

SRI RAMAKRISHNA MISSION VIDYALAYA
COLLEGE OF ARTS AND SCIENCE
[AUTONOMOUS]
COIMBATORE-641 020



APRIL – 2025

DEPARTMENT OF COMPUTER SCIENCE

NAME :
REGNO : 23USC0
SEMESTER : IV
COURSE : ANDROID PROGRAMMING LAB
COURSE CODE : 23USC4SE2

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DEPARTMENT OF COMPUTER SCIENCE
BONAFIDE CERTIFICATE

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This is to certify that it is a Bonafide record work done by _____ in “**ANDROID PROGRAMMING LAB**” for the **IV semester** during April - 2025. Submitted for the semester practical examination held on_____.

STAFF IN CHARGE

HEAD OF THE DEPARTMENT

INTERNAL EXAMINER

EXTERNAL EXAMINER

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EX. No. 1 WELCOME TO ANDROID PROGRAMMING

res/layout/activity_main.xml

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

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

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    android:paddingBottom="@dimen/activity_vertical_margin"

    android:paddingLeft="@dimen/activity_horizontal_margin"

    android:paddingRight="@dimen/activity_horizontal_margin"

    android:paddingTop="@dimen/activity_vertical_margin"

    tools:context="com.example.prgm1.MainActivity" >

    <TextView

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:text="Welcome to Android Programmimg" />

</RelativeLayout>
```

MainActivity.java

```
package com.example.prgm1;

import android.support.v7.app.ActionBarActivity;

import android.os.Bundle;

import android.view.Menu;

import android.view.MenuItem;

public class MainActivity extends ActionBarActivity {

    @Override

    protected void onCreate(Bundle savedInstanceState) {
```

```
super.onCreate(savedInstanceState);

setContentView(R.layout.activity_main);

}

@Override

public boolean onCreateOptionsMenu(Menu menu) {

    // Inflate the menu; this adds items to the action bar if it is present.

    getMenuInflater().inflate(R.menu.main, menu);

    return true;

}

@Override

public boolean onOptionsItemSelected(MenuItem item) {

    // Handle action bar item clicks here. The action bar will

    // automatically handle clicks on the Home/Up button, so long

    // as you specify a parent activity in AndroidManifest.xml.

    int id = item.getItemId();

    if (id == R.id.action_settings) {

        return true;

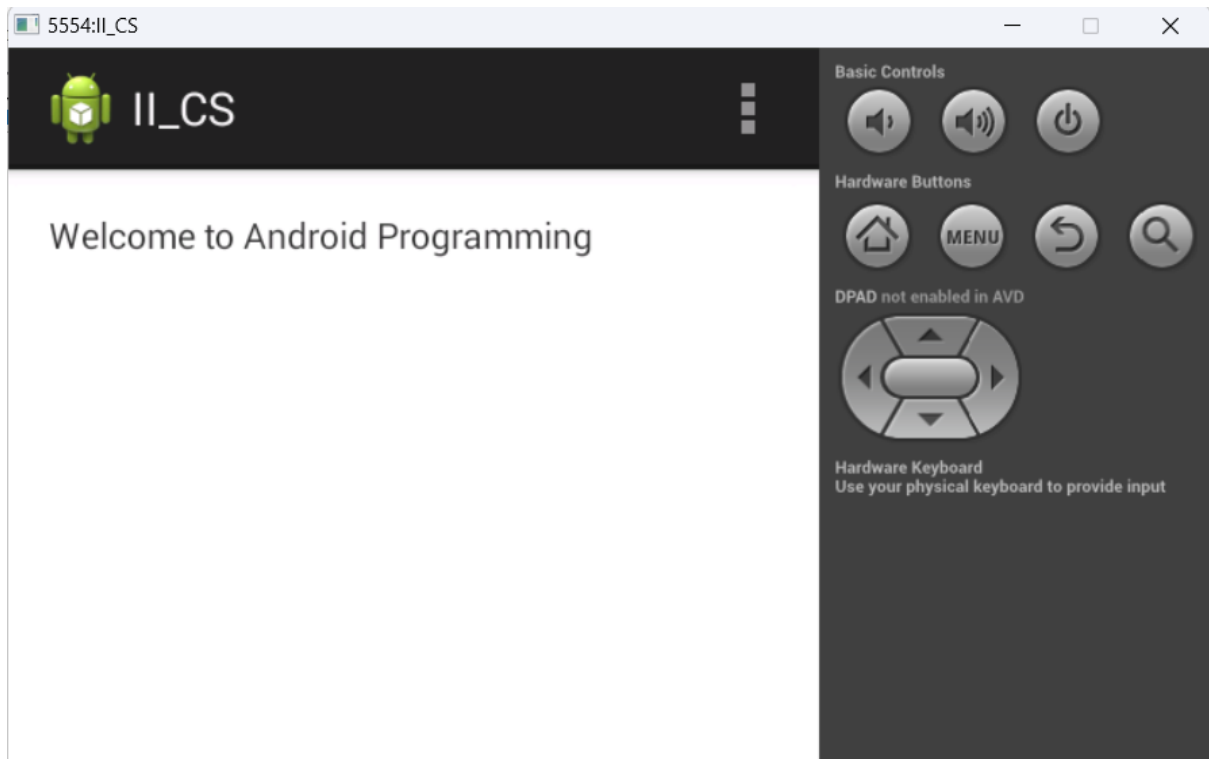
    }

    return super.onOptionsItemSelected(item);

}

}
```

Output:







EX. No. 2 WELCOME MESSAGE USING BUTTON

res/layout/activity_main.xml

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

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

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    android:paddingBottom="@dimen/activity_vertical_margin"

    android:paddingLeft="@dimen/activity_horizontal_margin"

    android:paddingRight="@dimen/activity_horizontal_margin"

    android:paddingTop="@dimen/activity_vertical_margin"

    tools:context="com.example.prgm_2.MainActivity" >

    <TextView

        android:id="@+id/textView1"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:text="Enter your name" />

    <EditText

        android:id="@+id/editText1"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_alignLeft="@+id/textView1"

        android:layout_below="@+id/textView1"

        android:ems="10" >
```

```
<requestFocus />
```

```
</EditText>
```

```
<Button
```

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

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

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

```
    android:layout_alignLeft="@+id/editText1"
```

```
    android:layout_below="@+id/editText1"
```

```
    android:text="Submit"
```

```
    android:onClick="sendMessage" />
```

```
<Button
```

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

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

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

```
    android:layout_alignBaseline="@+id/submit"
```

```
    android:layout_alignBottom="@+id/submit"
```

```
    android:layout_alignRight="@+id/editText1"
```

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

```
<TextView
```

```
    android:id="@+id/textView2"
```

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

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

```
    android:layout_alignLeft="@+id/submit"
```

```
    android:layout_alignRight="@+id/reset"
```

```
    android:layout_below="@+id/submit"
```

```
        android:layout_marginTop="34dp"

        android:text="" />

</RelativeLayout>
```

MainActivity.java

```
package com.example.prgm_2;

import android.support.v7.app.ActionBarActivity;

import android.os.Bundle;

import android.view.Menu;

import android.view.MenuItem;

import android.view.*;

import android.widget.*;

public class MainActivity extends ActionBarActivity {

    EditText editTextName;

    Button buttonSubmit,buttonReset;

    TextView textViewName;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        // Initialize views

        editTextName = (EditText) findViewById(R.id.editText1);

        buttonSubmit = (Button) findViewById(R.id.submit);

        buttonReset = (Button) findViewById(R.id.reset);

        textViewName = (TextView) findViewById(R.id.textView2);
```

```

        // Set onClickListener for the submit button

        buttonSubmit.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View v) {

                // Get the name entered in the EditText field

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

                // Set the TextView to display the name with a greeting

                textViewName.setText("Hello, " + name + ", Welcome to Android
Lab");

            }

        });

        buttonReset.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View v) {

                // Get the name entered in the EditText field

                // Set the TextView to display the name with a greeting

                textViewName.setText("");

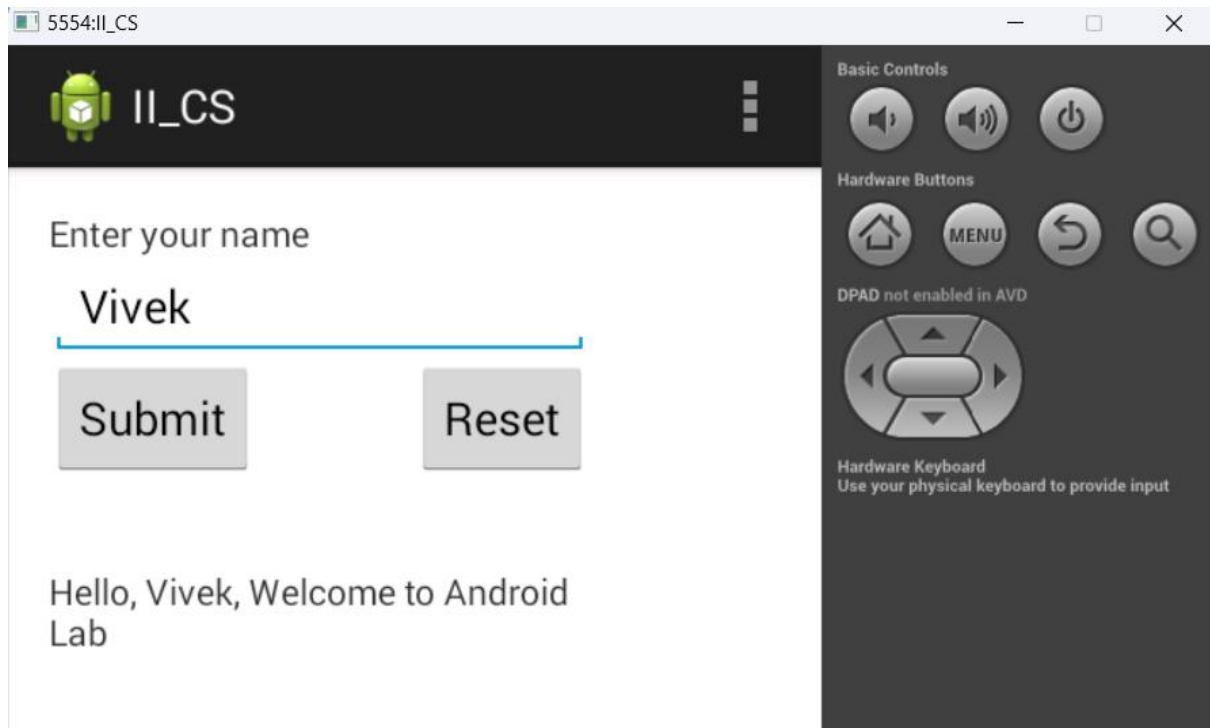
                editTextName.setText("");

            }

        });
    }
}

```

Output:







EX. No. 3

LIST VIEW WITH TOAST

res/layout/activity_main.xml

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

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

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    android:paddingBottom="@dimen/activity_vertical_margin"

    android:paddingLeft="@dimen/activity_horizontal_margin"

    android:paddingRight="@dimen/activity_horizontal_margin"

    android:paddingTop="@dimen/activity_vertical_margin"

    tools:context="com.example.prgm_3.MainActivity" >

    <TextView

        android:id="@+id/textView1"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_alignParentTop="true"

        android:layout_centerHorizontal="true"

        android:layout_marginTop="17dp"

        android:text="Enter your Department" />

    <ListView

        android:id="@+id/listView1"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:layout_below="@+id/textView1"
```

```
        android:layout_centerHorizontal="true"

        android:layout_marginTop="15dp" >

</ListView>

</RelativeLayout>
```

Main activity.java

```
package com.example.prgm_3;

import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.AdapterView.OnItemClickListener;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.Toast;

public class MainActivity extends Activity {

    // Declare ListView and sample data
    ListView listViewOptions;

    String[] options = {"CS", "BCA", "IT", "AIML"};

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

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

```

// Initialize ListView

listViewOptions = (ListView) findViewById(R.id.listView1);


// Set up ArrayAdapter to populate the ListView

ArrayAdapter<String> adapter = new ArrayAdapter<>(

    this,

    android.R.layout.simple_list_item_1,

    options

);

listViewOptions.setAdapter(adapter);


// Set an item click listener to handle clicks

listViewOptions.setOnItemClickListener(new AdapterView.OnItemClickListener() {

    @Override

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

        // Get the selected item

        String selectedOption = options[position];

        // Show the selected item in a Toast message

        Toast.makeText(MainActivity.this, "You Selected: " + selectedOption + "

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

    }

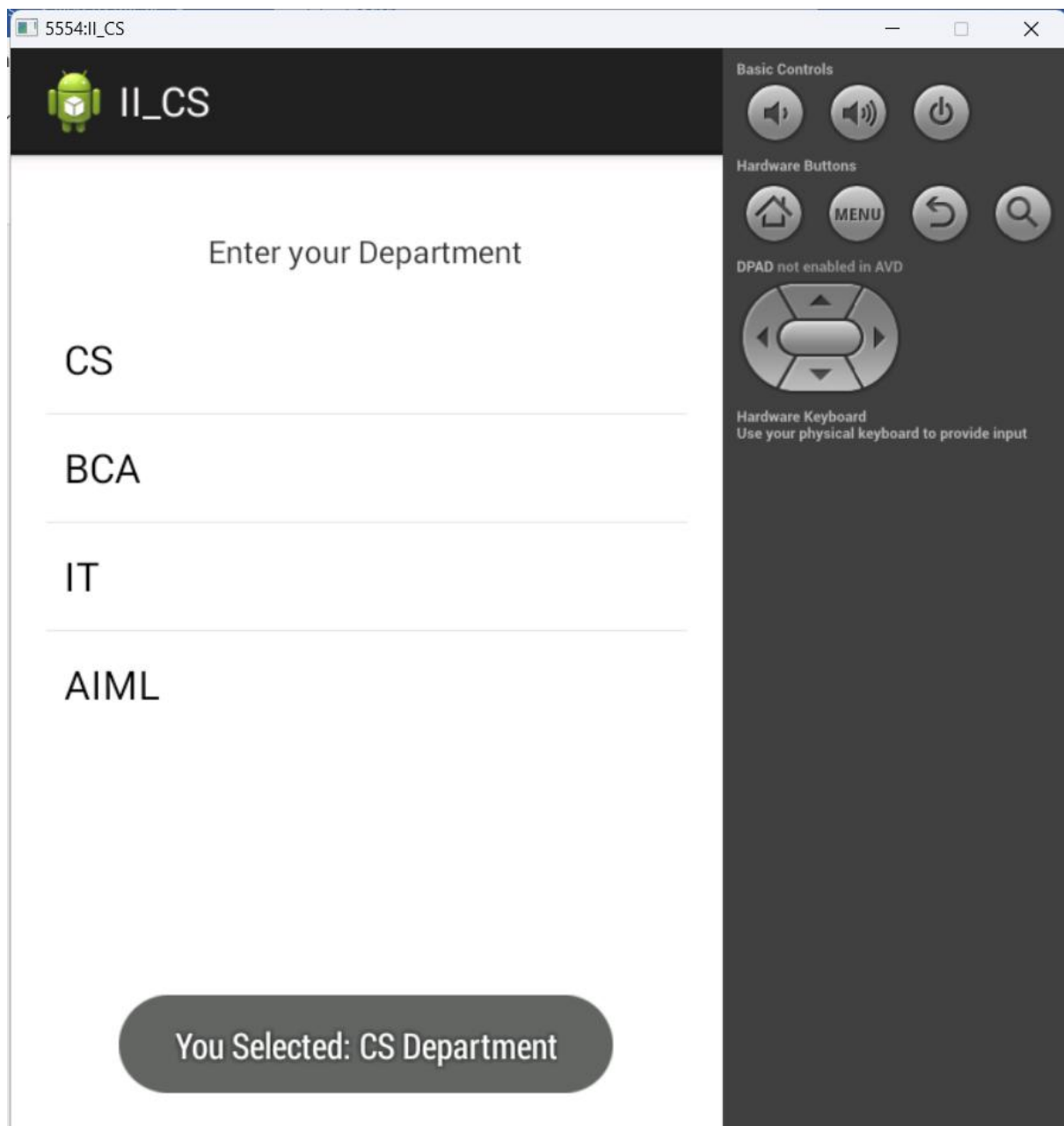
});

}

}

```

Output:







EX. No. 4

RADIO BUTTON WITH TOAST

res/layout/activity_main.xml

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

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

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    android:padding="16dp">

    <!-- Question Text -->

    <TextView

        android:id="@+id/questionTextView"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:text="XML stands for"

        android:textSize="18sp"

        android:layout_marginBottom="16dp" />

    <!-- RadioGroup for options -->

    <RadioGroup

        android:id="@+id/radioGroup"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:layout_below="@id/questionTextView">

        <!-- RadioButtons for options -->

        <RadioButton
```



```
    android:id="@+id/radioOption1"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="Excecutable Markup Language." />
```

```
<RadioButton
```

```
    android:id="@+id/radioOption2"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="Extensible Markup Language." />
```

```
<RadioButton
```

```
    android:id="@+id/radioOption3"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="Extentable Markup Language." />
```

```
</RadioGroup>
```

```
<!-- Submit Button -->
```

```
<Button
```

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

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="Submit"

    android:layout_below="@id/radioGroup"

    android:layout_marginTop="20dp"

    android:layout_centerHorizontal="true" />
```

```
</RelativeLayout>
```

Main activity.java

```
package com.example.prgm_4;

import android.app.Activity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.RadioButton;

import android.widget.RadioGroup;

import android.widget.Toast;

public class MainActivity extends Activity {

    RadioGroup radioGroup;

    Button submitButton;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        // Initialize views

        radioGroup = (RadioGroup) findViewById(R.id.radioGroup);

        submitButton = (Button) findViewById(R.id.submitButton);


        submitButton.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View v) {
```

```
// Get the selected RadioButton's ID

int selectedId = radioButton.getCheckedRadioButtonId();

if (selectedId == -1) {

    // No option selected

    Toast.makeText(MainActivity.this, "Please select an option",
Toast.LENGTH_SHORT).show();

} else {

    // Get the selected RadioButton

    RadioButton selectedRadioButton = (RadioButton) findViewById(selectedId);

    String answer = selectedRadioButton.getText().toString();

    // Check if the answer is correct

    if (answer.equals("Extensible Markup Language.")) {

        Toast.makeText(MainActivity.this, "Correct Answer!",
Toast.LENGTH_SHORT).show();

    } else {

        Toast.makeText(MainActivity.this, "Wrong Answer!",
Toast.LENGTH_SHORT).show();

    }

}


});

}

}
```

Output:

5554:II_CS

 II_CS

XML stands for

☐ Excecutable Markup Language.




☒ Extensible Markup Language.

☐ Extentable Markup Language.





Submit

Correct Answer!


Basic Controls



Hardware Buttons



DPAD not enabled in AVD



Hardware Keyboard
Use your physical keyboard to provide input





EX. No. 5

SPINNER WITH TOAST

res/layout/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">
```

```
    <TextView
```

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

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

```
        android:text="Select a Programming:"
```

```
        android:textSize="18sp"
```

```
        android:layout_marginBottom="8dp" />
```

```
    <Spinner
```

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

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

```
        android:layout_height="wrap_content" />
```

```
</LinearLayout>
```

res/values/strings.xml

```
<resources>
```

```
    <string name="app_name">SimpleSpinnerApp</string>
```

```
    <string-array name="spinner_items">
```

```
        <item>C</item>
```

```
        <item>C++</item>
```

```
        <item>JAVA</item>
```

```
        <item>ANDROID</item>
```

```
    </string-array>
```

```
</resources>
```

MainActivity.java

```
package com.example.prgm_5;
```

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

```
import android.app.Activity;
```

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

```
import android.widget.AdapterView;
```

```
import android.widget.AdapterView;
```

```
import android.widget.AdapterView;
```

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



```
public class MainActivity extends Activity {

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        // Initialize the Spinner

        Spinner spinner = findViewById(R.id.spinner);

        // Create an ArrayAdapter using the string array and a default spinner layout

        ArrayAdapter<CharSequence> adapter = ArrayAdapter.createFromResource(

            this,R.array.spinner_items, android.R.layout.simple_spinner_item);

        // Specify the layout to use when the list of choices appears

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

        // Apply the adapter to the spinner

        spinner.setAdapter(adapter);

        // Set a listener for spinner item selection

        spinner.setOnItemClickListener(new AdapterView.OnItemClickListener() {

            @Override

            public void onItemClick(AdapterView<?> parent, View view, int position, long id)

            {

                String selectedItem = parent.getItemAtPosition(position).toString();
```

```
        Toast.makeText(MainActivity.this, "Selected: " + selectedItem,
Toast.LENGTH_SHORT).show();

    }

    @Override

    public void onNothingSelected(AdapterView<?> parent) {

        // Optional: Handle the case when no item is selected

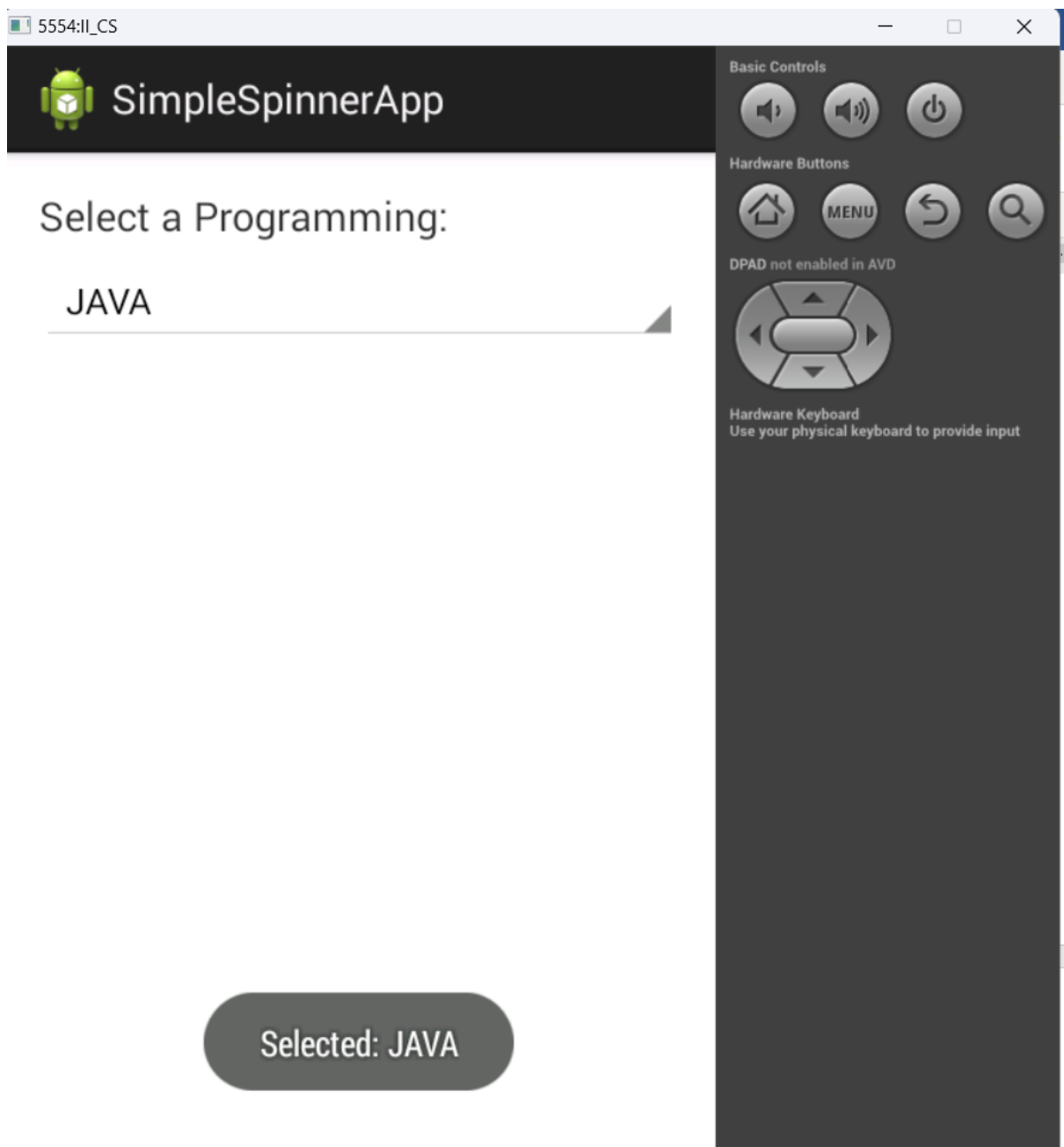
    }

});

}

}
```

Output:







EX. No. 6

SIMPLE ARITHMETIC CALCULATOR

res/layout/activity_main.xml

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

<LinearLayout

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

android:orientation="vertical"

android:layout_width="fill_parent"

android:layout_height="fill_parent">

<LinearLayout

android:layout_width="match_parent"

android:layout_height="wrap_content"

android:id="@+id/linearLayout1"

android:layout_marginLeft="10pt"

android:layout_marginRight="10pt"

android:layout_marginTop="3pt">

<EditText

android:layout_weight="1"

android:layout_height="wrap_content"

android:layout_marginRight="5pt"

android:id="@+id/etNum1"

android:layout_width="match_parent"

android:inputType="numberDecimal">

</EditText>

<EditText
```

```
    android:layout_height="wrap_content"

    android:layout_weight="1"

    android:layout_marginLeft="5pt"

    android:id="@+id/etNum2"

    android:layout_width="match_parent"

    android:inputType="numberDecimal">

</EditText>

</LinearLayout>

<LinearLayout

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:id="@+id/linearLayout2"

    android:layout_marginTop="3pt"

    android:layout_marginLeft="5pt"

    android:layout_marginRight="5pt">

    <Button

        android:layout_height="wrap_content"

        android:layout_width="match_parent"

        android:layout_weight="1"

        android:text="+"

        android:textSize="8pt"

        android:id="@+id/btnAdd">

    </Button>

    <Button

        android:layout_height="wrap_content"
```

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

```
android:layout_weight="1"
```

```
android:text="-"
```

```
android:textSize="8pt"
```

```
android:id="@+id/btnSub">
```

```
</Button>
```

```
<Button
```

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

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

```
android:layout_weight="1"
```

```
android:text="*"
```

```
android:textSize="8pt"
```

```
android:id="@+id/btnMult">
```

```
</Button>
```

```
<Button
```

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

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

```
android:layout_weight="1"
```

```
android:text="/"
```

```
android:textSize="8pt"
```

```
android:id="@+id/btnDiv">
```

```
</Button>
```

```
</LinearLayout>
```

```
<TextView
```



```
android:layout_height="wrap_content"

android:layout_width="match_parent"

android:layout_marginLeft="5pt"

android:layout_marginRight="5pt"

android:textSize="12pt"

android:layout_marginTop="3pt"

android:id="@+id/tvResult"

android:gravity="center_horizontal">

</TextView>
```

```
</LinearLayout>
```

MainActivity.java

```
package com.example.prgm_6;

import android.os.Bundle;

import android.app.Activity;

import android.text.TextUtils;

import android.view.View;

import android.view.View.OnClickListener;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

public class MainActivity extends Activity implements OnClickListener {

    EditText etNum1;

    EditText etNum2;

    Button btnAdd;
```

```
Button btnSub;

Button btnMult;

Button btnDiv;

TextView tvResult;

String oper = "";

/** Called when the activity is first created. */

@Override

public void onCreate(Bundle savedInstanceState) {

    super.onCreate(savedInstanceState);

    setContentView(R.layout.activity_main);

    // find the elements

    etNum1 = (EditText) findViewById(R.id.etNum1);

    etNum2 = (EditText) findViewById(R.id.etNum2);

    btnAdd = (Button) findViewById(R.id.btnAdd);

    btnSub = (Button) findViewById(R.id.btnSub);

    btnMult = (Button) findViewById(R.id.btnMult);

    btnDiv = (Button) findViewById(R.id.btnDiv);

    tvResult = (TextView) findViewById(R.id.tvResult);

    // set a listener

    btnAdd.setOnClickListener((OnClickListener) this);

    btnSub.setOnClickListener(this);

    btnMult.setOnClickListener(this);

    btnDiv.setOnClickListener(this);

}

@Override
```

```
public void onClick(View v) {  
  
    // TODO Auto-generated method stub  
  
    float num1 = 0;  
  
    float num2 = 0;  
  
    float result = 0;  
  
    // check if the fields are empty  
  
    if (TextUtils.isEmpty(etNum1.getText().toString())  
        || TextUtils.isEmpty(etNum2.getText().toString())) {  
  
        return;  
  
    }  
  
    // read EditText and fill variables with numbers  
  
    num1 = Float.parseFloat(etNum1.getText().toString());  
  
    num2 = Float.parseFloat(etNum2.getText().toString());  
  
    // defines the button that has been clicked and performs the corresponding operation  
  
    // write operation into oper, we will use it later for output  
  
    switch (v.getId()) {  
  
    case R.id.btnAdd:  
  
        oper = "+";  
  
        result = num1 + num2;  
  
        break;  
  
    case R.id.btnSub:  
  
        oper = "-";  
  
        result = num1 - num2;  
  
        break;  
  
    case R.id.btnMult:
```

```
        oper = "*";

        result = num1 * num2;

        break;

    case R.id.btnDiv:

        oper = "/";

        result = num1 / num2;

        break;

    default:

        break;

    }

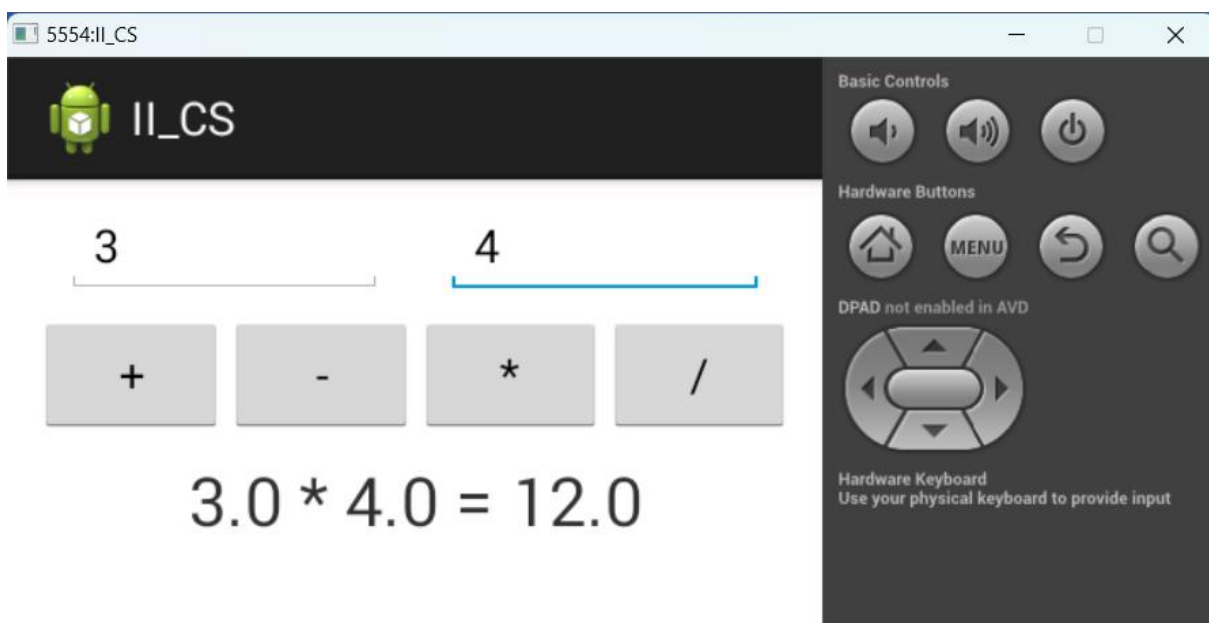
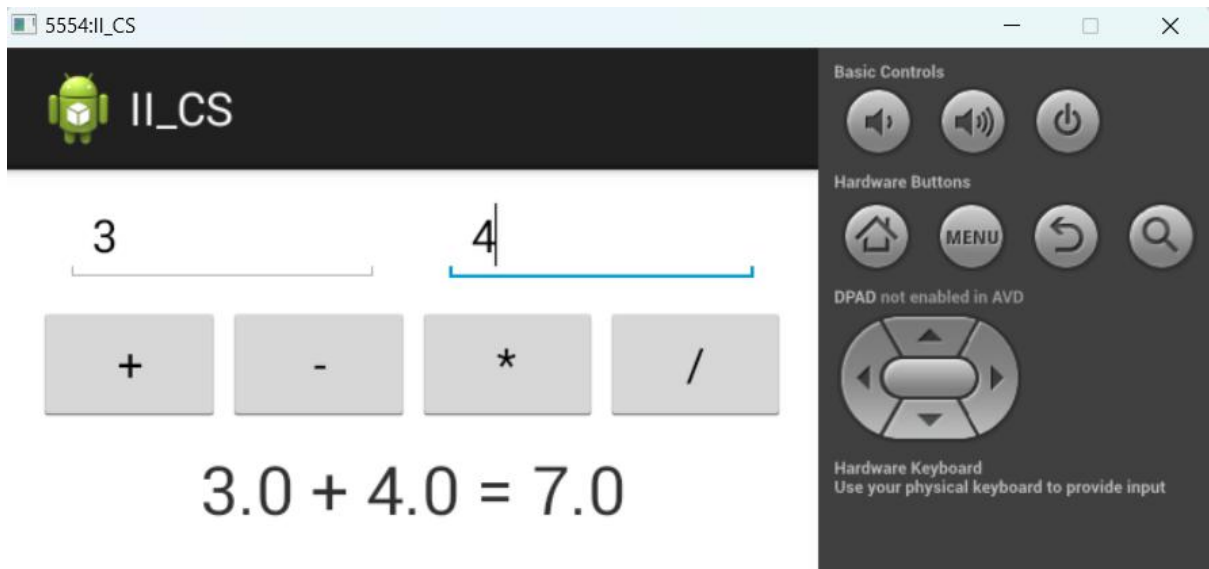
    // form the output line

    tvResult.setText(num1 + " " + oper + " " + num2 + " = " + result);

}

}
```

