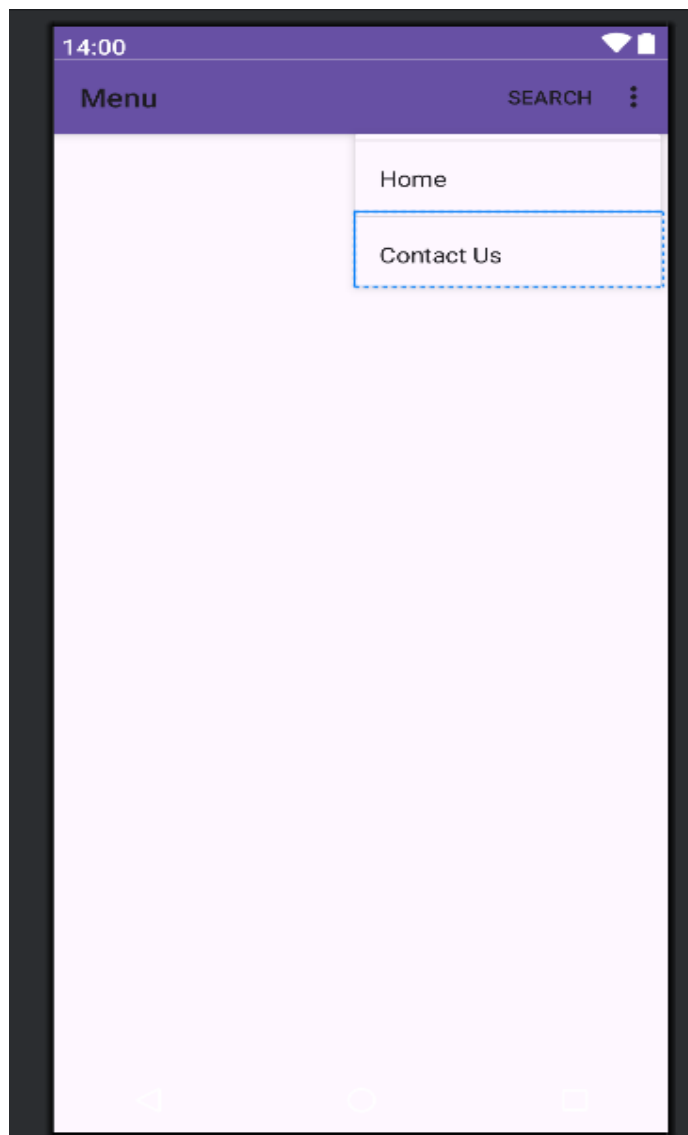
```
import android.os.Bundle
import android.view.Menu
import android.view.MenuItem
import android.widget.Toast
import androidx.activity.enableEdgeToEdge
import androidx.appcompat.app.AppCompatActivity
import androidx.core.view.ViewCompat
import androidx.core.view.WindowInsetsCompat
```

```
class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        enableEdgeToEdge()
        setContentView(R.layout.activity_main)
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main)) { v, insets ->
            val systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars())
            v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom)
            insets
        }
    }
    override fun onCreateOptionsMenu(menu: Menu): Boolean {
        menuInflater.inflate(R.menu.menu, menu)
        return true
    }
    override fun onOptionsItemSelected(item: MenuItem): Boolean {
        val id = item.itemId
        if (id == R.id.Search) {
            Toast.makeText(this, "Search", Toast.LENGTH_LONG).show()
        }
        if (id == R.id.Home) {
            Toast.makeText(this, "Home", Toast.LENGTH_LONG).show()
        }
        if (id == R.id.Contact_us) {
            Toast.makeText(this, "Contact Us", Toast.LENGTH_LONG).show()
        }
        return super.onOptionsItemSelected(item)
    }
}
```

Menu.xml

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android"
      xmlns:app="http://schemas.android.com/apk/res-auto">
<item
    android:id="@+id/Search"
    android:title="Search"
    app:showAsAction="always"/>
<item
    android:id="@+id/Home"
    android:title="Home"

<item
    android:id="@+id/Contact_us"
    android:title="Contact Us"/>
</menu>
```



List View

MainActivity.kt

```
package com.example.listview
```

```
import android.os.Bundle
import android.widget.AdapterView
import android.widget.ListView
import android.widget.Toast
import androidx.activity.enableEdgeToEdge
import androidx.appcompat.app.AppCompatActivity
import androidx.core.view.ViewCompat
import androidx.core.view.WindowInsetsCompat
```

```
class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        enableEdgeToEdge()
        setContentView(R.layout.activity_main)
        val arrayAdapter: ArrayAdapter<*>
        val city = arrayOf<String>("Mumbai", "Pune", "Banglore", "Delhi")
        val listView = findViewById<ListView>(R.id.List)
        arrayAdapter = ArrayAdapter(this, android.R.layout.simple_list_item_1, city)
        listView.adapter = arrayAdapter
        listView.setOnItemClickListener { parent, view, position, id ->
            val toast = Toast.makeText(this, "You clicked \n" + city[position], Toast.LENGTH_LONG)
            toast.show()
        }

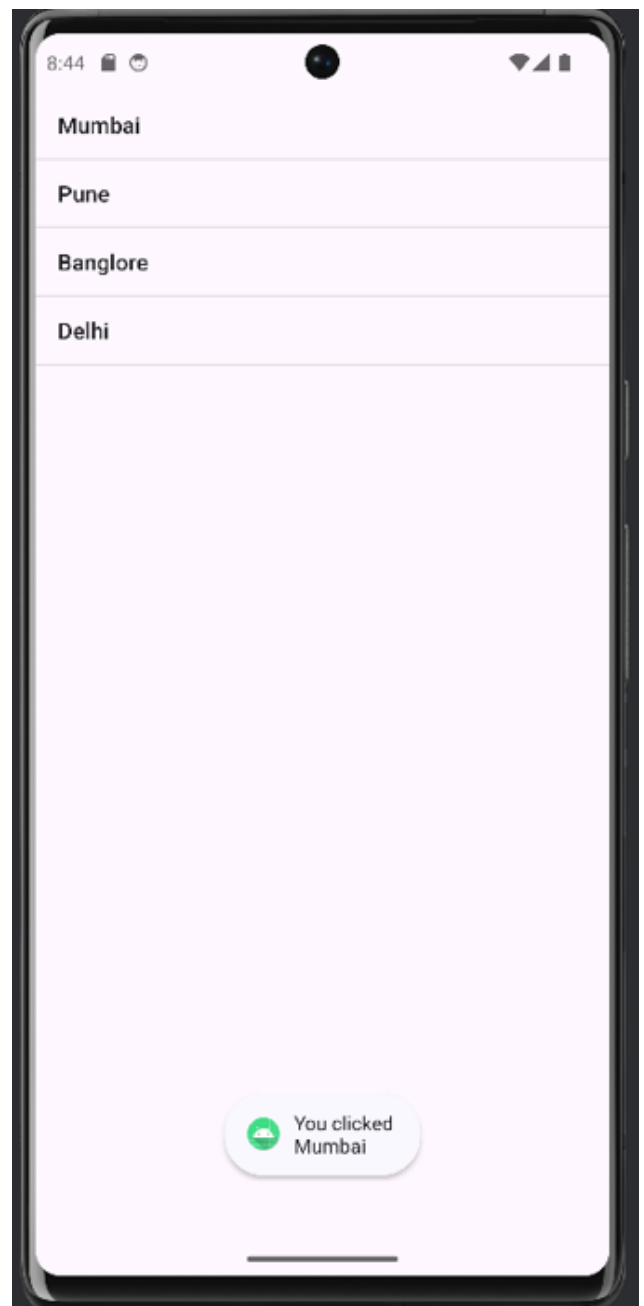
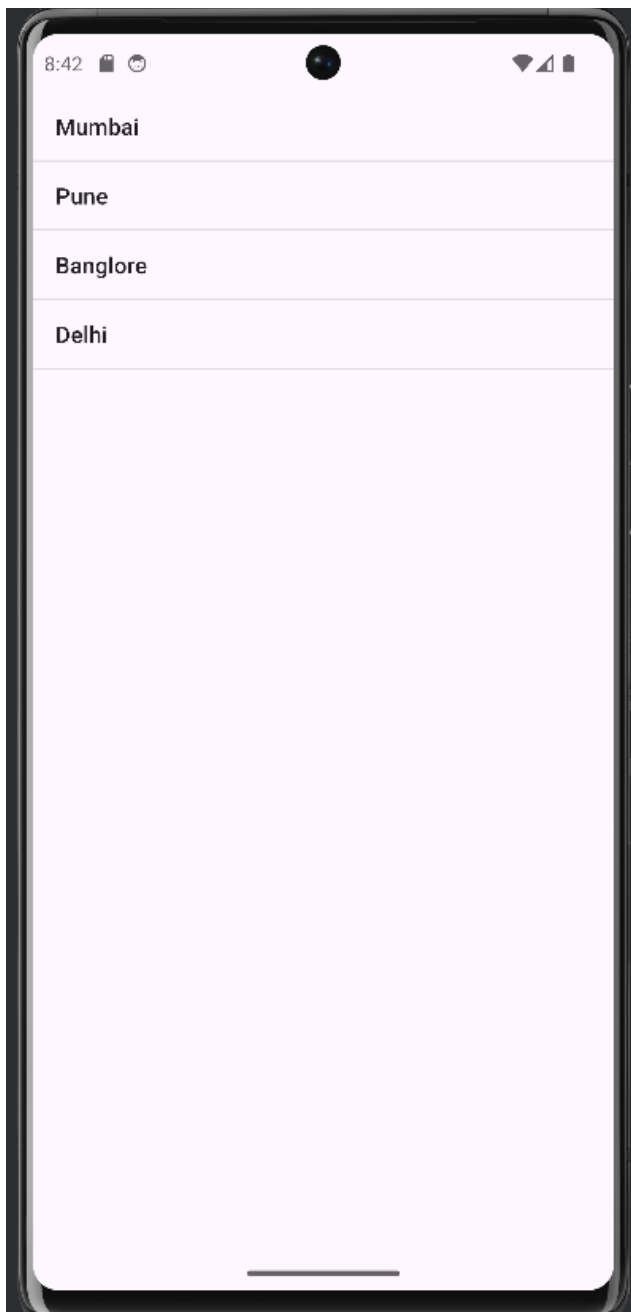
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main)) { v, insets ->
            val systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars())
            v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom)
            insets
        }
    }
}
```

Activity-main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

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

</LinearLayout>
```



Layout

Relative layout

Activity_Main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <TextView
        android:id="@+id/textViewUsername"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginTop="50dp"
        android:text="Username:" />

    <EditText
        android:id="@+id/editTextUsername"
        android:layout_width="200dp"
        android:layout_height="wrap_content"
        android:layout_below="@id/textViewUsername"
        android:layout_alignStart="@id/textViewUsername"
        android:hint="Enter username" />

    <TextView
        android:id="@+id/textViewPassword"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@id/editTextUsername"
        android:layout_alignStart="@id/editTextUsername"
        android:layout_marginTop="20dp"
        android:text="Password:" />

    <EditText
        android:id="@+id/editTextPassword"
        android:layout_width="200dp"
        android:layout_height="wrap_content"
        android:layout_below="@id/textViewPassword"
        android:layout_alignStart="@id/textViewPassword"
        android:hint="Enter password"
        android:inputType="textPassword" />

    <Button
        android:id="@+id/buttonRegister"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@id/editTextPassword"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="30dp"
        android:text="Register" />
```

</RelativeLayout>

MainActivity.kt

```
package com.example.relativelayout
```

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

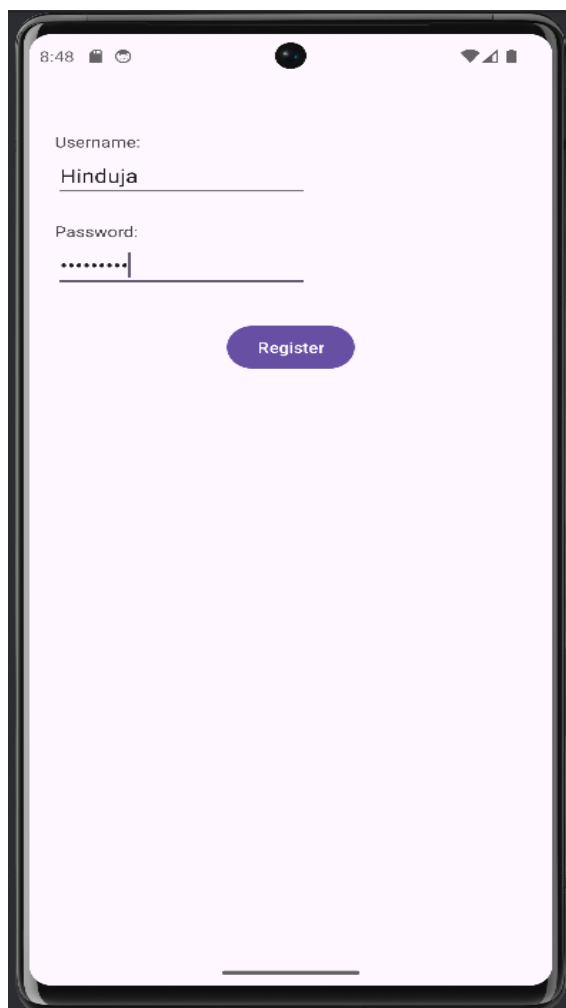
```
import androidx.activity.enableEdgeToEdge
```

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

```
import androidx.core.view.ViewCompat
```

```
import androidx.core.view.WindowInsetsCompat
```

```
class MainActivity : AppCompatActivity() {  
    override fun onCreate(savedInstanceState: Bundle?) {  
        super.onCreate(savedInstanceState)  
        enableEdgeToEdge()  
        setContentView(R.layout.activity_main)  
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main)) { v, insets ->  
            val systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars())  
            v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom)  
            insets  
        }  
    }  
}
```



Linear layout

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center_horizontal"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <EditText
        android:layout_width="150dp"
        android:layout_height="40dp"
        android:layout_marginTop="50dp"
        android:background="@color/black"
        android:hint="Username"
        android:textColor="@color/white"
        android:textColorHint="@color/white" />

    <EditText
        android:layout_width="150dp"
        android:layout_height="40dp"
        android:layout_marginTop="20dp"
        android:background="@color/black"
        android:hint="Password"
        android:textColor="@color/white"
        android:textColorHint="@color/white" />

    <Button
        android:id="@+id/Btn"
        android:layout_width="150dp"
        android:layout_height="40dp"
        android:layout_marginTop="20dp"
        android:text="Sign In" />

</LinearLayout>
```

MainActivity.kt

```
package com.example.linearlayout
```

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

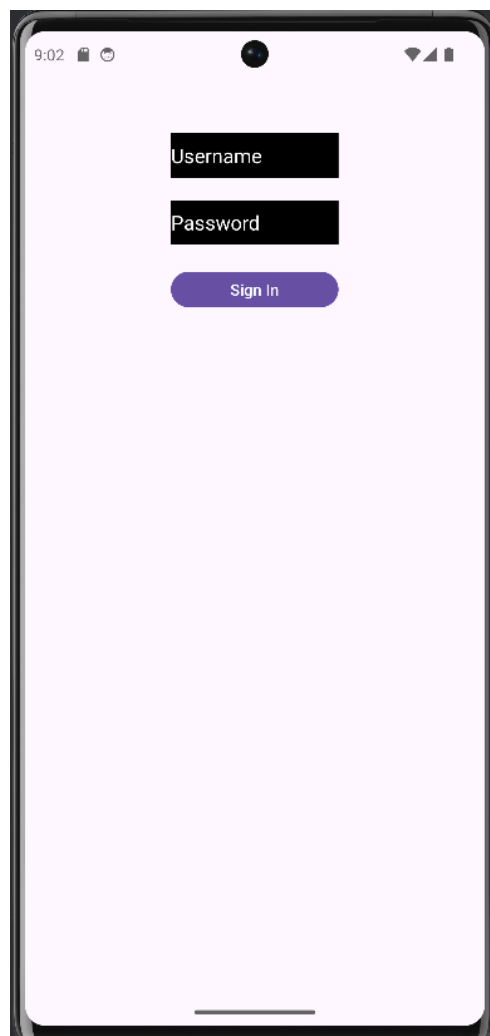
```
import androidx.activity.enableEdgeToEdge
```

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

```
import androidx.core.view.ViewCompat
```

```
import androidx.core.view.WindowInsetsCompat
```

```
class MainActivity : AppCompatActivity() {  
    override fun onCreate(savedInstanceState: Bundle?) {  
        super.onCreate(savedInstanceState)  
        enableEdgeToEdge()  
        setContentView(R.layout.activity_main)  
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main)) { v, insets ->  
            val systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars())  
            v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom)  
            insets  
        }  
    }  
}
```



Grid Layout

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<GridLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_row="2"
    android:layout_column="1"
    android:background="@color/sample"
    tools:context=".MainActivity">
    <EditText
        android:id="@+id/Username"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_row="0"
        android:layout_column="0"
        android:ems="10"
        android:hint="Username"
        android:inputType="textEmailAddress" />
    <EditText
        android:id="@+id/Password"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_row="0"
        android:layout_column="1"
        android:ems="10"
        android:hint="Password"
        android:inputType="textPassword" />
    <ImageView
        android:layout_width="180dp"
        android:layout_height="130dp"
        android:layout_row="1"
        android:layout_column="0"
        android:layout_marginLeft="12dp"
        android:src="@drawable/a" />
    <ImageView
        android:layout_width="180dp"
        android:layout_height="130dp"
        android:layout_row="1"
        android:layout_column="1"
        android:layout_marginLeft="15dp"
        android:src="@drawable/b" />

    <Button
        android:id="@+id/Register"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_row="2"
        android:layout_column="0"
```

```
        android:text="Sign In" />
    </GridLayout>

```

Colors.xml

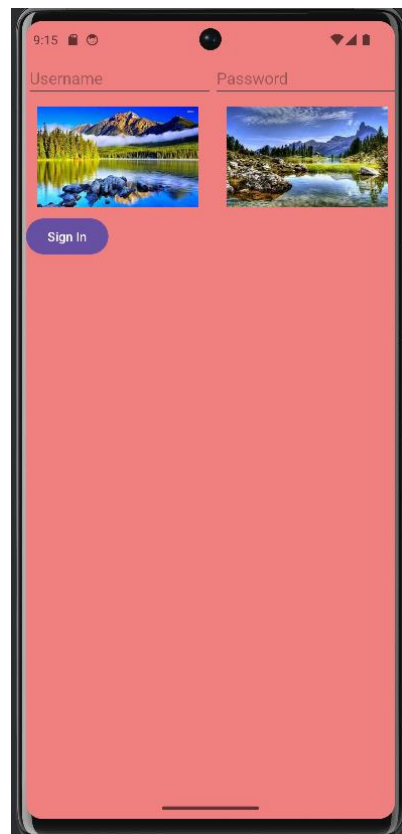
```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="black">#FF000000</color>
    <color name="white">#FFFFFFFF</color>
    <color name="sample">#F08080</color>
</resources>

```

MainActivity.kt

```
package com.example.gridlayout
import android.os.Bundle
import androidx.activity.enableEdgeToEdge
import androidx.appcompat.app.AppCompatActivity
import androidx.core.view.ViewCompat
import androidx.core.view.WindowInsetsCompat
class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        enableEdgeToEdge()
        setContentView(R.layout.activity_main)
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main)) { v, insets ->
            val systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars())
            v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom)
            insets
        }
    }
}

```



Absolute layout

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <TextView
        android:id="@+id/textViewUsername"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="20dp"
        android:layout_y="50dp"
        android:text="Username:" />

    <EditText
        android:id="@+id/editTextUsername"
        android:layout_width="200dp"
        android:layout_height="wrap_content"
        android:layout_x="120dp"
        android:layout_y="50dp"
        android:hint="Enter username" />

    <TextView
        android:id="@+id/textViewPassword"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="20dp"
        android:layout_y="100dp"
        android:text="Password:" />

    <EditText
        android:id="@+id/editTextPassword"
        android:layout_width="200dp"
        android:layout_height="wrap_content"
        android:layout_x="120dp"
        android:layout_y="100dp"
        android:hint="Enter password"
        android:inputType="textPassword" />

    <Button
        android:id="@+id/buttonRegister"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="150dp"
        android:layout_y="150dp"
        android:text="Register" />

</AbsoluteLayout>
```

MainActivity.kt

```
package com.example.absolutelayout
```

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

```
import androidx.activity.enableEdgeToEdge
```

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

```
import androidx.core.view.ViewCompat
```

```
import androidx.core.view.WindowInsetsCompat
```

```
class MainActivity : AppCompatActivity() {  
    override fun onCreate(savedInstanceState: Bundle?) {  
        super.onCreate(savedInstanceState)  
        enableEdgeToEdge()  
        setContentView(R.layout.activity_main)  
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main)) { v, insets ->  
            val systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars())  
            v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom)  
            insets  
        }  
    }  
}
```

