Mobile Application Development Lab Record

1. Simple Hello World Program

- AndroidManifest.xml

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

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category
android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>
```
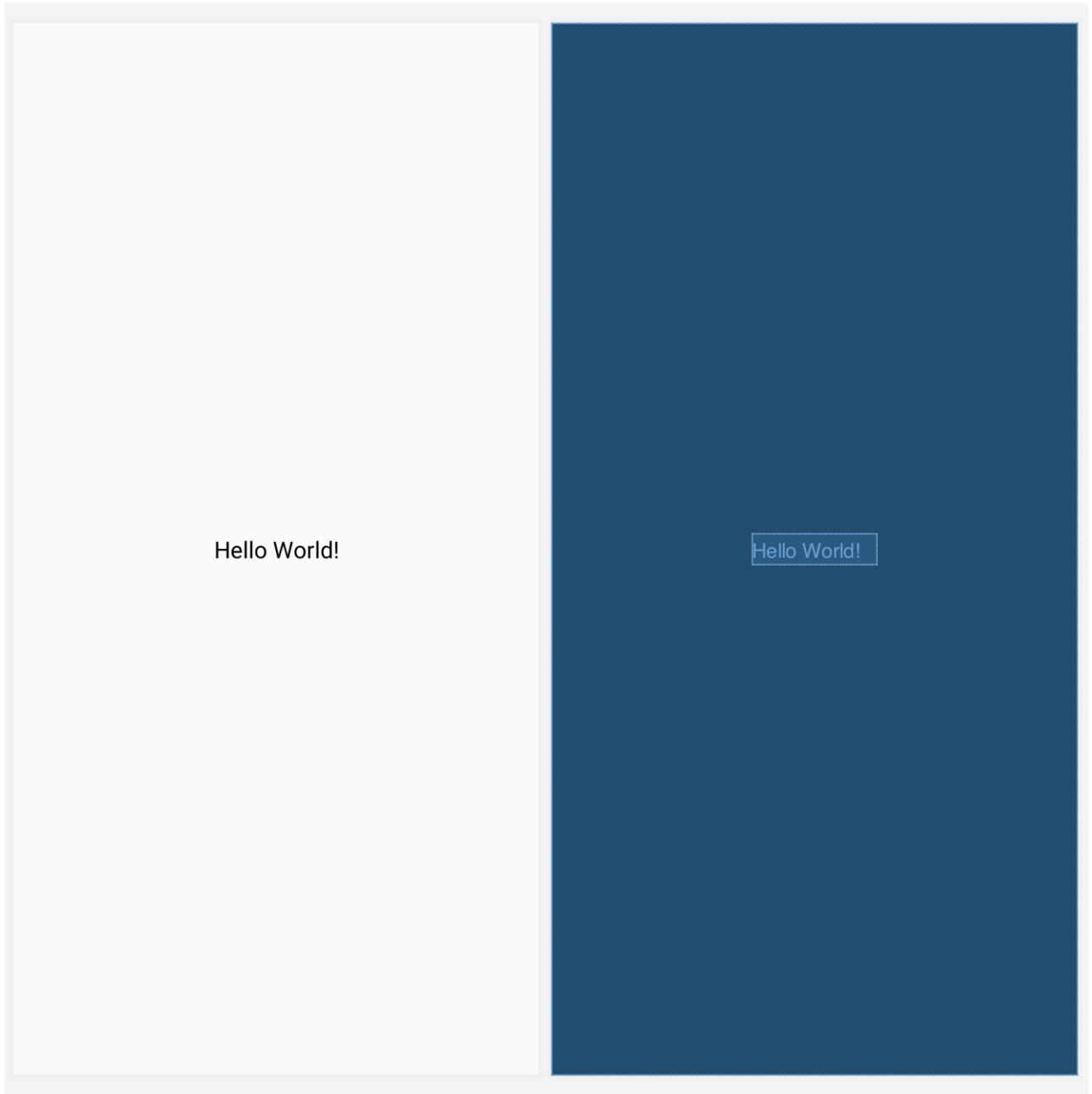
- activity_main.xml

```xml
<?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">

    <TextView
        android:id="@+id/textview"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        android:textColor="@android:color/black"
        android:textSize="18sp"
        app:layout_constraintBottom_toBottomOf="parent"
```

```
            app:layout_constraintLeft_toLeftOf="parent"
            app:layout_constraintRight_toRightOf="parent"
            app:layout_constraintTop_toTopOf="parent" />

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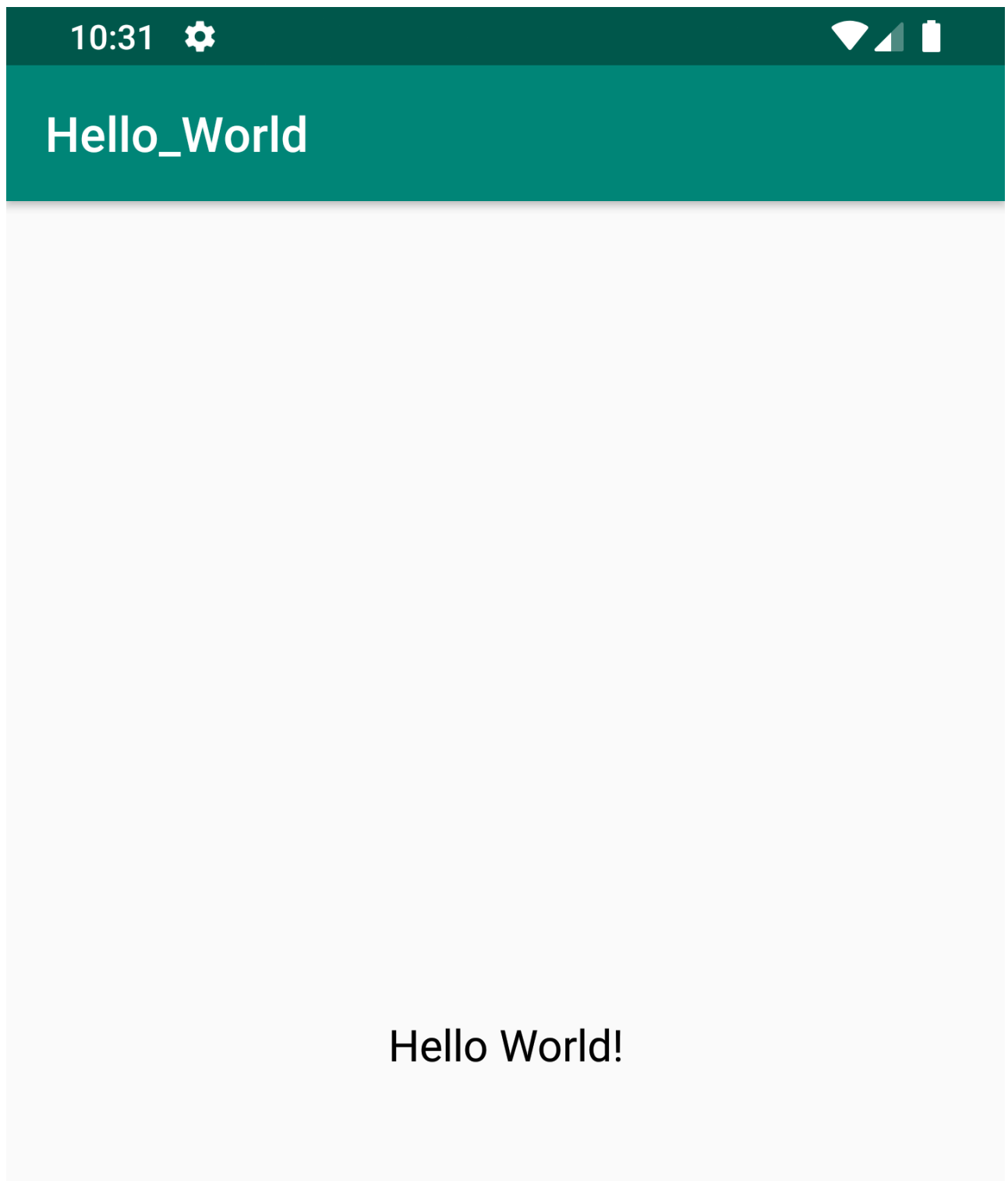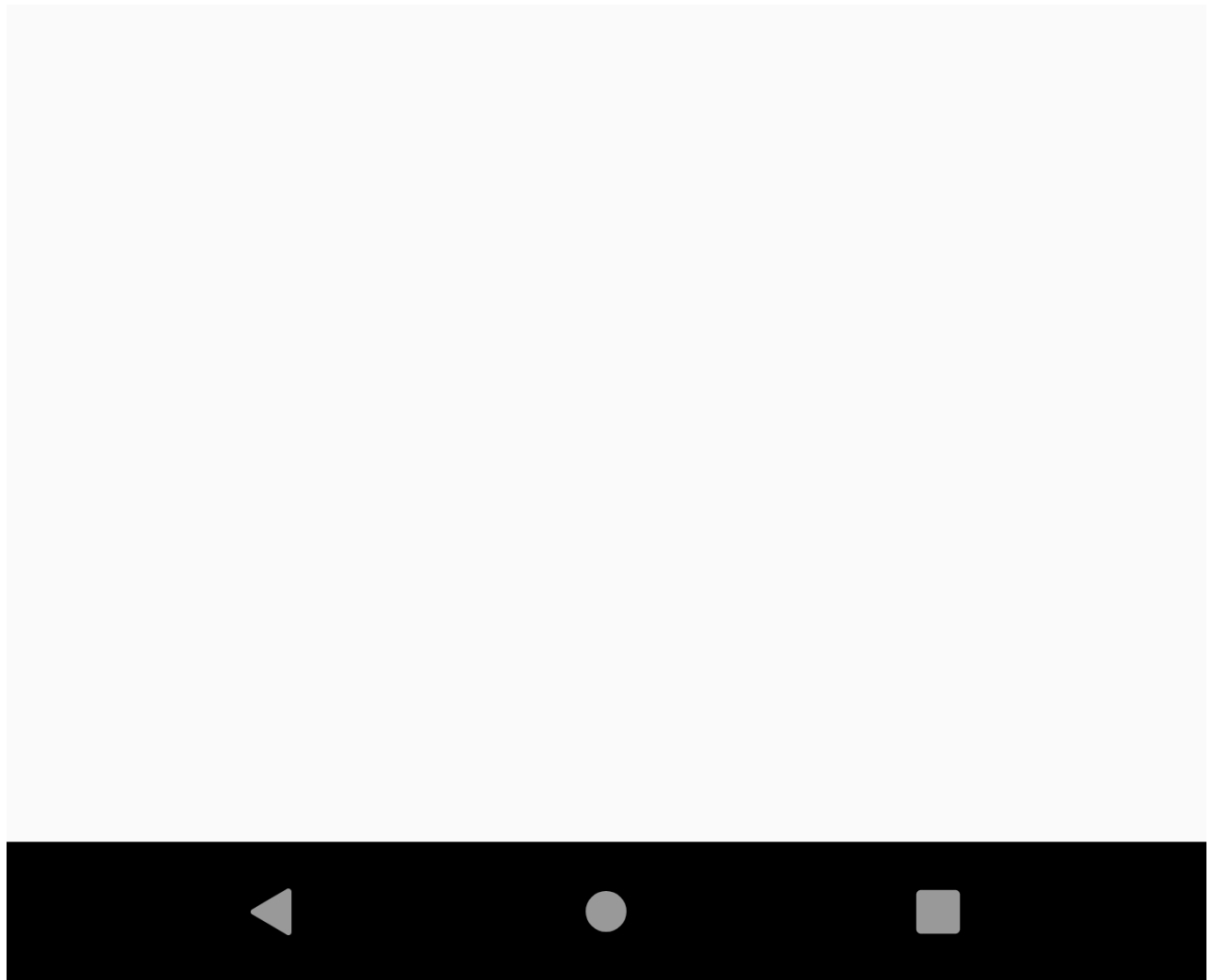

- MainActivity.java

```
    package com.android_lab.hello_world;

    import androidx.appcompat.app.AppCompatActivity;

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

    public class MainActivity extends AppCompatActivity {
```

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

            Toast.makeText(this, "Hello, World!",
    Toast.LENGTH_LONG).show();
        }
    }
```

- Output

Question 2: Demonstrate the concept of passing data through intents

- AndroidManifest.xml

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

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".HomeActivity"></activity>
        <activity android:name=".MainActivity">
            <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
    <?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=".MainActivity" >

        <TextView
            android:id="@+id/uname_label"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Username"
            android:textColor="@android:color/black" />

        <EditText
            android:id="@+id/uname"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:ems="10"
            android:inputType="textPersonName"
            android:textColor="@android:color/black" />

        <TextView
            android:id="@+id/pwd_label"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Password"
            android:textColor="@android:color/black" />

        <EditText
            android:id="@+id/pwd"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:ems="10"
            android:inputType="textPassword"
            android:textColor="@android:color/black" />

        <Button
            android:id="@+id/login"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
```
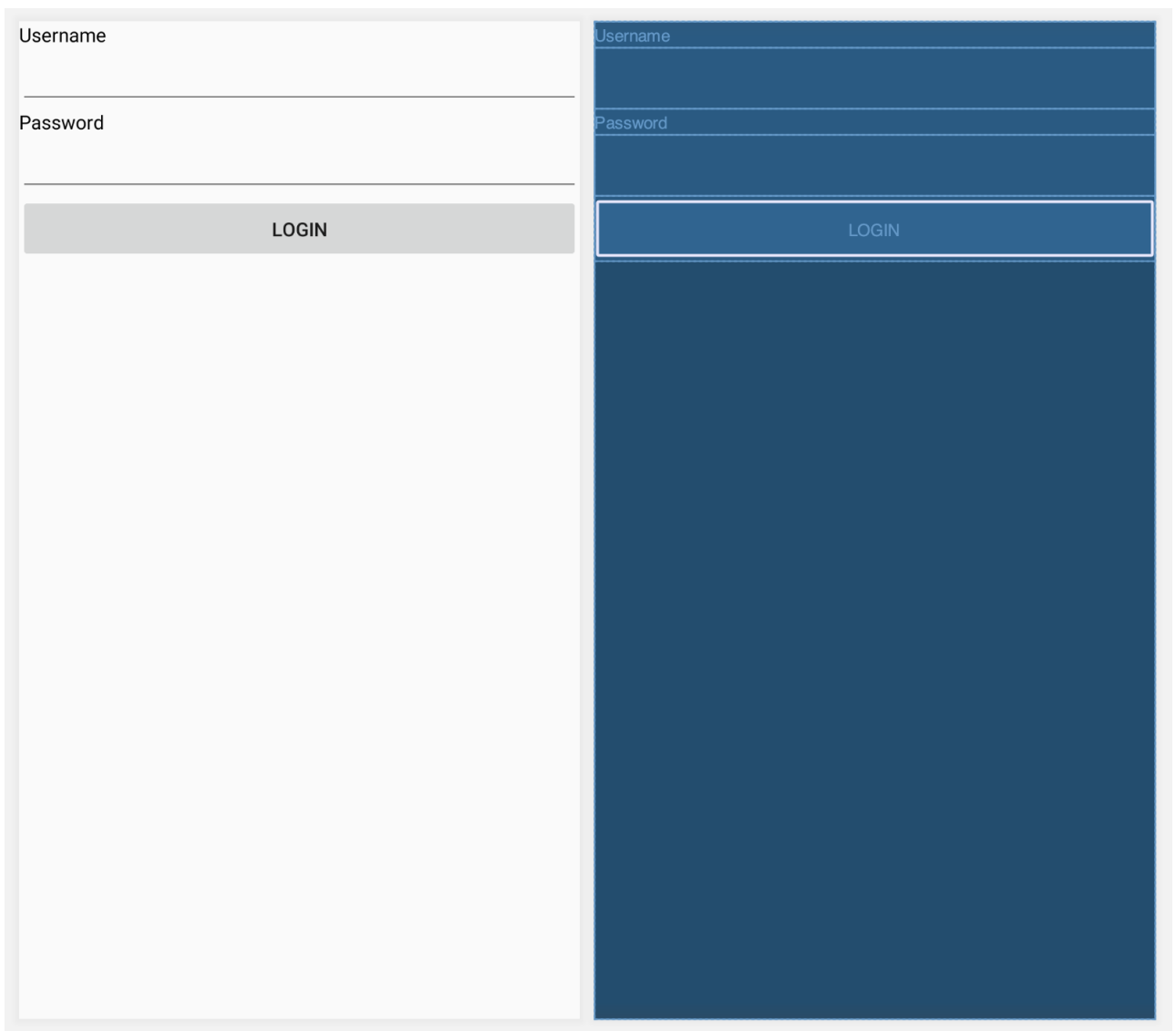
```
                android:text="Login" />
    </LinearLayout>
```

Username

Password

LOGIN

Username

Password
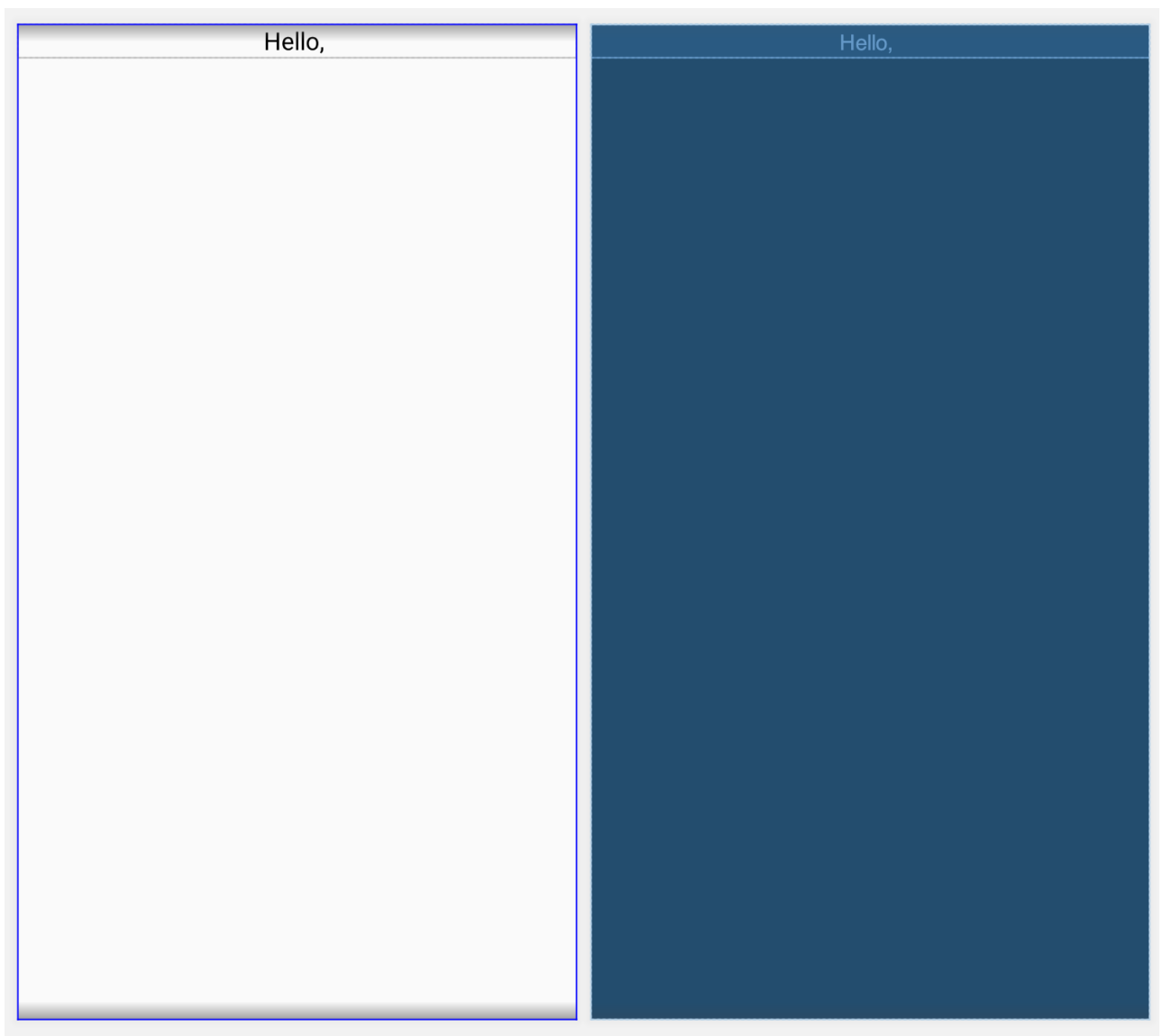
LOGIN

- activity_home.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=".HomeActivity">

    <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Hello, "
```

```
            android:textAlignment="center"
            android:textColor="@android:color/black"
            android:textSize="18sp" />
    </LinearLayout>
```


- MainActivity.java

```java
package com.android_lab.intents;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
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 implements
View.OnClickListener {
```

```java
        private EditText uname, pwd;
        private Button login;

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

            uname = findViewById(R.id.uname);
            pwd = findViewById(R.id.pwd);
            login = findViewById(R.id.login);
            login.setOnClickListener(this);
        }

        @Override
        public void onClick(View view) {
            String u = uname.getText().toString();
            String p = pwd.getText().toString();

            if(u.equals("cvrcsec") && p.equals("password")) {
                Intent intent = new Intent(this, HomeActivity.class);
                intent.putExtra("uname", u);
                startActivity(intent);
            } else {
                Toast.makeText(this, "Invalid Username/Password",
Toast.LENGTH_LONG).show();
            }
        }
    }
```

- HomeActivity.java

```java
package com.android_lab.intents;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;

public class HomeActivity extends AppCompatActivity {

    private TextView textView;

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

        textView = findViewById(R.id.textView);
```
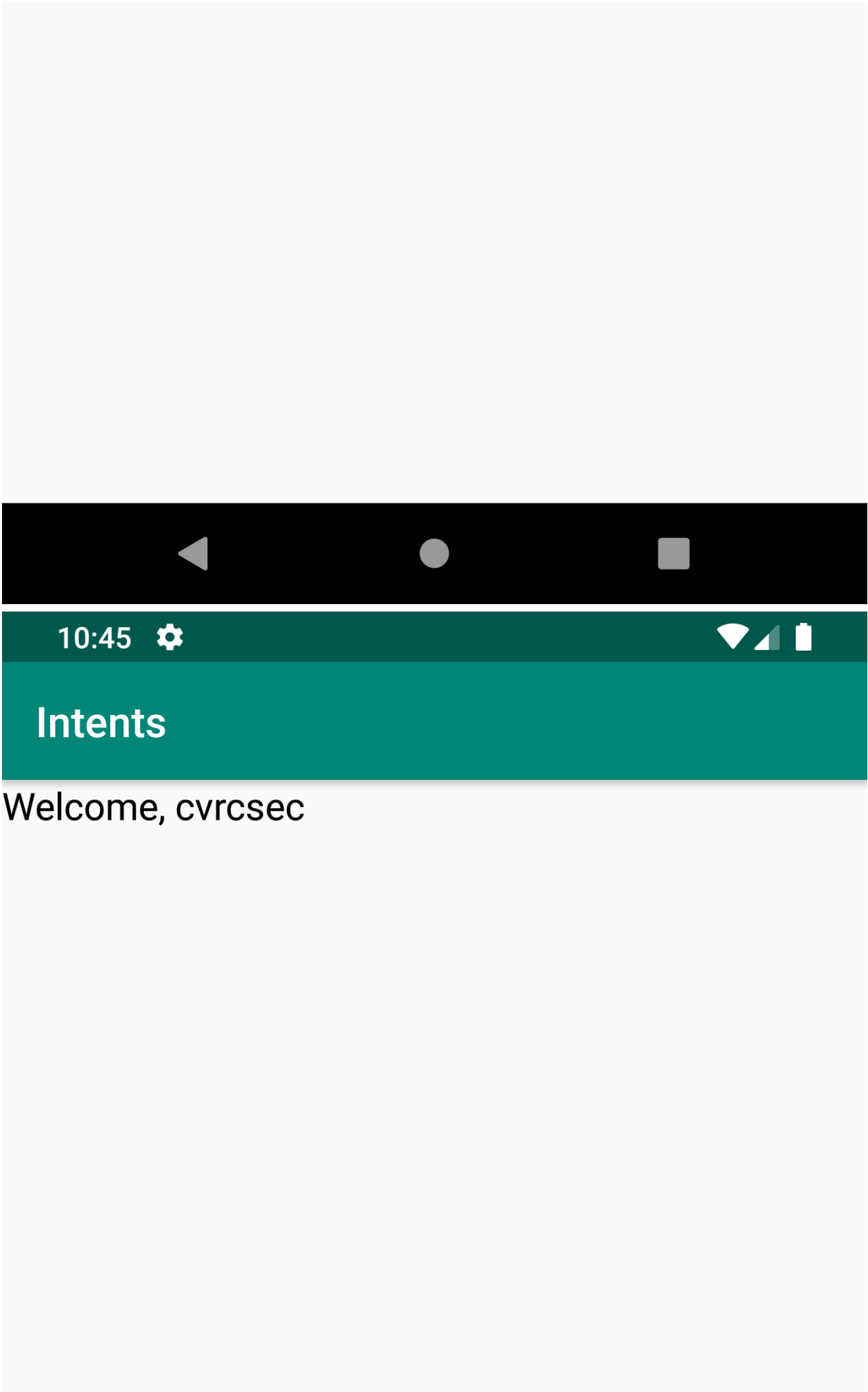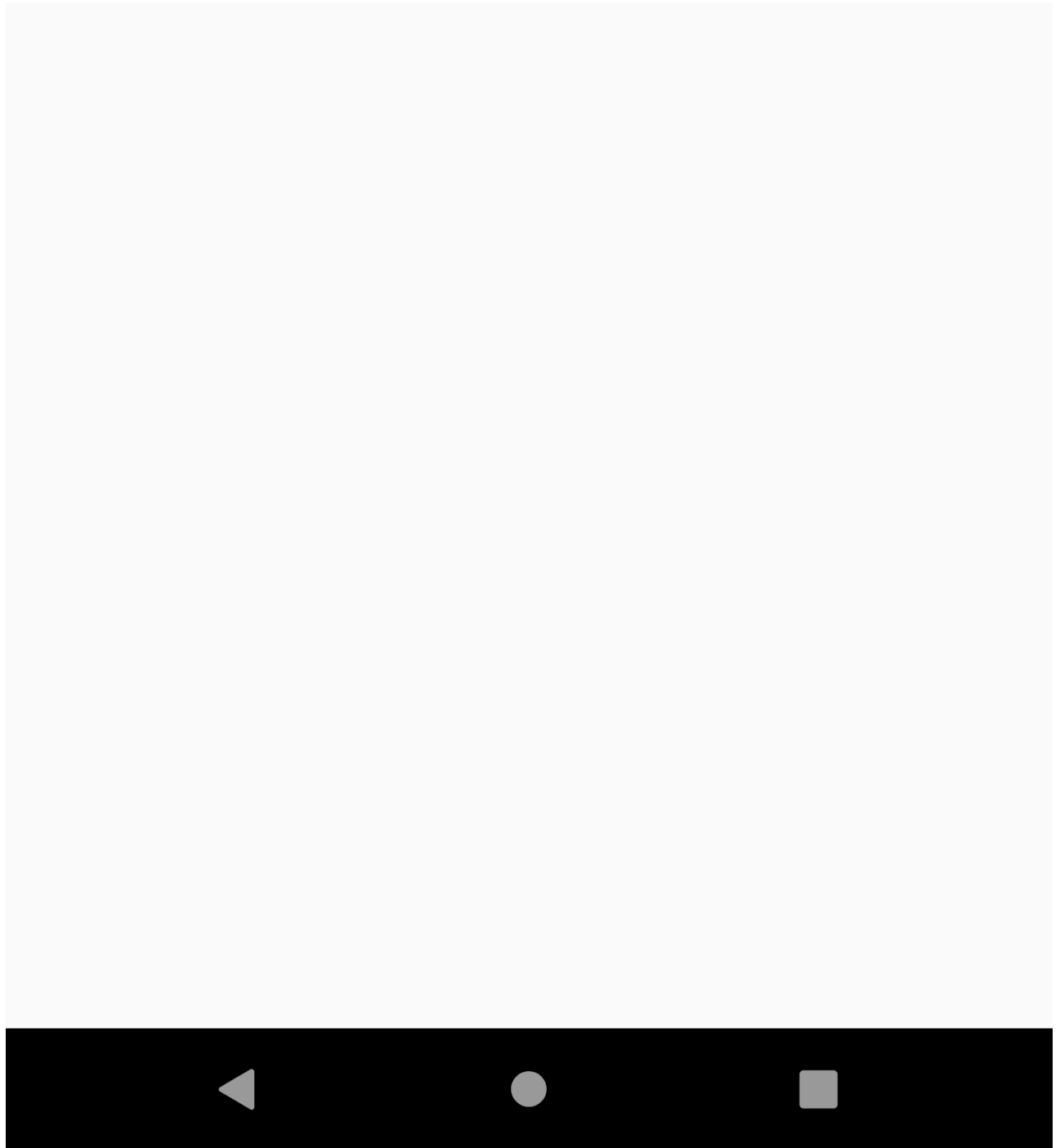
```
        Intent intent = getIntent();
        textView.setText("Welcome, " +
intent.getStringExtra("uname"));
    }
  }
```

- Output

Intents

Username

cvrcsec

Password

●●●●●●●

LOGIN

10:45 ⚙

Intents

Welcome, cvrcsec

Question 3: Write a program to demonstrate the use of Bundles

- AndroidManifest.xml

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

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
```

```
        android:theme="@style/AppTheme">
        <activity android:name=".ConfirmActivity"
android:parentActivityName=".MainActivity"></activity>
        <activity android:name=".MainActivity">
            <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"?>
<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=".MainActivity">

    <TextView
        android:id="@+id/name_label"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Name"
        android:textColor="@android:color/black" />

    <EditText
        android:id="@+id/cname"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="textPersonName"
        android:textColor="@android:color/black" />

    <TextView
        android:id="@+id/age_label"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="age"
        android:textColor="@android:color/black" />

    <EditText
        android:id="@+id/age"
```
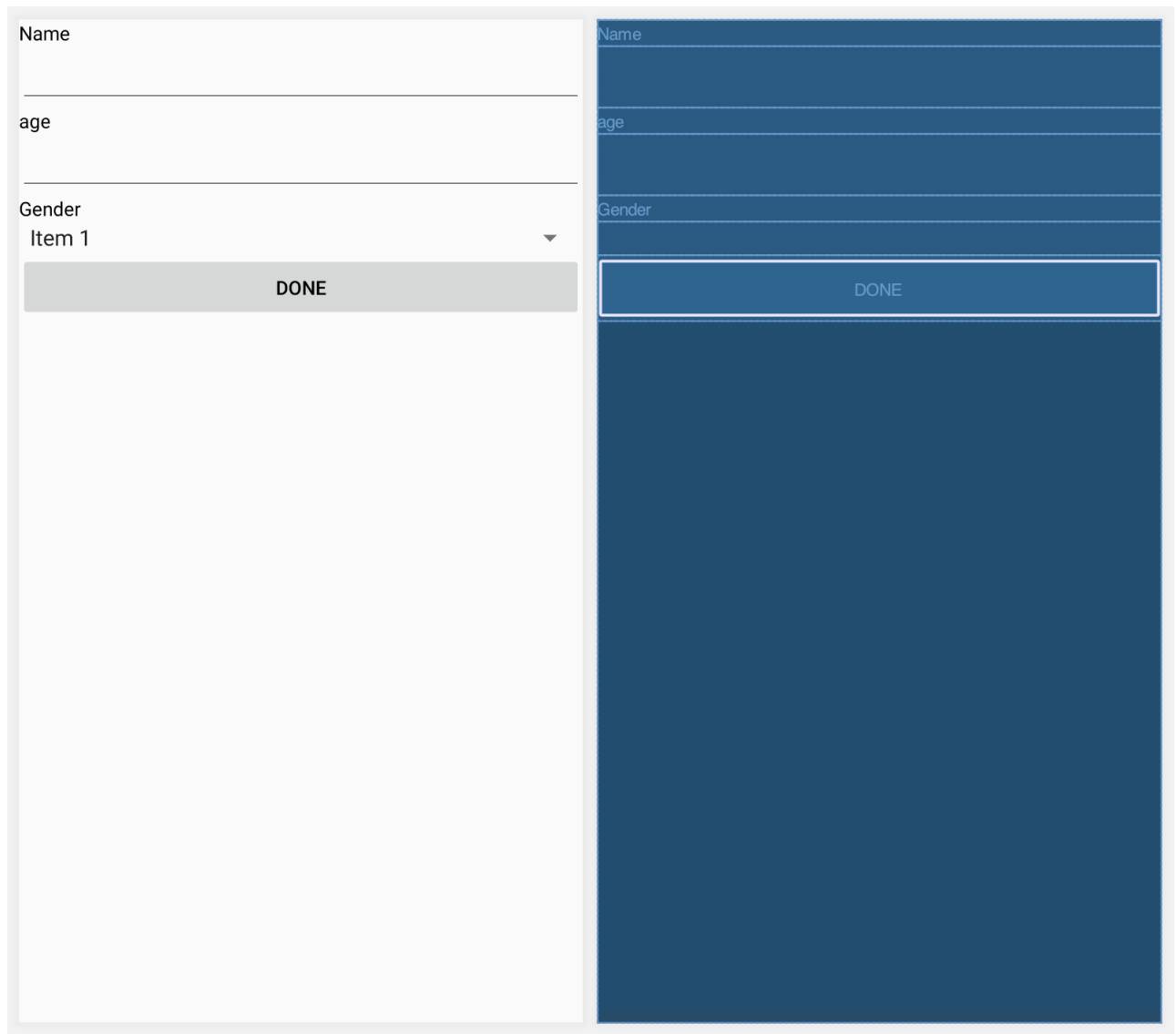
```
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="number"
        android:textColor="@android:color/black" />

    <TextView
        android:id="@+id/gender_label"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Gender"
        android:textColor="@android:color/black" />

    <Spinner
        android:id="@+id/gender"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:entries="@array/genders" />

    <Button
        android:id="@+id/done"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Done"
        android:textColor="@android:color/black" />
</LinearLayout>
```

- activity_confirm.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".ConfirmActivity">

    <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Your Information"
        android:textColor="@android:color/black"
        android:textSize="18sp" />

    <TextView
```
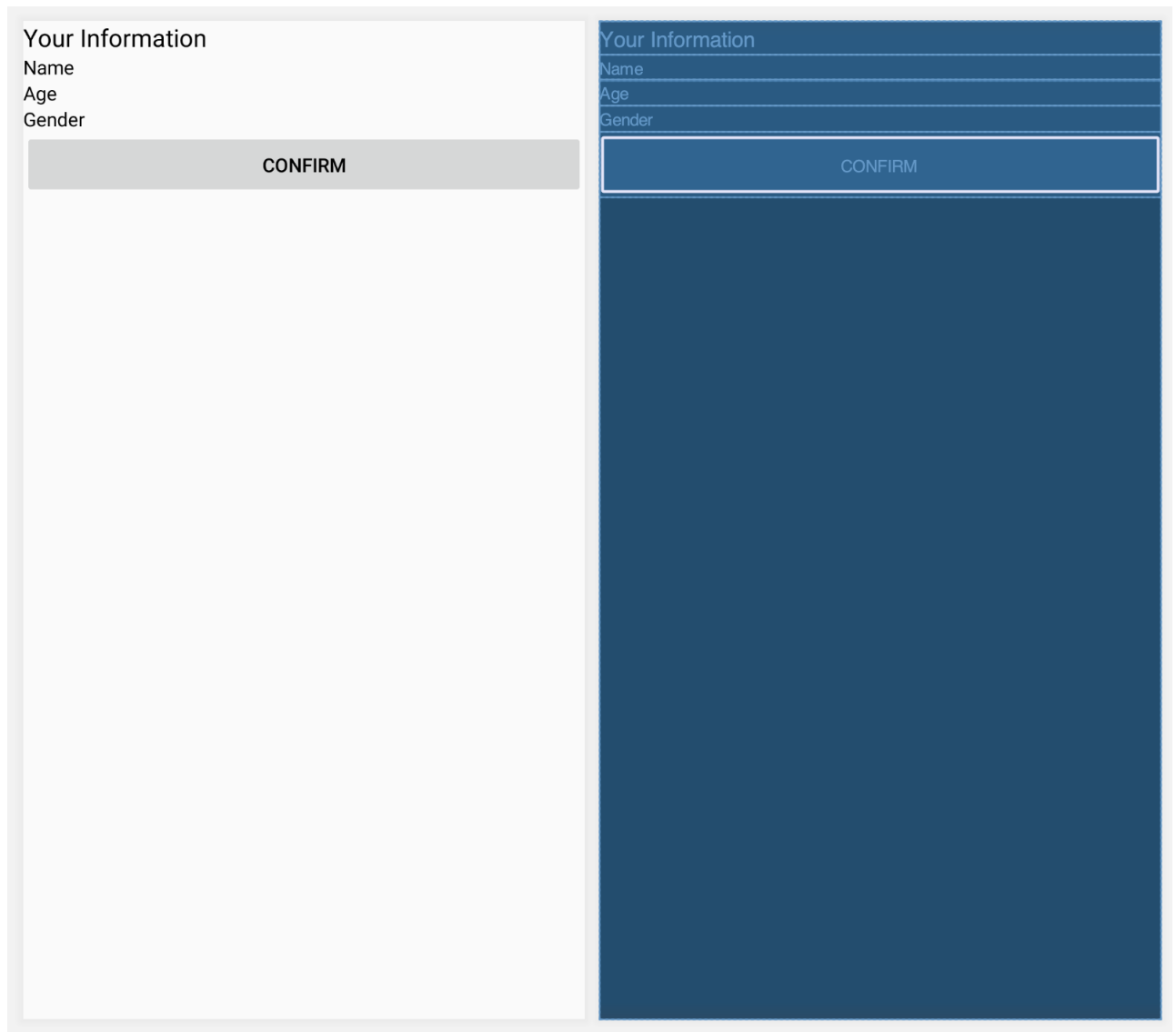
```
        android:id="@+id/cname"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Name"
        android:textColor="@android:color/black"
        android:textSize="14sp" />

    <TextView
        android:id="@+id/cage"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Age"
        android:textColor="@android:color/black"
        android:textSize="14sp" />

    <TextView
        android:id="@+id/cgender"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Gender"
        android:textColor="@android:color/black"
        android:textSize="14sp" />

    <Button
        android:id="@+id/confirm"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Confirm"
        android:textColor="@android:color/black" />
</LinearLayout>
```

Your Information	Your Information
Name	Name
Age	Age
Gender	Gender
CONFIRM	CONFIRM

- res/values/arrays/xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <string-array name="genders">
        <item>Male</item>
        <item>Female</item>
        <item>Prefer not to say</item>
    </string-array>
</resources>
```

- MainActivity.java

```java
package com.android_lab.bundles;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
```

```java
    import android.view.View;
    import android.widget.Button;
    import android.widget.EditText;
    import android.widget.Spinner;

    public class MainActivity extends AppCompatActivity implements
View.OnClickListener {

        private EditText name, age;
        private Spinner gender;
        private Button done;

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

            name = findViewById(R.id.cname);
            age = findViewById(R.id.age);
            gender = findViewById(R.id.gender);

            done = findViewById(R.id.done);
            done.setOnClickListener(this);
        }

        @Override
        public void onClick(View view) {
            Bundle bundle = new Bundle();
            bundle.putString("name", name.getText().toString());
            bundle.putString("age", age.getText().toString());
            bundle.putString("gender",
gender.getSelectedItem().toString());

            Intent intent = new Intent(this, ConfirmActivity.class);
            intent.putExtra("bundle", bundle);
            startActivity(intent);
        }
    }
```

- ConfirmActivity.java

```java
    package com.android_lab.bundles;

    import androidx.appcompat.app.AppCompatActivity;

    import android.os.Bundle;
    import android.view.View;
    import android.widget.Button;
    import android.widget.TextView;

    public class ConfirmActivity extends AppCompatActivity implements
```

```
View.OnClickListener {

    private TextView name, age, gender;
    private Button confirm;

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

        name = findViewById(R.id.cname);
        age = findViewById(R.id.cage);
        gender = findViewById(R.id.cgender);

        confirm = findViewById(R.id.confirm);
        confirm.setOnClickListener(this);

        Bundle bundle = getIntent().getBundleExtra("bundle");
        name.setText("Name: " + bundle.getString("name"));
        age.setText("Age: " + bundle.getString("age"));
        gender.setText("Gender: " + bundle.getString("gender"));

    }

    @Override
    public void onClick(View view) {
        finish();
    }
}
```
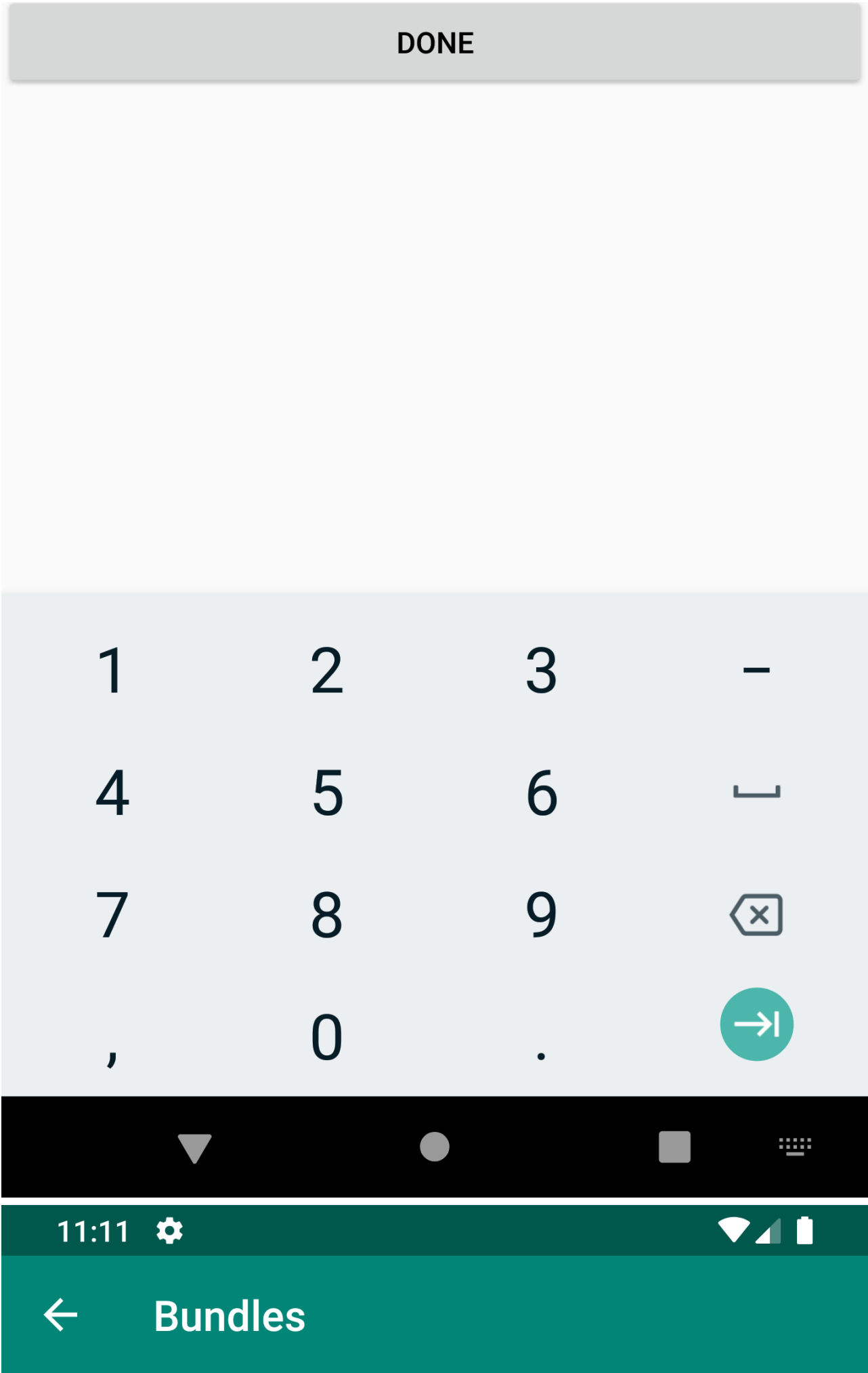
- Output

DONE

1	2	3	–
4	5	6	␣
7	8	9	⌫
,	0	.	→

11:11 ⚙

← **Bundles**
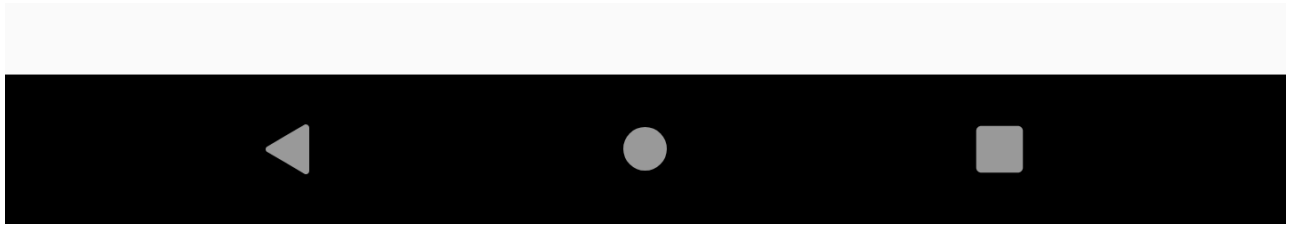
Your Information

Your Information

Name: Sai Hemanth

Age: 20

Gender: Male

CONFIRM

Question 4: Draw the diagram of an Android App Lifecycle and write a program with all the methods

- AndroidManifest.xml

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

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category
android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>
```

- MainActivity.java

```java
package com.android_lab.activity_lifecycle;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {

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

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

        System.out.println("onCreate()");
    }

    @Override
    protected void onStart() {
        super.onStart();

        System.out.println("onStart()");
    }

    @Override
    protected void onResume() {
        super.onResume();

        System.out.println("onResume()");
    }

    @Override
    protected void onPause() {
        super.onPause();

        System.out.println("onPause()");
    }

    @Override
    protected void onStop() {
        super.onStop();

        System.out.println("onStop()");
    }

    @Override
    protected void onDestroy() {
        super.onDestroy();

        System.out.println("onDestroy()");
    }
}
```
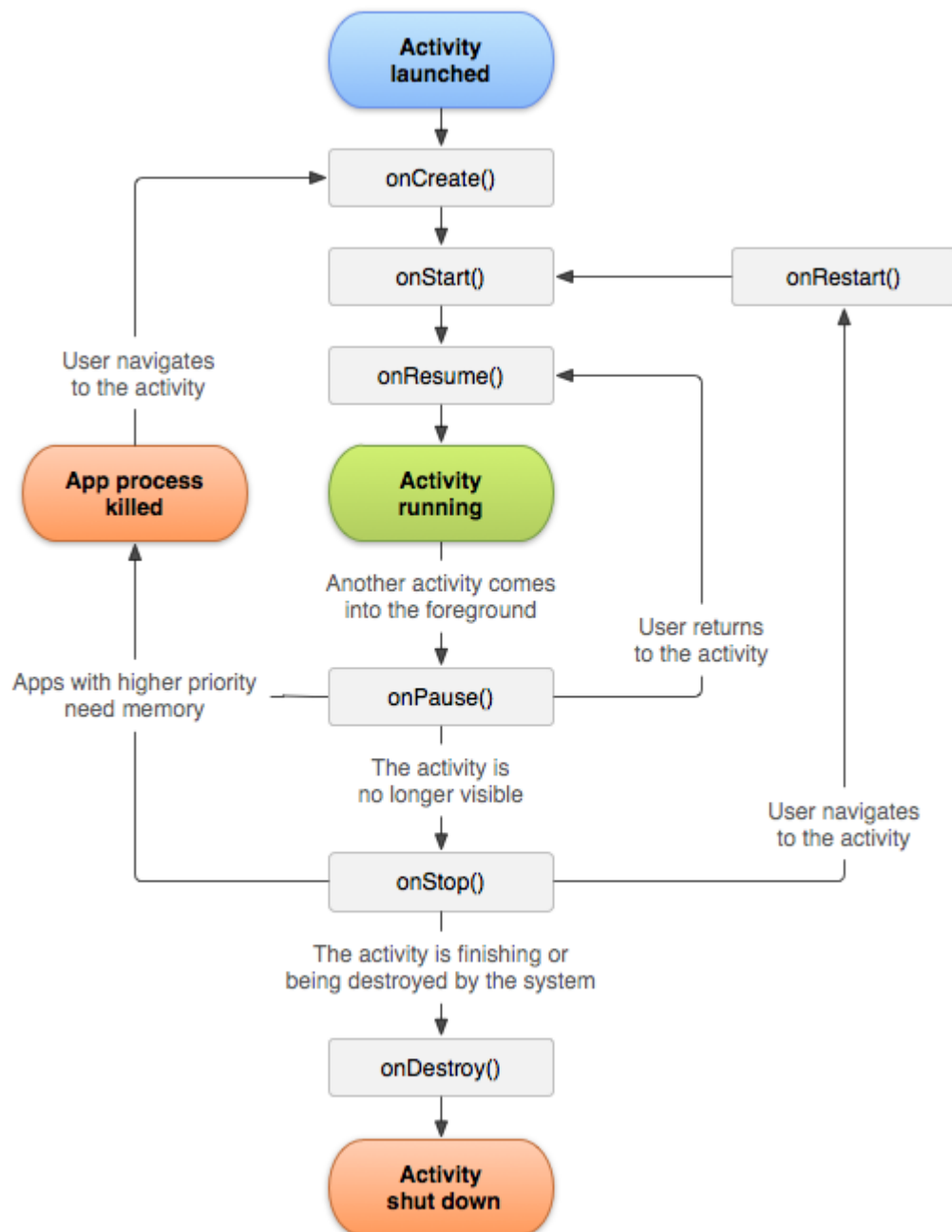
- Activity Lifecycle Diagram

- Output

```
Output in Run Tab:

I/System.out: onCreate()        // App Starts
I/System.out: onStart()
I/System.out: onResume()
I/System.out: onPause()         // User presses Home Button
I/System.out: onStop()
I/System.out: onStart()         // User open app again
I/System.out: onResume()
I/System.out: onPause()         // User presses Recent Apps Button
I/System.out: onStop()
I/System.out: onDestroy()       // User close app in Recent Apps

Application Terminated
```

Question 5: Create an Alert Dialog with three buttons

- AndroidManifest.xml

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

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category
android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>
```
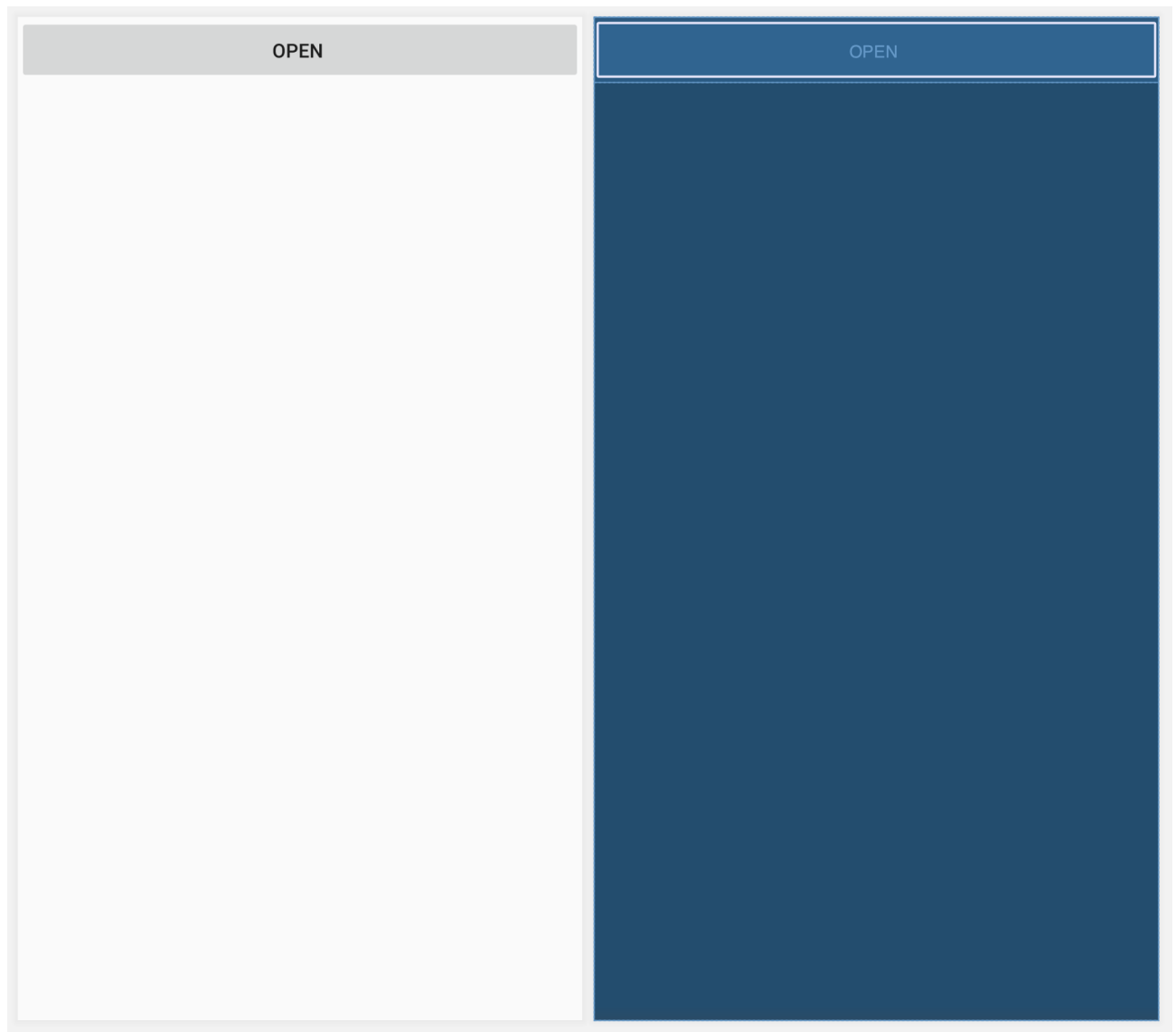
- activity_main.xml

```xml
<?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=".MainActivity" >

    <Button
        android:id="@+id/button"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Open " />
</LinearLayout>
```

- MainActivity.java

```java
package com.android_lab.alert_dialog;

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

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

public class MainActivity extends AppCompatActivity implements
View.OnClickListener {

    private Button button;

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

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

                button = findViewById(R.id.button);
                button.setOnClickListener(this);
        }

        @Override
        public void onClick(View view) {
                AlertDialog.Builder builder = new AlertDialog.Builder(this);
                builder.setMessage("You need to login to use this App")
                        .setPositiveButton("Log In", new
DialogInterface.OnClickListener() {
                                @Override
                                public void onClick(DialogInterface
dialogInterface, int i) {
                                        Toast.makeText(getApplicationContext(), "Log
In button pressed", Toast.LENGTH_LONG).show();
                                }
                        })
                        .setNeutralButton("Sign Up", new
DialogInterface.OnClickListener() {
                                @Override
                                public void onClick(DialogInterface
dialogInterface, int i) {
                                        Toast.makeText(getApplicationContext(),
"Sign Up button pressed", Toast.LENGTH_LONG).show();
                                }
                        })
                        .setNegativeButton("Cancel", new
DialogInterface.OnClickListener() {
                                @Override
                                public void onClick(DialogInterface
dialogInterface, int i) {
                                        Toast.makeText(getApplicationContext(),
"Cancel button pressed", Toast.LENGTH_LONG).show();
                                }
                        })
                        .setOnDismissListener(new
DialogInterface.OnDismissListener() {
                                @Override
                                public void onDismiss(DialogInterface
dialogInterface) {
                                        Toast.makeText(getApplicationContext(),
"Alert Dialog dismissed", Toast.LENGTH_LONG).show();
                                }
                        })
                        .create()
                        .show();
        }
    }
```

- Output

11:50 ⚙

Alert_Dialog

OPEN

You need to login to use this App

SIGN UP   CANCEL   LOG IN