Output:







EX. No. 7

SIMPLE & COMPOUND INTEREST

res/layout/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/editPrincipal"
```

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

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

```
        android:hint="Enter Principal Amount"
```

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

```
    <EditText
```

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

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

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

```
        android:hint="Enter Rate of Interest (%)"
```

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

```
    <EditText
```



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

android:layout_width="match_parent"

android:layout_height="wrap_content"

android:hint="Enter Years"

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

```
<RadioGroup
```

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

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:orientation="horizontal">
```

```
<RadioButton
```

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

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="Simple Interest"

    android:checked="true" />
```

```
<RadioButton
```

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

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="Compound Interest" />
```

```
</RadioGroup>
```

```
<Button  
    android:id="@+id/btnCalculate"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:text="Calculate" />
```

```
<TextView  
    android:id="@+id/textResult"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:textSize="18sp"  
    android:textStyle="bold"  
    android:paddingTop="16dp" />
```

```
</LinearLayout>
```

MainActivity.java

```
package com.example.ii_cs;  
  
import android.app.Activity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.RadioGroup;  
import android.widget.TextView;
```

```
public class MainActivity extends Activity {

    private EditText editPrincipal, editRate, editTime;

    private RadioGroup radioGroup;

    private Button btnCalculate;

    private TextView textResult;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        // Initialize UI components

        editPrincipal = (EditText) findViewById(R.id.editPrincipal);

        editRate = (EditText) findViewById(R.id.editRate);

        editTime = (EditText) findViewById(R.id.editTime);

        radioGroup = (RadioGroup) findViewById(R.id.radioGroup);

        btnCalculate = (Button) findViewById(R.id.btnCalculate);

        textResult = (TextView) findViewById(R.id.textResult);


        // Set button click listener

        btnCalculate.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View v) {

                calculateInterest();

            }

        })

    }

}
```

```

    });
}

private void calculateInterest() {
    try {
        // Get input values

        float principal = Float.parseFloat(editPrincipal.getText().toString());

        float rate = Float.parseFloat(editRate.getText().toString());

        float yr = Float.parseFloat(editTime.getText().toString());

        // Determine interest type

        int selectedId = radioGroup.getCheckedRadioButtonId();

        double interest;

        if (selectedId == R.id.radioSimple) {
            // Simple Interest formula:  $SI = (P * R * T) / 100$ 

            interest = (principal * rate * yr) / 100;

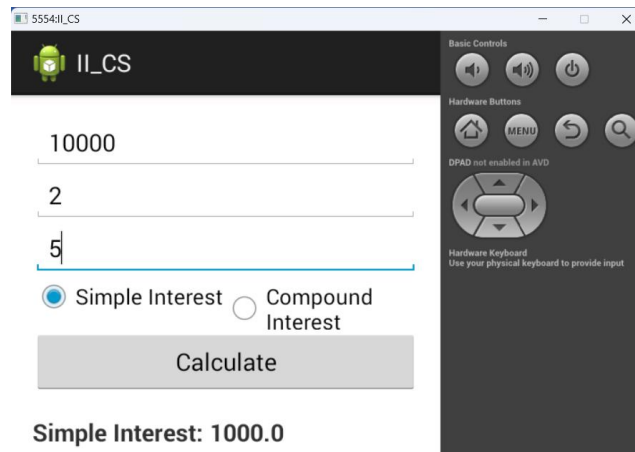
            textResult.setText("Simple Interest: " + interest);
        } else if (selectedId == R.id.radioCompound) {
            // Compound Interest formula:  $CI = P * (1 + R/100)^T - P$ 

            interest = principal * (Math.pow((1 + rate / 100), yr)) - principal;

            textResult.setText("Compound Interest: " + interest);
        }
    } catch (Exception e) {
        textResult.setText("Please enter valid inputs.");
    }
}
}

```

Output:



5554:II_CS

II_CS

10000

2

5

☒ Simple Interest ☐ Compound Interest

Calculate

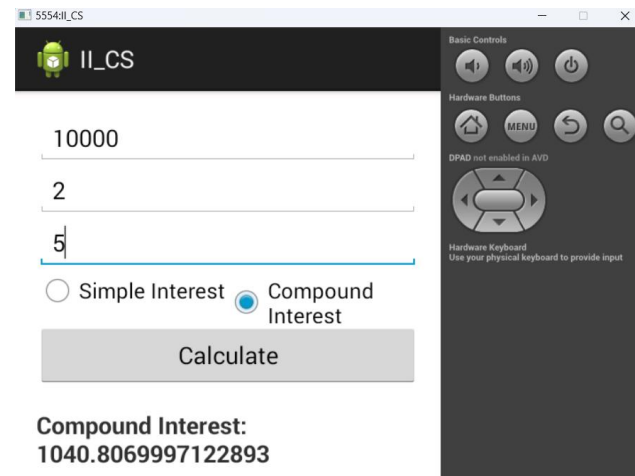
Simple Interest: 1000.0

Basic Controls

Hardware Buttons

DPAD not enabled in AVD

Hardware Keyboard
Use your physical keyboard to provide input



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II_CS

10000

2

5

☐ Simple Interest ☒ Compound Interest

Calculate

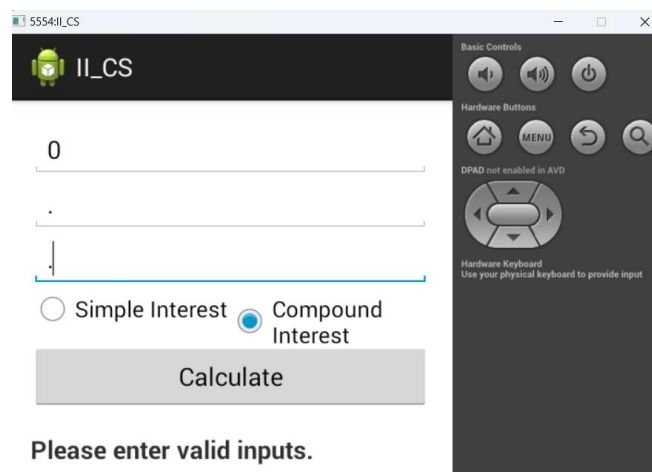
Compound Interest:
1040.8069997122893

Basic Controls

Hardware Buttons

DPAD not enabled in AVD

Hardware Keyboard
Use your physical keyboard to provide input



5554:II_CS

II_CS

0

.

|

☐ Simple Interest ☒ Compound Interest

Calculate

Please enter valid inputs.

Basic Controls

Hardware Buttons

DPAD not enabled in AVD

Hardware Keyboard
Use your physical keyboard to provide input





EX. No. 8

Registration Form

res/layout/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="20dp">

        <TextView

            android:text="Student Registration"

            android:textSize="24sp"

            android:textStyle="bold"

            android:layout_gravity="center"

            android:layout_width="wrap_content"

            android:layout_height="wrap_content"/>

        <EditText

            android:id="@+id/editTextName"

            android:hint="Full Name"
```



```
android:layout_width="match_parent"
android:layout_height="wrap_content"/>
```

```
<EditText
```

```
android:id="@+id/editTextRollNumber"
android:hint="Roll Number"
android:layout_width="match_parent"
android:layout_height="wrap_content"/>
```

```
<EditText
```

```
android:id="@+id/editTextEmail"
android:hint="Email"
android:inputType="textEmailAddress"
android:layout_width="match_parent"
android:layout_height="wrap_content"/>
```

```
<EditText
```

```
android:id="@+id/editTextPhone"
android:hint="Phone Number"
android:inputType="phone"
android:layout_width="match_parent"
android:layout_height="wrap_content"/>
```

```
<EditText
```

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

android:hint="Address"

android:layout_width="match_parent"

android:layout_height="wrap_content"/>

<EditText

android:id="@+id/editTextDOB"

android:hint="Date of Birth (dd/MM/yyyy)"

android:inputType="date"

android:layout_width="match_parent"

android:layout_height="wrap_content"/>

<EditText

android:id="@+id/editTextAge"

android:hint="Age"

android:inputType="number"

android:layout_width="match_parent"

android:layout_height="wrap_content"/>

<TextView

android:text="Select Gender:"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:paddingTop="10dp"/>

<RadioGroup

```
android:id="@+id/radioGroupGender"
android:orientation="horizontal"
android:layout_width="match_parent"
android:layout_height="wrap_content">
```

```
<RadioButton
    android:id="@+id/radioMale"
    android:text="Male"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"/>
```

```
<RadioButton
    android:id="@+id/radioFemale"
    android:text="Female"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"/>
```

```
<RadioButton
    android:id="@+id/radioOther"
    android:text="Other"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"/>
```

```
</RadioGroup>
```

```
<EditText
```

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

android:hint="Password"

android:inputType="textPassword"

android:layout_width="match_parent"

android:layout_height="wrap_content"/>
```

```
<Button
```

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

    android:text="Register"

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:padding="10dp"/>
```

```
</LinearLayout>
```

```
</ScrollView>
```

MainActivity.java

```
package com.example.prgm_8;

import android.annotation.SuppressLint;

import android.app.Activity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.RadioButton;

import android.widget.RadioGroup;
```

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

```
public class MainActivity extends Activity {
```

```
    EditText editTextName, editTextRollNumber, editTextEmail, editTextPhone,  
    editTextAddress, editTextPassword;
```

```
    EditText editTextDOB, editTextAge;
```

```
    RadioGroup radioGroupGender;
```

```
    Button buttonRegister;
```

```
@Override
```

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

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

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

```
    // Initialize UI Elements
```

```
    editTextName = (EditText) findViewById(R.id.editTextName);
```

```
    editTextRollNumber = (EditText) findViewById(R.id.editTextRollNumber);
```

```
    editTextEmail = (EditText) findViewById(R.id.editTextEmail);
```

```
    editTextPhone = (EditText) findViewById(R.id.editTextPhone);
```

```
    editTextAddress = (EditText) findViewById(R.id.editTextAddress);
```

```
    editTextDOB = (EditText) findViewById(R.id.editTextDOB);
```

```
    editTextAge = (EditText) findViewById(R.id.editTextAge);
```

```
    editTextPassword = (EditText) findViewById(R.id.editTextPassword);
```

```
    radioGroupGender = (RadioGroup) findViewById(R.id.radioGroupGender);
```

```
buttonRegister = (Button) findViewById(R.id.buttonRegister);

// Register Button Click Listener

buttonRegister.setOnClickListener(new View.OnClickListener() {

    @SuppressWarnings("NewApi")

    @Override

    public void onClick(View v) {

        String name = editTextName.getText().toString().trim();

        String rollNumber = editTextRollNumber.getText().toString().trim();

        String email = editTextEmail.getText().toString().trim();

        String phone = editTextPhone.getText().toString().trim();

        String address = editTextAddress.getText().toString().trim();

        String dob = editTextDOB.getText().toString().trim();

        String age = editTextAge.getText().toString().trim();

        String password = editTextPassword.getText().toString().trim();


        // Get selected gender

        int selectedGenderId = radioGroupGender.getCheckedRadioButtonId();

        String gender = "";

        if (selectedGenderId != -1) {

            RadioButton selectedGender = (RadioButton) findViewById(selectedGenderId);

            gender = selectedGender.getText().toString();

        }


        // Validation Checks
```

```
        if (name.isEmpty() || rollNumber.isEmpty() || email.isEmpty() || phone.isEmpty() ||
            address.isEmpty() || dob.isEmpty() || age.isEmpty() || gender.isEmpty() ||
password.isEmpty()) {

            Toast.makeText(MainActivity.this, "All fields are required!",
Toast.LENGTH_SHORT).show();

        } else if (!android.util.Patterns.EMAIL_ADDRESS.matcher(email).matches()) {

            Toast.makeText(MainActivity.this, "Invalid Email Format!",
Toast.LENGTH_SHORT).show();

        } else if (password.length() < 6) {

            Toast.makeText(MainActivity.this, "Password must be at least 6 characters!",
Toast.LENGTH_SHORT).show();

        } else {

            // Successful Registration Message

            Toast.makeText(MainActivity.this, "Registration Successful!\nWelcome " +
name, Toast.LENGTH_LONG).show();

        }



    }

});

}

}
```

Output:

 II_CS	 II_CS
<h3>Student Registration</h3> <p>Full Name _____</p> <p>Roll Number _____</p> <p>Email _____</p> <p>Phone Number _____</p> <p>Address _____</p> <p>Date of Birth (dd/MM/yyyy) _____</p> <p>Age _____</p> <p>Select Gender:</p> <p><input type="radio"/> Male <input type="radio"/> Female <input type="radio"/> Other</p> <p>Password _____</p> <p>Register</p>	<h3>Student Registration</h3> <p>Ashok _____</p> <p>23USC001 _____</p> <p>ashok@gmail.com _____</p> <p>9876543210 _____</p> <p>Coimbatore _____</p> <p>12/09/2006 _____</p> <p>22 _____</p> <p>Select Gender:</p> <p><input checked="" type="radio"/> Male <input type="radio"/> Female <input type="radio"/> Other</p> <p>••••• Registration Successful! Welcome Ashok</p> <p>Register</p>





EX. No. 9

Login Page using Intent

res/layout/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:gravity="center"

    android:padding="20dp">

    <EditText

        android:id="@+id/editTextUsername"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:hint="Username" />

    <EditText

        android:id="@+id/editTextPassword"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:hint="Password"

        android:inputType="textPassword"

        android:layout_marginTop="10dp" />
```

```
<Button  
    android:id="@+id/buttonLogin"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:text="Login"  
    android:layout_marginTop="20dp" />
```

```
<Button  
    android:id="@+id/buttonSignup"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:text="Signup"  
    android:layout_marginTop="10dp" />
```

```
</LinearLayout>
```

res/layout/actreg.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:gravity="center"  
    android:padding="20dp">  
  
    <EditText
```

```
android:id="@+id/editTextName"  
android:layout_width="match_parent"  
android:layout_height="wrap_content"  
android:hint="Name" />
```

<EditText

```
android:id="@+id/editTextEmail"  
android:layout_width="match_parent"  
android:layout_height="wrap_content"  
android:hint="Email"  
android:layout_marginTop="10dp" />
```

<EditText

```
android:id="@+id/editTextNewPassword"  
android:layout_width="match_parent"  
android:layout_height="wrap_content"  
android:hint="Password"  
android:inputType="textPassword"  
android:layout_marginTop="10dp" />
```

<Button

```
android:id="@+id/buttonRegister"  
android:layout_width="match_parent"  
android:layout_height="wrap_content"  
android:text="Register"  
android:layout_marginTop="20dp" />
```

```
<Button  
    android:id="@+id/buttonhomer"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_alignParentRight="true"  
    android:layout_alignParentTop="true"  
    android:text="Home" />
```

```
</LinearLayout>
```

res/layout/welcome.xml

```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
    xmlns:tools="http://schemas.android.com/tools"  
    android:layout_width="match_parent"  
    android:layout_height="match_parent"  
    android:paddingBottom="@dimen/activity_vertical_margin"  
    android:paddingLeft="@dimen/activity_horizontal_margin"  
    android:paddingRight="@dimen/activity_horizontal_margin"  
    android:paddingTop="@dimen/activity_vertical_margin"  
    tools:context="com.example.helloworld.MainActivity" >  
    <TextView  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"  
        android:text="@string/hello_world" />  
    <Button  
        android:id="@+id/buttonhome"  
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"

        android:layout_alignParentRight="true"

        android:layout_alignParentTop="true"

        android:text="Home" />

</RelativeLayout>
```

MainActivity.java

```
package com.example.prgm_9;

import android.app.Activity;
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 Activity {

    private EditText editTextUsername;
    private EditText editTextPassword;
    private Button buttonLogin;
    private Button buttonSignup;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);
```

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

```
editTextUsername = (EditText) findViewById(R.id.editTextUsername);
```

```
editTextPassword = (EditText) findViewById(R.id.editTextPassword);
```

```
buttonLogin = (Button) findViewById(R.id.buttonLogin);
```

```
buttonSignup = (Button) findViewById(R.id.buttonSignup);
```

```
// Login button logic
```

```
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("1234")) {
```

```
            Toast.makeText(MainActivity.this, "Login Successful!",
```

```
            Toast.LENGTH_SHORT).show();
```

```
            Intent intent = new Intent(getApplicationContext(),welcome.class);
```

```
            startActivity(intent);
```

```
        } else {
```

```
            Toast.makeText(MainActivity.this, "Invalid Username or Password!",
```

```
            Toast.LENGTH_SHORT).show();
```

```
        }
```

```
    }
```

```
});
```



```
// Signup button logic (using Intent)

buttonSignup.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View v) {

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

        startActivity(intent);

    }

});

}
```

RegAct.java

```
package com.example.prgm_9;


import android.app.Activity;

import android.os.Bundle;

import android.view.View;

import android.view.View.OnClickListener;

import android.widget.Button;

import android.widget.EditText;

import android.widget.Toast;


public class RegAct extends Activity {
```

```
EditText editTextName;  
  
EditText editTextEmail;  
  
EditText editTextNewPassword;  
  
Button buttonRegister,ButtonHomer;
```

```
@Override
```

```
protected void onCreate(Bundle savedInstanceState) {  
  
    super.onCreate(savedInstanceState);  
  
    setContentView(R.layout.actreg);  
  
  
    editTextName = (EditText) findViewById(R.id.editTextName);  
    editTextEmail = (EditText) findViewById(R.id.editTextEmail);  
    editTextNewPassword = (EditText) findViewById(R.id.editTextNewPassword);  
    buttonRegister = (Button) findViewById(R.id.buttonRegister);  
    ButtonHomer = (Button) findViewById(R.id.buttonhomer);  
    buttonRegister.setOnClickListener(new View.OnClickListener() {  
  
        @Override  
  
        public void onClick(View v) {  
  
            String name = editTextName.getText().toString().trim();  
  
            String email = editTextEmail.getText().toString().trim();  
  
            String password = editTextNewPassword.getText().toString().trim();  
  
  
            if (!name.isEmpty() && !email.isEmpty() && !password.isEmpty()) {  
  
                Toast.makeText(RegAct.this, "Registration Successful!",  
Toast.LENGTH_SHORT).show();
```

```

        finish(); // Close signup activity and return to login page

    } else {

        Toast.makeText(RegAct.this, "Please fill all fields!",
Toast.LENGTH_SHORT).show();

    }

}

});

ButtonHomer.setOnClickListener(new OnClickListener() {

    public void onClick(View v) {

        // TODO Auto-generated method stub

        finish();

    }

});

}

}

```

Welcome.java

```

package com.example.prgm_9;

import android.support.v7.app.ActionBarActivity;

import android.os.Bundle;

import android.view.Menu;

import android.view.MenuItem;

import android.view.View;

```

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

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

```
public class welcome extends ActionBarActivity {
```

```
    Button ButtonHome;
```

```
    @Override
```

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

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

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

```
        ButtonHome = (Button) findViewById(R.id.buttonhome);
```

```
        ButtonHome.setOnClickListener(new OnClickListener() {
```

```
            public void onClick(View v) {
```

```
                // TODO Auto-generated method stub
```

```
                finish();
```

```
            }
```

```
        });
```

```
    }
```

```
    @Override
```

```
    public boolean onCreateOptionsMenu(Menu menu) {
```

```
        // Inflate the menu; this adds items to the action bar if it is present.
```

```
        getMenuInflater().inflate(R.menu.main, menu);
```

```
        return true;
```

```
    }
```

@Override

```
public boolean onOptionsItemSelected(MenuItem item) {  
  
    // Handle action bar item clicks here. The action bar will  
    // automatically handle clicks on the Home/Up button, so long  
    // as you specify a parent activity in AndroidManifest.xml.  
  
    int id = item.getItemId();  
  
    if (id == R.id.action_settings) {  
  
        return true;  
  
    }  
  
    return super.onOptionsItemSelected(item);  
  
}
```

bin/AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>  
  
<manifest xmlns:android="http://schemas.android.com/apk/res/android"  
    package="com.example.prgm_9"  
    android:versionCode="1"  
    android:versionName="1.0" >  
  
    <uses-sdk  
        android:minSdkVersion="8"  
        android:targetSdkVersion="21" />  
  
    <application
```

```
    android:allowBackup="true"

    android:icon="@drawable/ic_launcher"

    android:label="@string/app_name"

    android:theme="@style/AppTheme" >

    <activity

        android:name=".MainActivity"

        android:label="@string/app_name" >

        <intent-filter>

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

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

        </intent-filter>

    </activity>

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

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

</application>

</manifest>
```

Output:

5554:II_CS

II_CS

admin

....

Login

Signup

II_CS

Hello world!

Home

5554:II_CS

II_CS

admin

admin@gmail.com

....

Register

Home





EX. No. 10 Image View and Image Button

res/layout/activity_main.xml

```
<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">
```

```
    <!-- ImageButton -->
```

```
    <ImageButton
```

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

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

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

```
        android:src="@drawable/and_btn"
```

```
        android:contentDescription="Click Me"
```

```
        android:layout_centerHorizontal="true"
```

```
        android:layout_marginTop="50dp" />
```

```
    <!-- ImageView -->
```

```
    <ImageView
```

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

```
        android:layout_width="200dp"
```

```
        android:layout_height="200dp"
```

```
        android:layout_below="@id/imgButton"
```

```
        android:layout_centerHorizontal="true"
```

```
        android:scaleType="fitCenter"
```

```
        android:contentDescription="Sample Image" />
```

```
</RelativeLayout>
```

MainActivity.java

```
package com.example.prgm_10;

import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.widget.ImageButton;
import android.widget.ImageView;

public class MainActivity extends Activity {

    private ImageView imgView;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        // Link the ImageView and ImageButton

        imgView = (ImageView) findViewById(R.id.imgView);

        ImageButton imgButton = (ImageButton) findViewById(R.id.imgButton);

        // Set click event on ImageButton

        imgButton.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View v) {

                // Change the ImageView image when the button is clicked

                imgView.setImageResource(R.drawable.img_view);

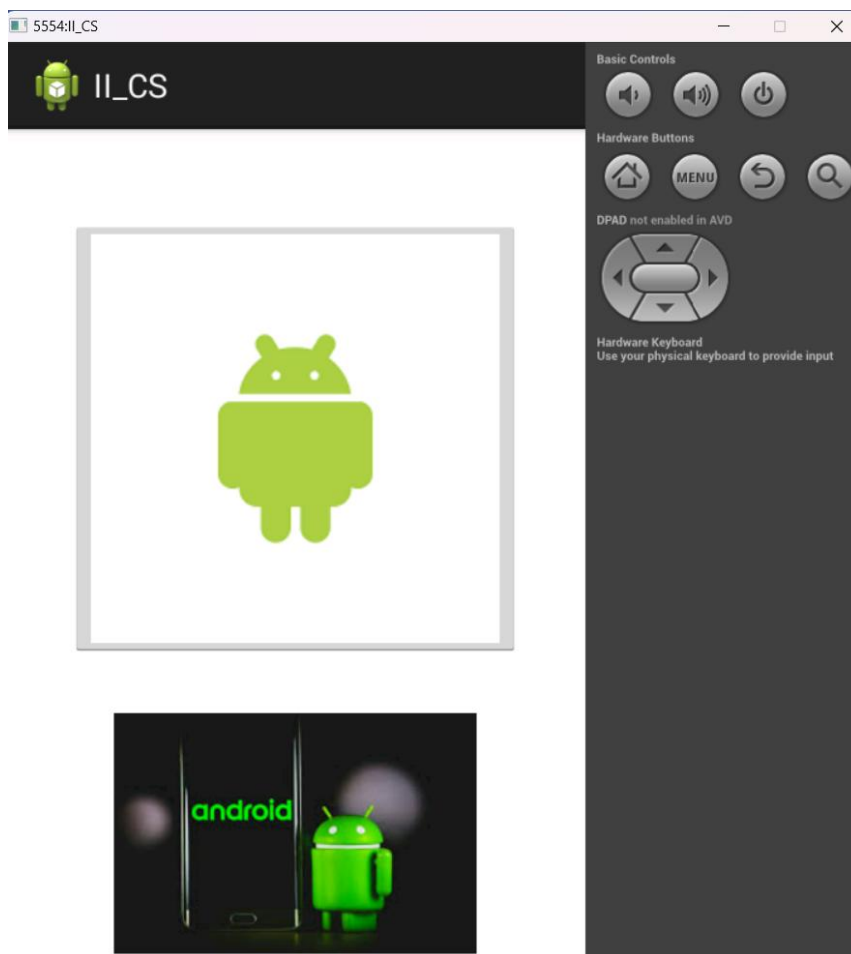
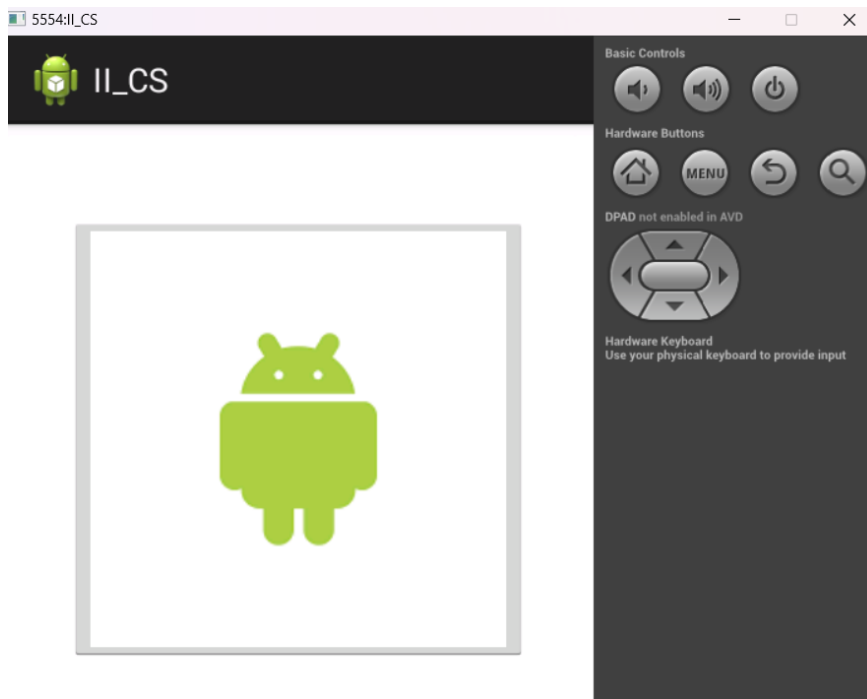
            }

        });

    }

}
```

Output:







EX. No. 11

Dialog Message

res/layout/activity_main.xml

```
<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">

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

</RelativeLayout>
```

MainActivity.java

```
package com.example.prgm_11;

import android.app.Activity;

import android.app.AlertDialog;

import android.content.DialogInterface;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

public class MainActivity extends Activity {
```

```
@Override
```

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

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

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

```
    Button btnShowDialog = (Button) findViewById(R.id.btnShowDialog);
```

```
    btnShowDialog.setOnClickListener(new View.OnClickListener() {
```

```
        @Override
```

```
        public void onClick(View v) {
```

```
            showDialogMessage();
```

```
        }
```

```
    });
```

```
}
```

```
private void showDialogMessage() {
```

```
    AlertDialog.Builder builder = new AlertDialog.Builder(this);
```

```
    builder.setTitle("Alert!");
```

```
    builder.setMessage("This is a simple alert dialog.");
```

```
    // OK button
```

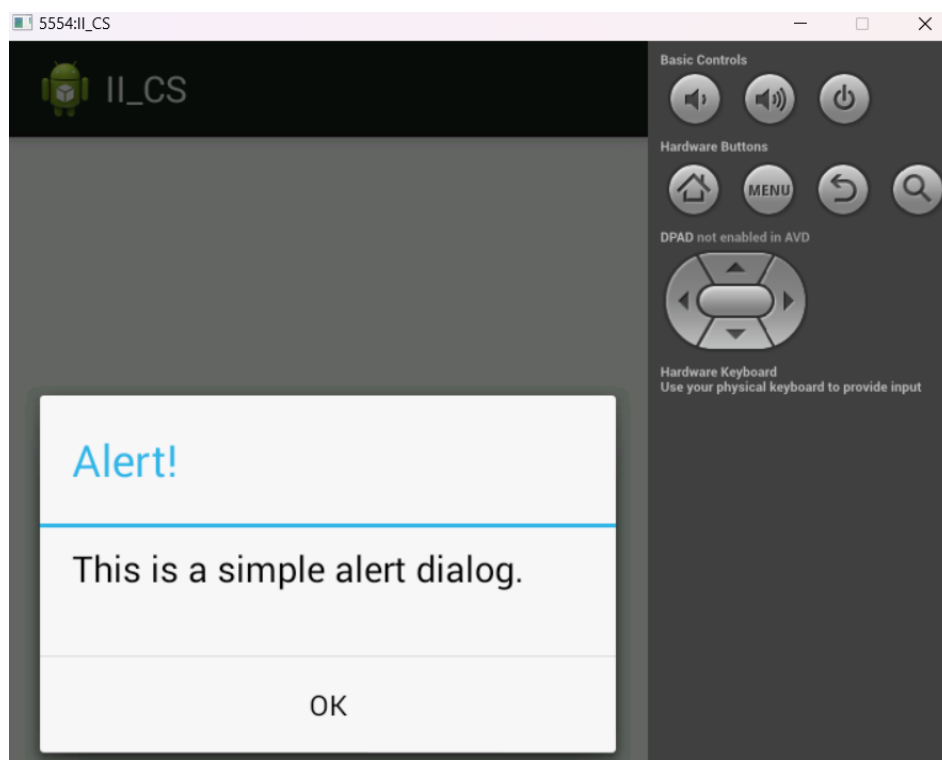
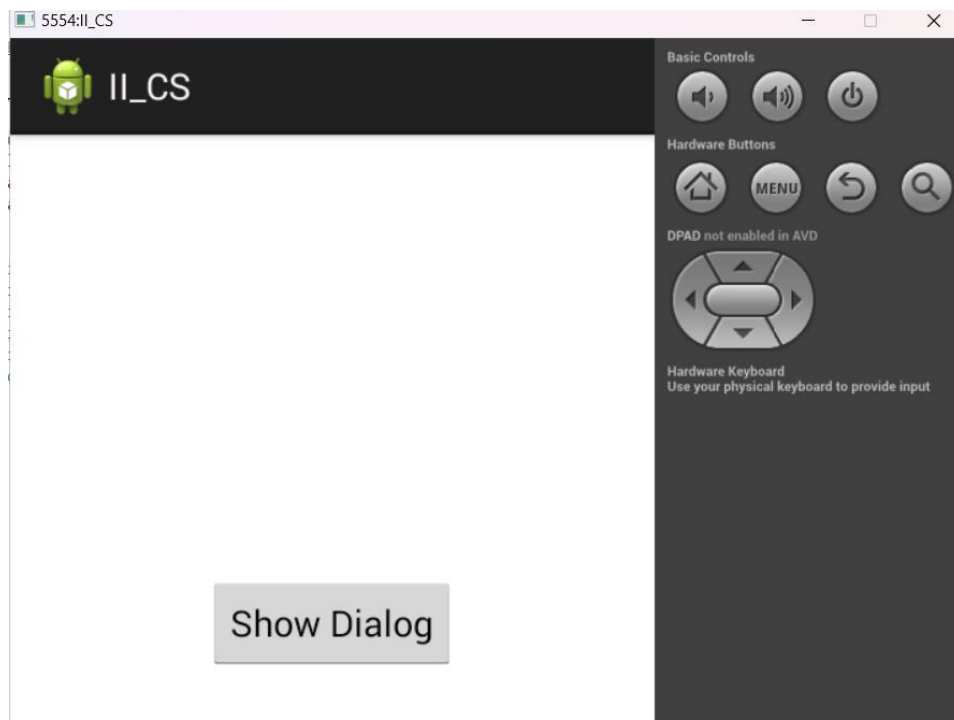
```
    builder.setPositiveButton("OK", new DialogInterface.OnClickListener() {
```

```
        @Override
```



```
public void onClick(DialogInterface dialog, int which) {  
  
    // Action when OK is clicked  
  
    dialog.dismiss();  
  
}  
  
});  
  
builder.show();  
  
}  
  
}
```

Output:







EX. No. 12

Status Bar Notification

res/layout/activity_main.xml

```
<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">

    <Button
        android:id="@+id/btnShowNotification"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Show Notification"
        android:layout_centerInParent="true" />
</RelativeLayout>
```

MainActivity.java

```
package com.example.prgm_12;

import android.app.Activity;
import android.app.Notification;
import android.app.NotificationManager;
import android.app.PendingIntent;
import android.content.Context;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends Activity {
```

```
private static final int NOTIFICATION_ID = 1;
```

```
@Override
```

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

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

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

```
    Button btnShowNotification = (Button) findViewById(R.id.btnShowNotification);
```

```
    btnShowNotification.setOnClickListener(new View.OnClickListener() {
```

```
        @Override
```

```
        public void onClick(View v) {
```

```
            showNotification();
```

```
        }
```

```
    });
```

```
}
```

```
private void showNotification() {
```

```
    // Create an intent to open MainActivity when notification is clicked
```

```
    Intent intent = new Intent(this, MainActivity.class);
```

```
    PendingIntent pendingIntent = PendingIntent.getActivity(
```

```
        this,
```

```
        0,
```

```
        intent,
```

```
        PendingIntent.FLAG_UPDATE_CURRENT
```

```
    );
```

```
    // Build the notification
```

```
    Notification.Builder builder = new Notification.Builder(this)
```

```
.setSmallIcon(R.drawable.ic_launcher) // Use an icon from res/drawable

.setContentTitle("Simple Notification")

.setContentText("This is a basic status bar notification.")

.setAutoCancel(true) // Remove notification when tapped

.setContentIntent(pendingIntent);


// Get NotificationManager and notify
NotificationManager notificationManager = (NotificationManager)
getSystemService(Context.NOTIFICATION_SERVICE);

notificationManager.notify(NOTIFICATION_ID, builder.build());
}
}
```

Output:

