

## **20MCA243 – MOBILE APPLICATION DEVELOPMENT**

### **LABORATORY RECORD**

*Submitted in partial fulfilment of the requirements for the award of  
Masters of Computer Applications*

*At*

## **COLLEGE OF ENGINEERING POONJAR**

**Managed by I.H.R.D., A Govt. of Kerala undertaking**

*(Affiliated to APJ Abdul Kalam Technological University)*



**SUBMITTED BY**

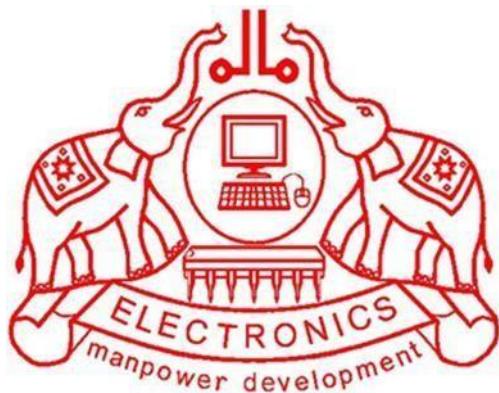
**SAMBHU LAL (PJR24MCA-2015)**

**Department of Computer Science  
COLLEGE OF ENGINEERING POONJAR**

# **COLLEGE OF ENGINEERING POONJAR**

**Managed by I.H.R.D., A Govt. of Kerala undertaking**

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## **CERTIFICATE**

Certified that this is a Bonafide record of practical work done in Mobile Application Development Lab (20MCA243) Laboratory by **SAMBHU LAL** Reg No. **PJR24MCA-2015** of College of Engineering, Poonjar during the academic year 2024- 2026.

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**Submitted to the University Examination held on:**

**INTERNAL EXAMINER**

**EXTERNAL EXAMINER**

## INDEX

# **Experiment No. 1**

**Aim:** To implement a program to Toast a message hello world on a button click.

## **Procedure:**

### **Activity\_main.xml**

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

        android:layout_width="match_parent"
        android:layout_height="match_parent"
        tools:context=".MainActivity">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:text="Activity Life Cycle"
        android:textAlignment="center"
        android:layout_marginTop="50dp"
        android:textSize="30dp"/>

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

## MainActivity.java

```
package com.example.toastydemo;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

import android.widget.Toast;

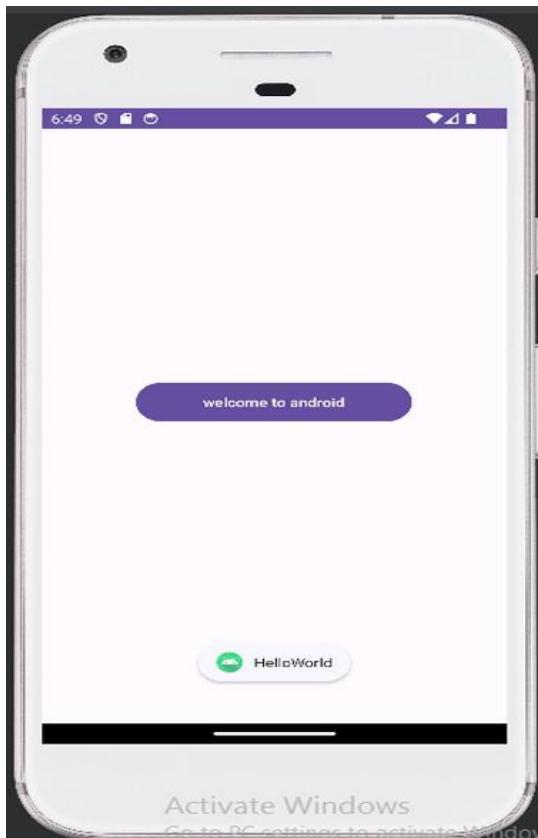
public class MainActivity extends AppCompatActivity {

    Button btnToast;

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

        btnToast.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view)
                Toast.makeText(MainActivity.this,"HelloWorld",Toast.LENGTH_LONG).show();
        });
    }
}
```

## Output:



## Experiment No. 2

**Aim:** To design login page in android studio

### **Procedure:**

#### **Activity\_main.xml**

```
<?xmlversion="1.0"encoding="utf-8"?>
<LinearLayoutxmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="20dp"
    android:background="@color/white"
    tools:context=".MainActivity">

<EditText
    android:id="@+id/etEmail"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_margin="20dp"
    android:ems="110"
    android:hint="enteremail"
    android:inputType="text"/>

<EditText
    android:id="@+id/etpassword"
    android:layout_margin="20dp"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
```

```
    android:ems="10"
    android:hint="Enterpassword"
    android:inputType="text"/>

<Button
    android:id="@+id/btLogin"
    android:layout_margin="20dp"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Login"/>

</LinearLayout>
```

### MainActivity.java

```
package com.example.loginpage;
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import android.view.View;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    EditText etEmail, etPassword;
    Button btLogin;

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

```
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);

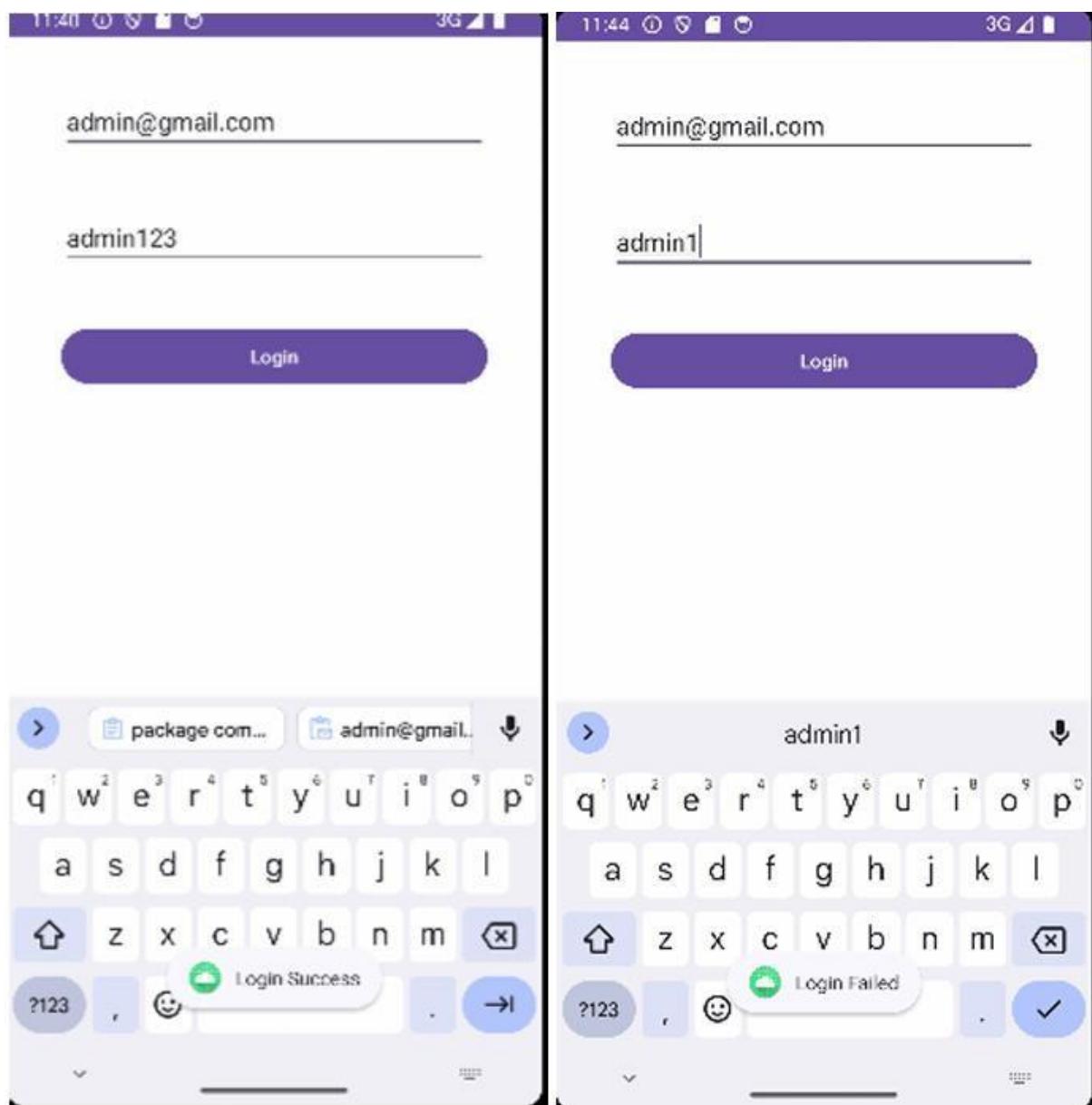
// Initialize UI components
btLogin = findViewById(R.id.btLogin);
etEmail = findViewById(R.id.etEmail);
etPassword = findViewById(R.id.etPassword);

// Set up login button click listener
btLogin.setOnClickListener(new View.OnClickListener() {

    @Override
    public void onClick(View v) {
        String email = etEmail.getText().toString().trim();
        String password = etPassword.getText().toString().trim();

        if (email.equals("admin@gmail.com") && password.equals("admin123")) {
            Toast.makeText(MainActivity.this, "Login Success",
Toast.LENGTH_SHORT).show();
        } else {
            Toast.makeText(MainActivity.this, "Login Failed",
Toast.LENGTH_SHORT).show();
        }
    }
});
```

## Output:



## Experiment No. 3

**Aim:** Write a program that demonstrates Activity Lifecycle.

### **Procedure:**

#### **Activity\_main.xml**

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

    <TextView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:text="Activity Life Cycle"
        android:textAlignment="center"
        android:layout_marginTop="50dp"
        android:textSize="30dp"/>

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

#### **MainActivity.java**

```
package com.example.cycle;
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);  
        showToast("Activity Created");  
    }  
    protected void onStart() {  
        super.onStart();  
        showToast("Activity Started");  
    }  
    protected void onResume() {  
        super.onResume();  
        showToast("Activity Resumed");  
    }  
    protected void onPause() {  
        super.onPause();  
        showToast("Activity Paused");  
    }  
    protected void onStop() {  
        super.onStop();  
        showToast("Activity Stopped");  
    }  
    protected void onRestart() {  
        super.onRestart();  
        showToast("Activity Restarted");  
    }  
  
    @Override
```

```
protected void onDestroy() {  
    super.onDestroy();  
    showToast("Activity Destroyed");  
}  
  
// Helper method to display toast messages  
private void showToast(String message) {  
    Toast.makeText(this, message, Toast.LENGTH_LONG).show();  
}  
}
```

## Output:



## Experiment No. 4

**Aim:** To create a calculator application in android studio.

### **Procedure:**

#### **Activity\_main.xml**

```
<?xmlversion="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"
    android:padding="16dp"
    tools:context=".MainActivity">

<EditText
    android:id="@+id/num1EditText"
    android:layout_width="0dp"
    android:layout_height="48dp"
    android:layout_marginTop="44dp"
    android:hint="Enter number1"
    android:inputType="numberDecimal"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"/>

<EditText
    android:id="@+id/num2EditText"
    android:layout_width="0dp"
    android:layout_height="48dp"
    android:layout_marginTop="12dp"
```

```
    android:hint="Enter number2"  
    android:inputType="numberDecimal"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintHorizontal_bias="0.47"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toBottomOf="@+id/num1EditText"/>
```

<Button

```
    android:id="@+id/addButton"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginTop="20dp"  
    android:text="+"  
    android:textSize="16sp"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toBottomOf="@+id/num2EditText"/>
```

<Button

```
    android:id="@+id/subtractButton"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginTop="20dp"  
    android:text="-"  
    android:textSize="16sp"  
    app:layout_constraintEnd_toStartOf="@+id/multiplyButton"  
    app:layout_constraintStart_toEndOf="@+id/addButton"  
    app:layout_constraintTop_toBottomOf="@+id/num2EditText"/>
```

<Button

```
    android:id="@+id/multiplyButton"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginTop="20dp"
```

```
    android:text="x"
    android:textSize="16sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/num2EditText"/>

<Button
    android:id="@+id/divideButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="20dp"
    android:text="/"
    android:textSize="16sp"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/addButton"/>

<Button
    android:id="@+id/sqrtButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="20dp"
    android:layout_marginEnd="140dp"
    android:text="Sqrt"
    android:textSize="16sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/subtractButton"/>

<TextView
    android:id="@+id/resultTextView"
    android:layout_width="84dp"
    android:layout_height="41dp"
    android:layout_marginStart="4dp"
    android:layout_marginTop="40dp"
    android:text="Result:"
```

```
        android:textSize="18sp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/divideButton"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

## MainActivity.java

```
package com.example.calculator;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import java.text.DecimalFormat;

public class MainActivity extends AppCompatActivity {

    // Declare variables to hold references to UI elements
    private EditText num1EditText, num2EditText;
    private TextView resultTextView;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        num1EditText = findViewById(R.id.num1EditText);
        num2EditText = findViewById(R.id.num2EditText);
```

```
resultTextView = findViewById(R.id.resultTextView);

Button addButton = findViewById(R.id.addButton);
addButton.setOnClickListener(new View.OnClickListener() {

    @Override
    public void onClick(View v) {
        performCalculation('+');
    }
});

Button subtractButton = findViewById(R.id.subtractButton);
subtractButton.setOnClickListener(new View.OnClickListener() {

    @Override
    public void onClick(View v) {
        performCalculation('-');
    }
});

Button multiplyButton = findViewById(R.id.multiplyButton);
multiplyButton.setOnClickListener(new View.OnClickListener() {

    @Override
    public void onClick(View v) {
        performCalculation('*');
    }
});

Button divideButton = findViewById(R.id.divideButton);
divideButton.setOnClickListener(new View.OnClickListener() {

    @Override
    public void onClick(View v) {
        performCalculation('/');
    }
});
```

```

Button sqrtButton = findViewById(R.id.sqrtButton);
sqrtButton.setOnClickListener(new View.OnClickListener() {

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

}

private void performCalculation(char operator) {
    // Get the values entered in the input fields
    String num1Str = num1EditText.getText().toString();
    String num2Str = num2EditText.getText().toString();

    // Check if either input field is empty
    if (num1Str.isEmpty() || num2Str.isEmpty()) {
        Toast.makeText(this, "Please enter both numbers", Toast.LENGTH_SHORT).show();
        return; // Exit the method to prevent calculations with empty inputs
    }

    // Convert the input values to numeric format
    double num1 = Double.parseDouble(num1Str);
    double num2 = Double.parseDouble(num2Str);
    double result = 0;

    // Perform the selected calculation based on the operator
    switch (operator) {
        case '+':
            result = num1 + num2;
            break;
        case '-':
            result = num1 - num2;
            break;
        case '*':
            result = num1 * num2;
            break;
        case '/':
            result = num1 / num2;
            break;
    }
}

```

```

        result = num1 - num2;
        break;

    case '*':
        result = num1 * num2;
        break;

    case '/':
        if (num2 != 0) {
            result = num1 / num2;
        } else {
            Toast.makeText(this, "Cannot divide by zero", Toast.LENGTH_SHORT).show();
            return; // Exit the method if division by zero is attempted
        }
        break;
    }

    // Format and display the calculation result
    DecimalFormat df = new DecimalFormat("#.##");
    resultTextView.setText("Result: " + df.format(result));
}

private void calculateSquareRoot() {
    String num1Str = num1EditText.getText().toString();

    // Check if the input field is empty
    if (num1Str.isEmpty()) {
        Toast.makeText(this, "Please enter a number", Toast.LENGTH_SHORT).show();
        return; // Exit the method to prevent calculations with empty inputs
    }

    double num = Double.parseDouble(num1Str);
}

```

```
        double sqrtResult = Math.sqrt(num);

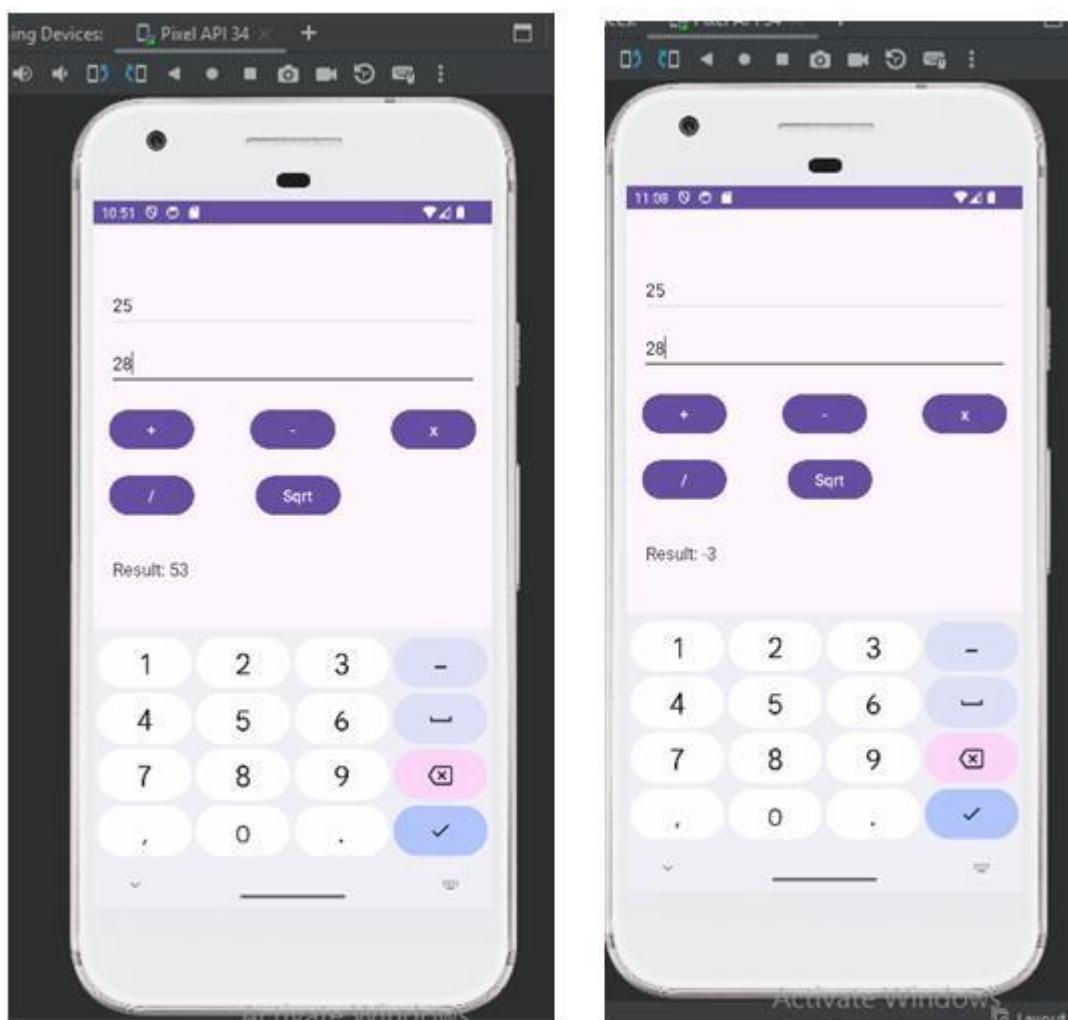
        // Format and display the square root result
        DecimalFormat df = new DecimalFormat("#.###");

        resultTextView.setText("Square Root: " + df.format(sqrtResult));

    }

}
```

### Output:



## **Experiment No. 5**

**Aim:** To create an android application to understand passing data between activities using intent.

### **Procedure:**

#### **Activity\_main.xml**

```
<?xmlversion="1.0"encoding="utf-8"?>
<RelativeLayoutxmlns: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:padding="20dp"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/nameET"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Name"/>

    <EditText
        android:id="@+id/numberET"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/nameET"
        android:layout_marginTop="10dp"
        android:hint="Number"
        android:inputType="number"/>
```

```
<Button  
    android:id="@+id	btn"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_below="@+id/numberET"  
    android:layout_marginTop="30dp"  
    android:text="SendData"/>  
  
<TextView  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_centerInParent="true"  
    android:text="FirstActivity"/>  
  
</RelativeLayout>
```

## MainActivity.java

```
package com.example.firstactivity;  
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;  
  
public class MainActivity extends AppCompatActivity {  
  
    EditText name, number;  
    Button btn;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);
```

```

setContentView(R.layout.activity_main);
name = findViewById(R.id.nameET);
number = findViewById(R.id.numberET);
btn = findViewById(R.id.btn);

// Pass Data on Button Click
btn.setOnClickListener(new View.OnClickListener() {

    @Override
    public void onClick(View view) {
        // Get data from input fields
        String getName = name.getText().toString();
        String getNumber = number.getText().toString();

        // Pass data to 2nd activity
        Intent intent = new Intent(MainActivity.this, SecondActivity.class);
        intent.putExtra("name", getName);
        intent.putExtra("number", getNumber);
        startActivity(intent);
    }
});

}
}

```

### **Activity\_main2.xml**

```

<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="20dp"

```

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

<TextView
    android:id="@+id/set_name"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Name"
    android:textSize="24sp"/>

<TextView
    android:id="@+id/set_number"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/set_name"
    android:layout_marginTop="10dp"
    android:text="123"
    android:textSize="24sp"/>

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerInParent="true"
    android:text="Secondactivity"
    android:textSize="24sp"/>

</RelativeLayout>
```

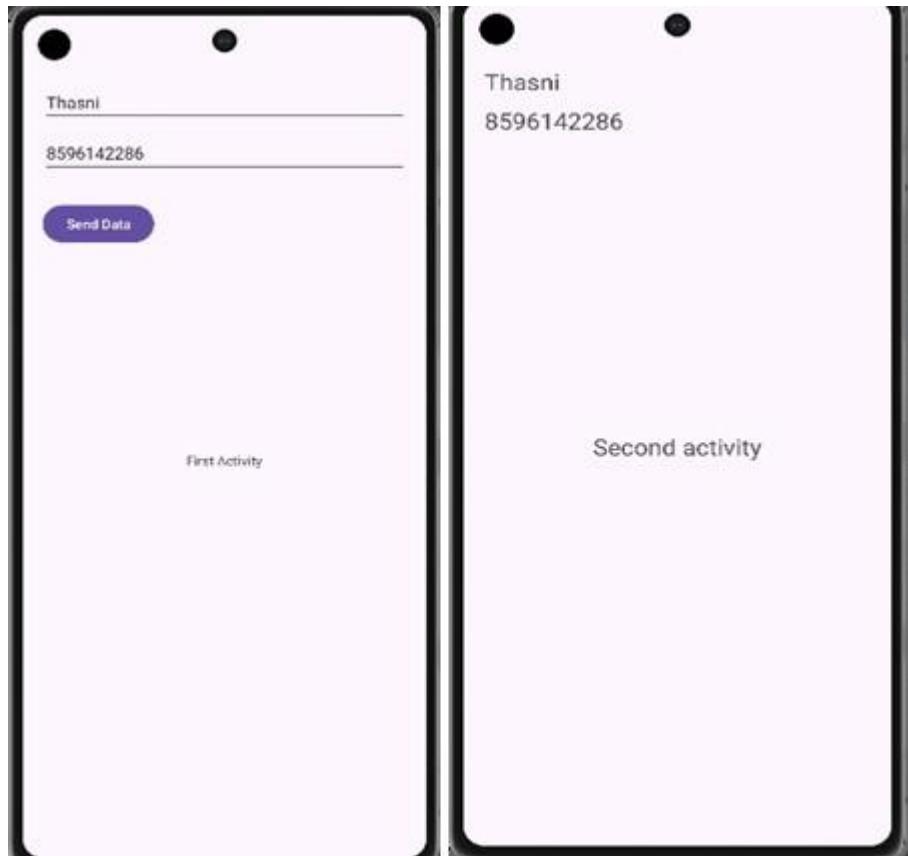
## MainActivity2.java

```
package com.example.firstactivity;

import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;
```

```
public class SecondActivity extends AppCompatActivity {  
    TextView name, number;  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_second);  
        // Hooks  
        name = findViewById(R.id.set_name);  
        number = findViewById(R.id.set_number);  
        // Get text from Intent  
        Intent intent = getIntent();  
        String getName = intent.getStringExtra("name");  
        String getNumber = intent.getStringExtra("number");  
        // Set Text  
        name.setText(getName);  
        number.setText(getNumber);  
    }  
}
```

## Output:



## Experiment No. 6

**Aim:** Design a registration activity and store registration details in local memory of phone using Intents and SharedPreferences.

### **Procedure:**

#### **Activity\_main.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp"
    android:gravity="center">

    <EditText
        android:id="@+id/usernameEditText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Username"
        android:inputType="text" />

    <EditText
        android:id="@+id/emailEditText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Email"
        android:inputType="textEmailAddress" />

    <EditText
```

```
    android:id="@+id/passwordEditText"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Password"
    android:inputType="textPassword" />

<Button
    android:id="@+id/registerButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:text="Register" />

</LinearLayout>
```

### MainActivity.java

```
package com.example.registration;

import android.content.Intent;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    private EditText usernameEditText, emailEditText, passwordEditText;
    private Button registerButton;
```

```

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

    // Initialize UI elements
    usernameEditText = findViewById(R.id.usernameEditText);
    emailEditText = findViewById(R.id.emailEditText);
    passwordEditText = findViewById(R.id.passwordEditText);
    registerButton = findViewById(R.id.registerButton);

    // Set click listener for the register button
    registerButton.setOnClickListener(new View.OnClickListener() {

        @Override
        public void onClick(View v) {
            // Retrieve user input
            String username = usernameEditText.getText().toString();
            String email = emailEditText.getText().toString();
            String password = passwordEditText.getText().toString();

            // Store registration details in SharedPreferences
            SharedPreferences preferences = getSharedPreferences("MyPrefs",
            MODE_PRIVATE);
            SharedPreferences.Editor editor = preferences.edit();
            editor.putString("username", username);
            editor.putString("email", email);
            editor.putString("password", password);
            editor.apply();

            Toast.makeText(MainActivity.this, "Registration successful",
            Toast.LENGTH_SHORT).show();
        }
    });
}

```

```
// Start another activity
Intent intent = new Intent(MainActivity.this, MainActivity.class);
startActivity(intent);

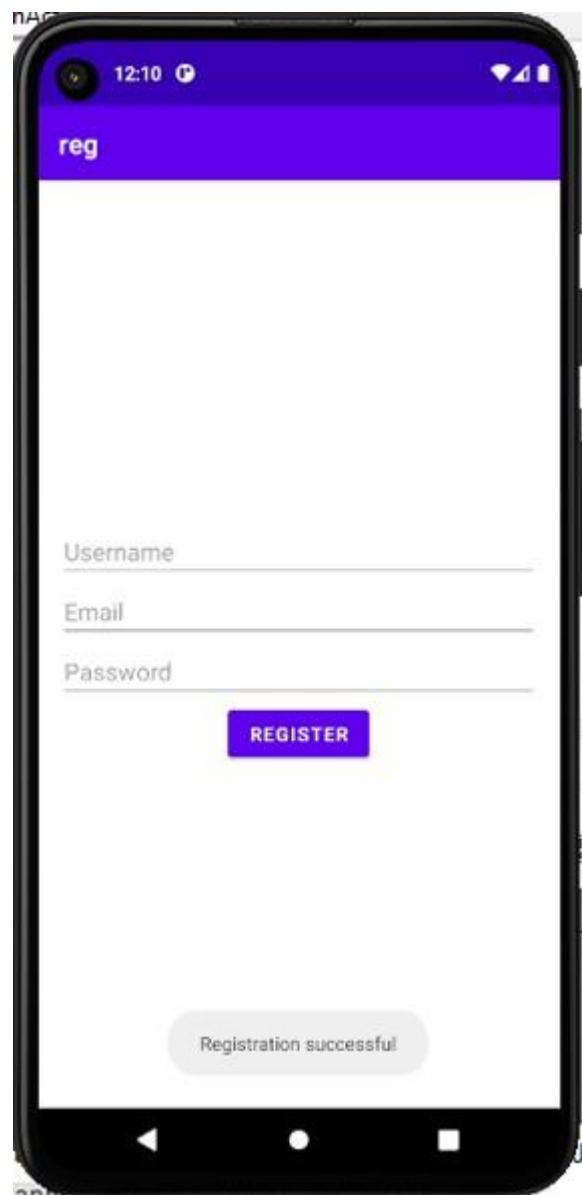
}

});

}

}
```

## Output:



## **Experiment No. 7**

**Aim:** Create a Facebook page using RelativeLayout; set properties using .xml file

### **Procedure:**

#### **Activity\_main.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:paddingLeft="16dp"
    android:paddingRight="16dp">

    <ScrollView
        android:layout_width="match_parent"
        android:layout_height="match_parent">

        <LinearLayout
            android:layout_width="fill_parent"
            android:layout_height="fill_parent"
            android:orientation="vertical">

            <ImageView
                android:id="@+id/facebookView"
                android:layout_width="200dp"
                android:layout_height="80dp" />
        
```

```
    android:layout_gravity="center"
    android:src="@drawable/facebook" />

<ImageView
    android:id="@+id/imageView4"
    android:layout_width="match_parent"
    android:layout_height="281dp"
    android:src="@drawable/post" />

<GridLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_marginTop="40dp"
    android:columnCount="4"
    android:rowCount="4">

    <!-- Like ImageView -->
    <ImageView
        android:id="@+id/likeImageView"
        android:layout_width="110dp"
        android:layout_height="83dp"
        android:layout_gravity="center"
        android:clickable="true"
        android:onClick="onLikeClick"
        android:src="@drawable/like" />

    <!-- Comment ImageView -->
    <ImageView
        android:id="@+id/commentImageView"
```

```
    android:layout_width="111dp"
    android:layout_height="66dp"
    android:layout_row="0"
    android:layout_column="1"
    android:layout_gravity="center"
    android:clickable="true"
    android:onClick="onCommentClick"
    android:src="@drawable/comment" />

<!-- Share ImageView -->
<ImageView
    android:id="@+id/shareImageView"
    android:layout_width="93dp"
    android:layout_height="86dp"
    android:layout_row="0"
    android:layout_column="3"
    android:layout_gravity="center"
    android:clickable="true"
    android:onClick="onShareClick"
    android:src="@drawable/share" />

</GridLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="vertical">

    <ImageView
        android:id="@+id/imageView7"
        android:layout_width="match_parent"
```

```
    android:layout_height="281dp"
    android:src="@drawable/dog" />

<GridLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_marginTop="40dp"
    android:columnCount="4"
    android:rowCount="4">

    <!-- Like ImageView -->
    <ImageView
        android:id="@+id/likeImageView2"
        android:layout_width="110dp"
        android:layout_height="83dp"
        android:layout_gravity="center"
        android:clickable="true"
        android:onClick="onLikeClick"
        android:src="@drawable/like" />

    <!-- Comment ImageView -->
    <ImageView
        android:id="@+id/commentImageView2"
        android:layout_width="111dp"
        android:layout_height="66dp"
        android:layout_row="0"
        android:layout_column="1"
        android:layout_gravity="center"
        android:clickable="true"
```

```
        android:onClick="onCommentClick"
        android:src="@drawable/comment" />

<!-- Share ImageView -->
<ImageView
    android:id="@+id/shareImageView2"
    android:layout_width="93dp"
    android:layout_height="86dp"
    android:layout_row="0"
    android:layout_column="3"
    android:layout_gravity="center"
    android:clickable="true"
    android:onClick="onShareClick"
    android:src="@drawable/share" />

</GridLayout>
</LinearLayout>
</LinearLayout>
</ScrollView>
</RelativeLayout>
```

## MainActivity.java

```
package com.example.facebook;

import androidx.appcompat.app.AppCompatActivity;
import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.widget.ImageView;
```

```
import android.widget.Toast;

public class MainActivity extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Find the ImageView elements by their IDs
        ImageView facebookView = findViewById(R.id.facebookView);
        ImageView likeImageView = findViewById(R.id.likeImageView);
        ImageView commentImageView = findViewById(R.id.commentImageView);
        ImageView shareImageView = findViewById(R.id.shareImageView);

        // Set click listeners for the ImageViews
        likeImageView.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                showToast("You clicked the Like button");
            }
        });

        commentImageView.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                showToast("You clicked the Comment button");
            }
        });

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

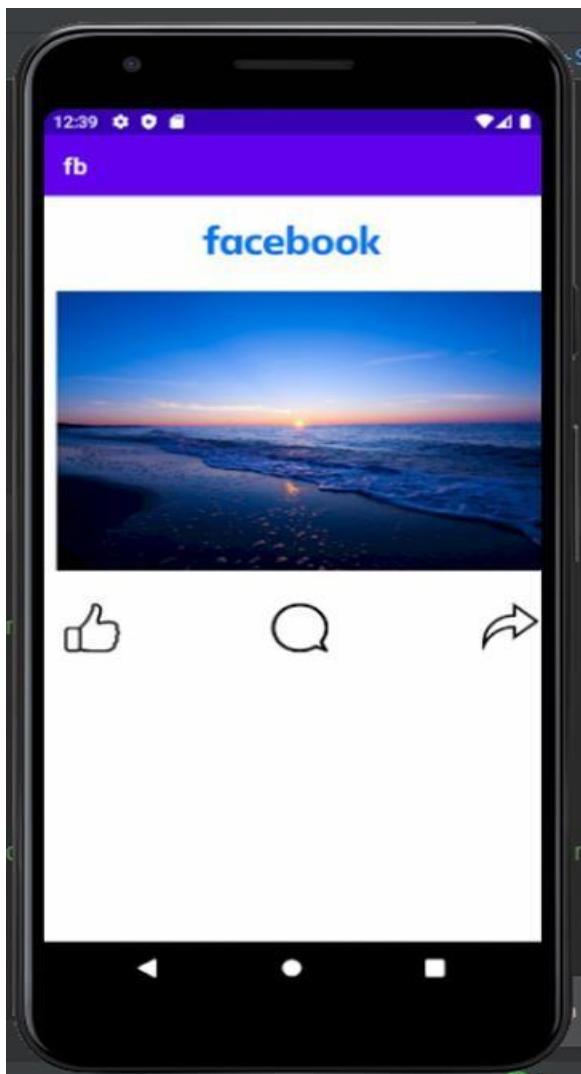
```
@Override
public void onClick(View v) {
    showToast("You clicked the Share button");
}

});

}

// Helper method to display a toast message
private void showToast(String message) {
    Toast.makeText(this, message, Toast.LENGTH_SHORT).show();
}
```

**Output:**



## Experiment No. 8

**Aim:** Develop an application that toggles image using FrameLayout

### **Procedure:**

#### **Activity\_main.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout 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:background="#BDBABA"
    tools:context=".MainActivity">

    <ImageView
        android:id="@+id/imageView1"
        android:layout_width="427dp"
        android:layout_height="wrap_content"
        android:layout_gravity="left|top"
        android:background="#CACAC8"
        app:srcCompat="@drawable/s1" />

    <ImageView
        android:id="@+id/imageView2"
        android:layout_width="396dp"
        android:layout_height="wrap_content"
        android:layout_gravity="left|top"
        android:visibility="gone"
        app:srcCompat="@drawable/f1" />

</FrameLayout>
```

## MainActivity.java

```
package com.example.frame_layout;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    ImageView i1, i2;

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

        // Initialize ImageView elements
        i1 = (ImageView) findViewById(R.id.imageView1);
        i2 = (ImageView) findViewById(R.id.imageView2);

        // Set click listeners
        i1.setOnClickListener(this);
        i2.setOnClickListener(this);
    }

    @Override
    public void onClick(View v) {
        if (v.getId() == R.id.imageView1) {
            i1.setVisibility(View.GONE);
            i2.setVisibility(View.VISIBLE);
        }
    }
}
```

```
    } else {  
        i2.setVisibility(View.GONE);  
        i1.setVisibility(View.VISIBLE);  
    }  
}  
}  
}
```

Output:



## **Experiment No. 9**

**Aim:** Develop an android mobile application to illustrate the usage of alert dialogue

### **Procedure:**

#### **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">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="180dp"
        android:gravity="center_horizontal"
        android:text="Press The Back Button of Your Phone."
        android:textSize="30dp"
        android:textStyle="bold" />

</RelativeLayout>
```

#### **MainActivity.java**

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

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

public class MainActivity extends AppCompatActivity {

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

    // Declare the onBackPressed method when the back button is pressed this method will call
    @Override
    public void onBackPressed() {
        // Create the object of AlertDialog Builder class
        AlertDialog.Builder builder = new AlertDialog.Builder(MainActivity.this);

        // Set the message show for the Alert time
        builder.setMessage("Do you want to exit ?");

        // Set Alert Title
        builder.setTitle("Alert !");

        // Set Cancelable false for when the user clicks on the outside the Dialog Box then it will
        // remain show
        builder.setCancelable(false);

        // Set the positive button with yes name Lambda OnClickListener method is use of
        // DialogInterface interface.
        builder.setPositiveButton("Yes", (DialogInterface.OnClickListener) (dialog, which) -> {
            // When the user click yes button then app will close
        });
    }
}
```

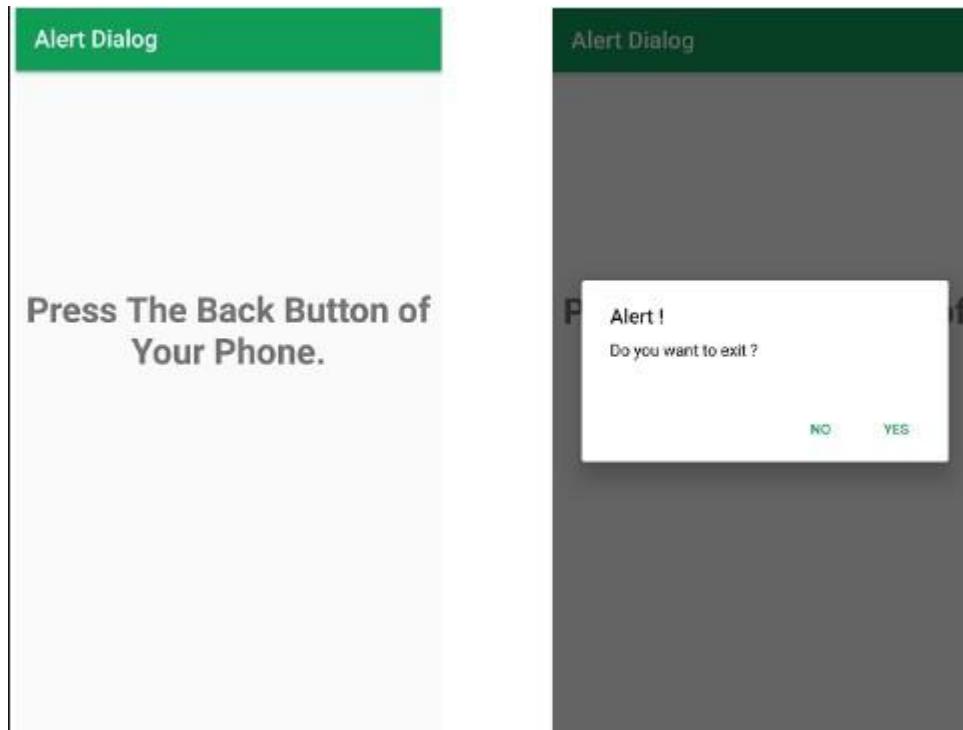
```
        finish();
    });

    // Set the Negative button with No name Lambda OnClickListener method is use of
    // DialogInterface interface.
    builder.setNegativeButton("No", (DialogInterface.OnClickListener) (dialog, which) -> {
        // If user click no then dialog box is canceled.
        dialog.cancel();
    });

    // Create the Alert dialog
    AlertDialog alertDialog = builder.create();
    // Show the Alert Dialog box
    alertDialog.show();
}

}
```

## **Output:**



## **Experiment No. 10**

**Aim:** Develop an application using array adapter with List view

### **Procedure:**

#### **Activity\_main.xml**

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

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

</RelativeLayout>
```

#### **MainActivity.java**

```
package com.example.days;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.ListView;
```

```
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity implements
AdapterView.OnItemClickListener {

ListView l;
String[] days = {"Sunday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday",
"Saturday"};

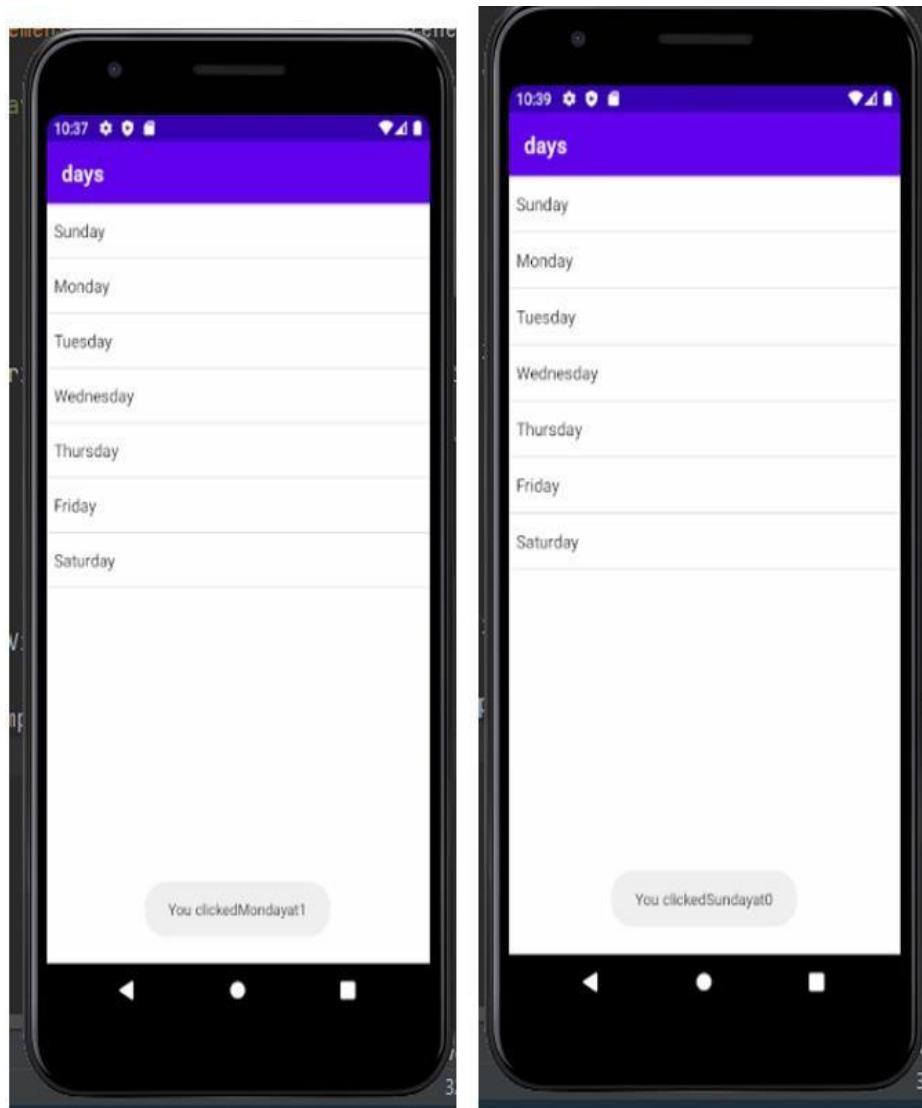
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    // Initialize ListView
    l = findViewById(R.id.MyLists);
    // Set up ArrayAdapter for ListView
    ArrayAdapter<String> adapter = new ArrayAdapter<String>(
        this,
        androidx.appcompat.R.layout.support_simple_spinner_dropdown_item,
        days
    );
    // Set the adapter to ListView
    l.setAdapter(adapter);

    // Set the onItemClickListener for ListView
    l.setOnItemClickListener(this);
}

@Override
public void onItemClick(AdapterView<?> adapterView, View view, int position, long id) {
    // Get the TextView clicked and display a Toast
}
```

```
TextView temp = (TextView) view;  
Toast.makeText(this, "You Clicked " + temp.getText() + " at " + position,  
Toast.LENGTH_SHORT).show();  
}  
}
```

Output:



## **Experiment No. 11**

**Aim:** Create database using SQLite and perform INSERT and SELECT.

### **Procedure:**

#### **Activity\_main.xml**

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

<android.support.constraint.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">

    <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/editTextName"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="Name" />
    
```

```
<EditText  
    android:id="@+id/editTextAge"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:hint="Age"  
    android:inputType="number" />
```

```
<EditText  
    android:id="@+id/editTextMark"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:hint="Mark"  
    android:inputType="number" />
```

```
<Button  
    android:id="@+id/buttonInsert"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:text="InsertData" />
```

```
<Button  
    android:id="@+id/buttonSelect"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:text="selectData" />
```

```
<TextView  
    android:id="@+id/textViewData"  
    android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"
    android:layout_marginTop="16dp"
    android:text="UserData:"
    android:textStyle="bold" />

</LinearLayout>

</android.support.constraint.ConstraintLayout>
```

### MainActivity.java

```
package com.example.database;

import android.support.v7.app.AppCompatActivity;
import android.database.Cursor;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    private DatabaseHelper db; // database name
    private EditText editTextName, editTextAge, editTextMark;
    private TextView textViewData;

    @Override
```

```

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

    db = new DatabaseHelper(this);

    editTextName = findViewById(R.id.editTextName);
    editTextAge = findViewById(R.id.editTextAge);
    editTextMark = findViewById(R.id.editTextMark);
    textViewData = findViewById(R.id.textViewData);

    Button buttonInsert = findViewById(R.id.buttonInsert);
    Button buttonSelect = findViewById(R.id.buttonSelect);

    buttonInsert.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            String name = editTextName.getText().toString();
            int age = Integer.parseInt(editTextAge.getText().toString());
            int mark = Integer.parseInt(editTextMark.getText().toString());

            boolean insertData = db.insertUser(name, age, mark); // insert data
            if (insertData) {
                Toast.makeText(MainActivity.this, "User Inserted Successfully",
                        Toast.LENGTH_SHORT).show();
                displayData();
            } else {
                Toast.makeText(MainActivity.this, "Failed to Insert User",
                        Toast.LENGTH_SHORT).show();
            }
        }
    });
}

```

```

    });

buttonSelect.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        displayData();
    }
});

}

// Display data
private void displayData() {
    Cursor cursor = db.getAllUsers();
    if (cursor.getCount() == 0) {
        textViewData.setText("No users found");
    } else {
        StringBuilder data = new StringBuilder();
        while (cursor.moveToNext()) {
            int id = cursor.getInt(0);
            String name = cursor.getString(1);
            int age = cursor.getInt(2);
            int mark = cursor.getInt(3);
            data.append("ID: ").append(id)
                .append(", Name: ").append(name)
                .append(", Age: ").append(age)
                .append(", Mark: ").append(mark)
                .append("\n");
        }
        textViewData.setText(data.toString());
    }
}

```

```
    }  
}  
}
```

### **DatabaseHelper.java**

```
package com.example.database;  
  
import android.content.ContentValues;  
import android.content.Context;  
import android.database.Cursor;  
import android.database.sqlite.SQLiteDatabase;  
import android.database.sqlite.SQLiteOpenHelper;  
  
public class DatabaseHelper extends SQLiteOpenHelper {  
  
    private static final String DATABASE_NAME = "UserDatabase.db";  
    private static final String TABLE_NAME = "UserTable";  
    private static final String COL_1 = "ID";  
    private static final String COL_2 = "NAME";  
    private static final String COL_3 = "AGE";  
    private static final String COL_4 = "MARK";  
  
    public DatabaseHelper(Context context) {  
        super(context, DATABASE_NAME, null, 1);  
    }  
  
    @Override  
    public void onCreate(SQLiteDatabase db) {  
        db.execSQL("CREATE TABLE " + TABLE_NAME + " (" +  
                COL_1 + " INTEGER PRIMARY KEY AUTOINCREMENT, " +
```

```

        COL_2 + " TEXT, " +
        COL_3 + " INTEGER, " +
        COL_4 + " INTEGER)");
    }

@Override
public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
    db.execSQL("DROP TABLE IF EXISTS " + TABLE_NAME);
    onCreate(db);
}

public boolean insertUser(String name, int age, int mark) {
    SQLiteDatabase db = this.getWritableDatabase();
    ContentValues contentValues = new ContentValues();
    contentValues.put(COL_2, name);
    contentValues.put(COL_3, age);
    contentValues.put(COL_4, mark);

    long result = db.insert(TABLE_NAME, null, contentValues);
    return result != -1;
}

public Cursor getAllUsers() {
    SQLiteDatabase db = this.getWritableDatabase();
    return db.rawQuery("SELECT * FROM " + TABLE_NAME, null);
}
}

```

## Output:

