

Q1) Create a PHP program that calculates the sum of two numbers and displays the result.

```
<!DOCTYPE html>
<html>
<head>
    <title>Sum Calculator</title>
</head>
<body>
    <h1>Sum Calculator</h1>
    <form method="post" action="">
        Enter the first number: <input type="text" name="num1"><br><br>
        Enter the second number: <input type="text" name="num2"><br><br>
        <input type="submit" value="Calculate Sum">
    </form>

    <?php
    if ($_SERVER["REQUEST_METHOD"] == "POST") {
        // Get the values entered by the user
        $num1 = $_POST["num1"];
        $num2 = $_POST["num2"];

        // Check if the input is numeric
        if (is_numeric($num1) && is_numeric($num2)) {
            // Calculate the sum
            $sum = $num1 + $num2;

            // Display the result
            echo "<h2>Result:</h2>";
            echo "<p>$num1 + $num2 = $sum</p>";
        } else {
            // Display an error message if the input is not numeric
            echo "<h2>Error:</h2>";
            echo "<p>Both inputs must be numeric.</p>";
        }
    }
    ?>
</body>
</html>
```

Output:

The screenshot shows a web browser window titled "Sum Calculator". The address bar indicates the URL is "localhost/FardinKhanRollNo19/P1ByFardinKhan.php". The main content area displays a "Sum Calculator" form. It has two input fields: one for "Enter the first number" and another for "Enter the second number". Below these is a "Calculate Sum" button. At the bottom of the form, the result "1 + 2 = 3" is displayed.

Sum Calculator

Enter the first number:

Enter the second number:

Calculate Sum

1 + 2 = 3

Q2) Build a simple PHP calculator that can perform addition, subtraction, multiplication, and division operations based on user input.

```
<!DOCTYPE html>
<html>
<head>
    <title>Simple Calculator</title>
</head>
<body>
    <h1>Simple Calculator</h1>
    <form method="post" action="">
        Enter the first number: <input type="text" name="num1"><br><br>
        Enter the second number: <input type="text" name="num2"><br><br>
        Select an operation:
        <select name="operation">
            <option value="add">Addition</option>
            <option value="subtract">Subtraction</option>
            <option value="multiply">Multiplication</option>
            <option value="divide">Division</option>
        </select><br><br>
        <input type="submit" value="Calculate">
    </form>

    <?php
    if ($_SERVER["REQUEST_METHOD"] == "POST") {
        // Get the values entered by the user
        $num1 = $_POST["num1"];
        $num2 = $_POST["num2"];
        $operation = $_POST["operation"];

        // Check if the input is numeric
        if (is_numeric($num1) && is_numeric($num2)) {
            // Perform the selected operation
            switch ($operation) {
                case 'add':
                    $result = $num1 + $num2;
                    break;
                case 'subtract':
                    $result = $num1 - $num2;
                    break;
                case 'multiply':
                    $result = $num1 * $num2;
                    break;
                case 'divide':
                    if ($num2 != 0) {
                        $result = $num1 / $num2;
                    } else {

```

```

        echo "<h2>Error:</h2>";
        echo "<p>Division by zero is not allowed.</p>";
        exit;
    }
    break;
default:
    echo "<h2>Error:</h2>";
    echo "<p>Invalid operation selected.</p>";
    exit;
}

// Display the result
echo "<h2>Result:</h2>";
echo "<p>$num1 $operation $num2 = $result</p>";
} else {
    // Display an error message if the input is not numeric
    echo "<h2>Error:</h2>";
    echo "<p>Both inputs must be numeric.</p>";
}
}

?>
</body>
</html>

```

Output :

Simple Calculator

localhost/FardinKhanRollNo19/P2ByFardinKhan.php

Simple Calculator

Enter the first number: 5

Enter the second number: 5

Select an operation:

Calculate

Result:

5 multiply 5 = 25

Q3) Develop a PHP script that generates a random number between 1 and 100 and asks the user to guess it.

```
<!DOCTYPE html>
<html>
<head>
    <title>Guess the Number Game</title>
</head>
<body>
    <h1>Guess the Number Game</h1>
    <p>I'm thinking of a number between 1 and 100. Try to guess it!</p>

    <?php
        // Generate a random number between 1 and 100
        $randomNumber = rand(1, 100);

        // Initialize variables
        $guess = null;
        $attempts = 0;
        if ($_SERVER["REQUEST_METHOD"] == "POST") {
            // Get the user's guess from the form
            $guess = $_POST["guess"];
            $attempts = $_POST["attempts"] + 1;

            // Check if the guess is valid
            if (is_numeric($guess)) {
                // Check if the guess is correct
                if ($guess == $randomNumber) {
                    echo "<p>Congratulations! You guessed the correct number:
$randomNumber</p>";
                    echo "<p>It took you $attempts attempts to guess the number.</p>";
                    // Reset the game
                    $randomNumber = rand(1, 100);
                    $attempts = 0;
                } elseif ($guess < $randomNumber) {
                    echo "<p>Your guess is too low. Try again!</p>";
                } else {
                    echo "<p>Your guess is too high. Try again!</p>";
                }
            } else {
                echo "<p>Please enter a valid number.</p>";
            }
        }
    ?>
    <form method="post" action="">
        Enter your guess: <input type="text" name="guess">
        <input type="hidden" name="attempts" value="<?php echo $attempts; ?>">
        <input type="submit" value="Submit Guess">
    </form>
</body>
</html>
```

Output :

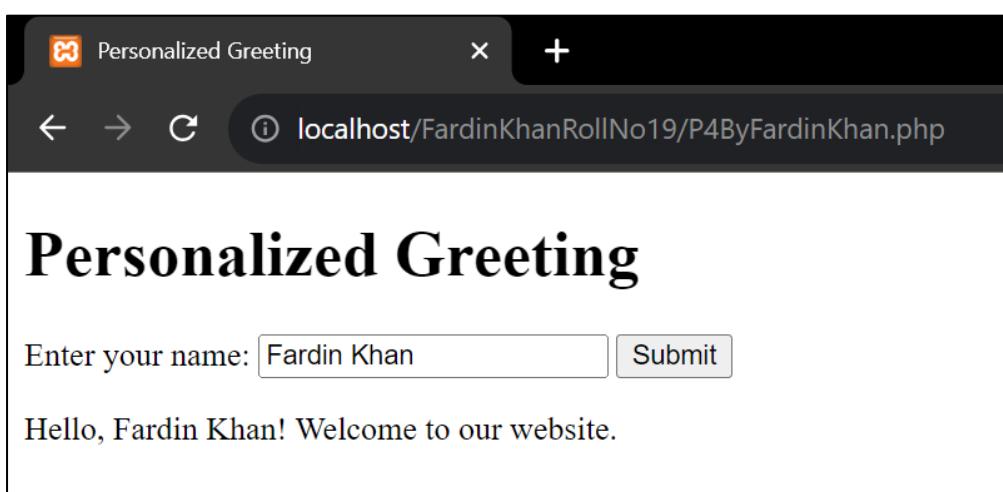


Q4) Write a PHP program that takes a user's name as input and displays a personalized greeting.

```
<!DOCTYPE html>
<html>
<head>
    <title>Personalized Greeting</title>
</head>
<body>
    <h1>Personalized Greeting</h1>
    <form method="post" action="">
        Enter your name: <input type="text" name="name">
        <input type="submit" value="Submit">
    </form>
    <?php
    if ($_SERVER["REQUEST_METHOD"] == "POST") {
        // Get the user's name from the form
        $name = $_POST["name"];

        // Check if a name was provided
        if (!empty($name)) {
            // Display a personalized greeting
            echo "<p>Hello, $name! Welcome to our website.</p>";
        } else {
            // Display an error message if no name was provided
            echo "<p>Please enter your name.</p>";
        }
    }
    ?>
</body>
</html>
```

Output :



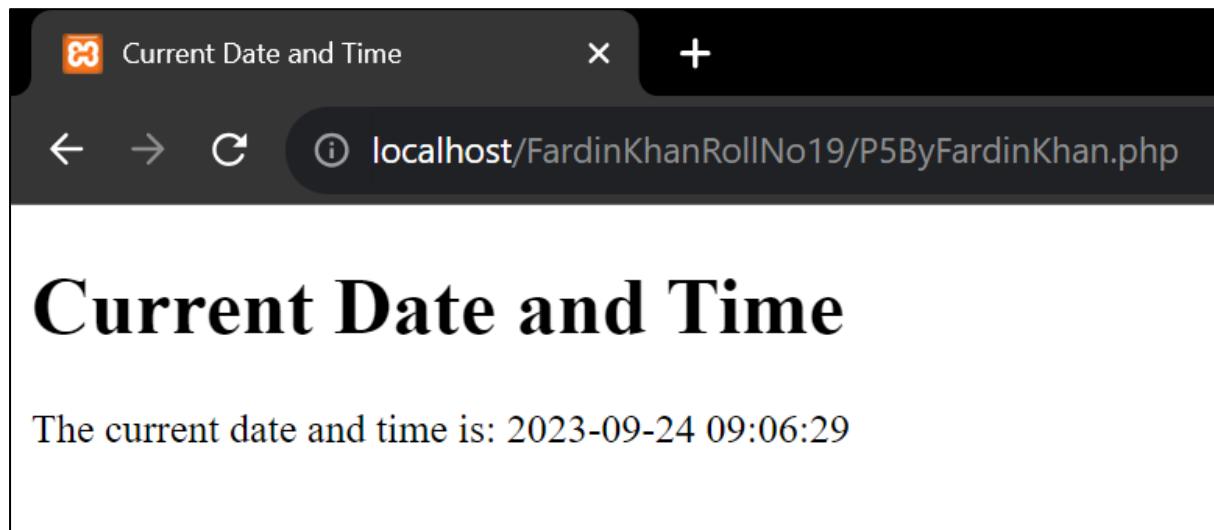
Q5) Create a PHP script that displays the current date and time on a web page.

```
<!DOCTYPE html>
<html>
<head>
    <title>Current Date and Time</title>
</head>
<body>
    <h1>Current Date and Time</h1>

    <?php
        // Get the current date and time
        $currentDateTime = date("Y-m-d H:i:s");

        // Display it on the web page
        echo "<p>The current date and time is: $currentDateTime</p>";
    ?>
</body>
</html>
```

Output :



Q6) : Build a basic PHP form that collects user input (name, email, and message) and displays it on submission.

```
<!DOCTYPE html>
<html>
<head>
    <title>Basic PHP Form</title>
</head>
<body>
    <h1>Contact Us</h1>
    <form method="post" action="">
        <label for="name">Name:</label>
        <input type="text" id="name" name="name"><br><br>

        <label for="email">Email:</label>
        <input type="email" id="email" name="email"><br><br>

        <label for="message">Message:</label><br>
        <textarea id="message" name="message" rows="4"
cols="50"></textarea><br><br>

        <input type="submit" value="Submit">
    </form>

    <?php
    if ($_SERVER["REQUEST_METHOD"] == "POST") {
        // Get the user input from the form
        $name = $_POST["name"];
        $email = $_POST["email"];
        $message = $_POST["message"];

        // Display the user input
        echo "<h2>Thank you for your submission!</h2>";
        echo "<p>Name: $name</p>";
        echo "<p>Email: $email</p>";
        echo "<p>Message:</p>";
        echo "<p>$message</p>";
    }
    ?>
</body>
</html>
```

Output :

Basic PHP Form

localhost/FardinKhanRollNo19/P6ByFardinKhan.php

Contact Us

Name:

Email:

Message:

My name is Fardin Khan
My Roll No is 19
This is my php practical

Basic PHP Form

localhost/FardinKhanRollNo19/P6ByFardinKhan.php

Contact Us

Name:

Email:

Message:

Thank you for your submission!

Name: Fardin Khan

Email: fardinkhan52003@gmail.com

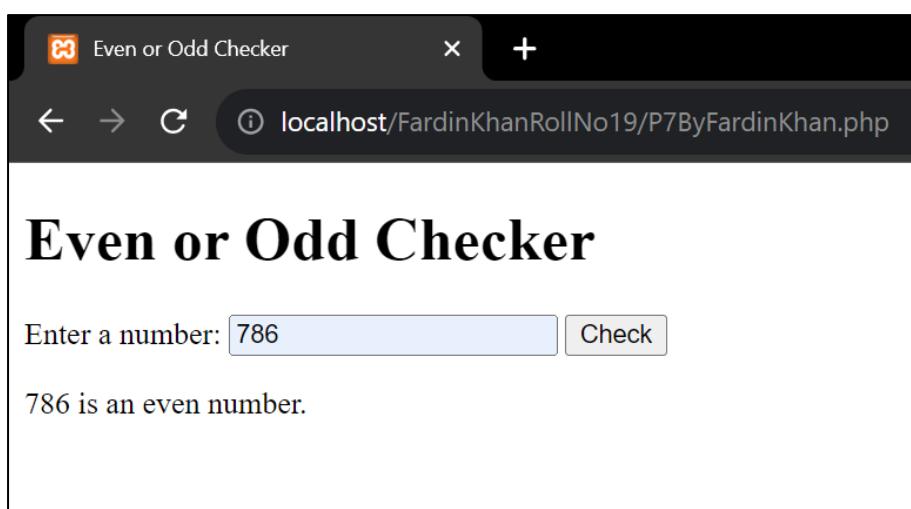
Message:

My name is Fardin Khan My Roll No is 19 This is my php practical

Q7) Write a PHP script to check if a given number is even or odd and display an appropriate message.

```
<!DOCTYPE html>
<html>
<head>
    <title>Even or Odd Checker</title>
</head>
<body>
    <h1>Even or Odd Checker</h1>
    <form method="post" action="">
        Enter a number: <input type="text" name="number">
        <input type="submit" value="Check">
    </form>
    <?php
        if ($_SERVER["REQUEST_METHOD"] == "POST") {
            // Get the number entered by the user
            $number = $_POST["number"];
            // Check if the input is numeric
            if (is_numeric($number)) {
                // Check if the number is even or odd
                if ($number % 2 == 0) {
                    echo "<p>$number is an even number.</p>";
                } else {
                    echo "<p>$number is an odd number.</p>";
                }
            } else {
                // Display an error message if the input is not numeric
                echo "<p>Please enter a valid number.</p>";
            }
        }
    ?>
</body>
</html>
```

Output :



Q8) Develop a PHP program that converts temperatures from Fahrenheit to Celsius and vice versa, based on user input.

```
<!DOCTYPE html>
<html>
<head>
    <title>Temperature Converter</title>
</head>
<body>
    <h1>Temperature Converter</h1>
    <form method="post" action="">
        Enter temperature: <input type="text" name="temperature"><br><br>
        Convert to:
        <input type="radio" name="unit" value="celsius"> Celsius
        <input type="radio" name="unit" value="fahrenheit"> Fahrenheit<br><br>
        <input type="submit" value="Convert">
    </form>

    <?php
    if ($_SERVER["REQUEST_METHOD"] == "POST") {
        // Get the temperature and unit selected by the user
        $temperature = $_POST["temperature"];
        $unit = $_POST["unit"];

        // Check if the input is numeric
        if (is_numeric($temperature)) {
            // Perform the conversion based on the selected unit
            if ($unit == "celsius") {
                $celsius = ($temperature - 32) * 5/9;
                echo "<p>$temperature&deg;F is equal to $celsius&deg;C.</p>";
            } elseif ($unit == "fahrenheit") {
                $fahrenheit = ($temperature * 9/5) + 32;
                echo "<p>$temperature&deg;C is equal to $fahrenheit&deg;F.</p>";
            } else {
                echo "<p>Please select a valid conversion unit (Celsius or
Fahrenheit).</p>";
            }
        } else {
            // Display an error message if the input is not numeric
            echo "<p>Please enter a valid temperature.</p>";
        }
    }
    ?>
</body>
</html>
```

Output :

The screenshot shows a web browser window titled "Temperature Converter". The URL in the address bar is "localhost/FardinKhanRollNo19/P8ByFardinKhan.php". The main content area displays a large title "Temperature Converter". Below it, there is a form with the text "Enter temperature: ". Underneath the input field, there is a label "Convert to: <input type='radio' checked="" value='Celsius' style='margin-right: 10px;"/> Celsius <input type='radio' value='Fahrenheit' style='margin-right: 10px;"/> Fahrenheit". Below this, there is a "Convert" button inside a button-style container. At the bottom, the result is displayed as "35°C is equal to 95°F."

Q9) Create a PHP script that calculates the factorial of a number entered by the user.

```
<!DOCTYPE html>
<html>
<head>
    <title>Factorial Calculator</title>
</head>
<body>
    <h1>Factorial Calculator</h1>
    <form method="post" action="">
        Enter a number: <input type="text" name="number"><br><br>
        <input type="submit" value="Calculate Factorial">
    </form>

    <?php
    function calculateFactorial($n) {
        if ($n == 0) {
            return 1;
        } else {
            return $n * calculateFactorial($n - 1);
        }
    }
    if ($_SERVER["REQUEST_METHOD"] == "POST") {
        // Get the number entered by the user
        $number = $_POST["number"];

        // Check if the input is numeric and non-negative
        if (is_numeric($number) && $number >= 0) {
            // Calculate the factorial using a recursive function
            $factorial = calculateFactorial($number);

            // Display the result
            echo "<h2>Factorial:</h2>";
            echo "<p>$number! = $factorial</p>";
        } else {
            // Display an error message if the input is not valid
            echo "<h2>Error:</h2>";
            echo "<p>Please enter a non-negative numeric value.</p>";
        }
    }
    ?>
</body>
</html>
```

Output :

The screenshot shows a web browser window titled "Factorial Calculator". The URL in the address bar is "localhost/FardinKhanRollNo19/P9ByFardinKhan.php". The main content area displays the title "Factorial Calculator" in large bold letters. Below it, there is an input field with the placeholder "Enter a number:" and a value of "5" inside. A button labeled "Calculate Factorial" is positioned below the input field. The result is displayed in a bold font as "Factorial:", followed by the equation "5! = 120".

Q10) Build a PHP script that generates a multiplication table for a given number.

```
<!DOCTYPE html>
<html>
<head>
    <title>Multiplication Table Generator</title>
</head>
<body>
    <h1>Multiplication Table Generator</h1>
    <form method="post" action="">
        Enter a number: <input type="text" name="number"><br><br>
        <input type="submit" value="Generate Table">
    </form>

    <?php
    if ($_SERVER["REQUEST_METHOD"] == "POST") {
        // Get the number entered by the user
        $number = $_POST["number"];

        // Check if the input is numeric
        if (is_numeric($number)) {
            echo "<h2>Multiplication Table for $number:</h2>";
            echo "<table border='1'>";
            for ($i = 1; $i <= 10; $i++) {
                $result = $number * $i;
                echo "<tr><td>$number x $i</td><td>=$result</td></tr>";
            }
            echo "</table>";
        } else {
            // Display an error message if the input is not numeric
            echo "<h2>Error:</h2>";
            echo "<p>Please enter a valid number.</p>";
        }
    }
    ?>
</body>
</html>
```

Output :

The screenshot shows a web browser window titled "Multiplication Table Generator". The URL in the address bar is "localhost/FardinKhanRollNo19/P10ByFardinKhan.php". The main content is a large title "Multiplication Table Generator" followed by a form where a user has entered the number "5". Below the form is a button labeled "Generate Table". The generated multiplication table for 5 is displayed as a grid of 10 rows and 2 columns, showing products from 5x1 to 5x10.

5 x 1	= 5
5 x 2	= 10
5 x 3	= 15
5 x 4	= 20
5 x 5	= 25
5 x 6	= 30
5 x 7	= 35
5 x 8	= 40
5 x 9	= 45
5 x 10	= 50

1) Develop simple app in android (HelloWorld).

MainActivity.java File :

```
package com.example.helloworldfk;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

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

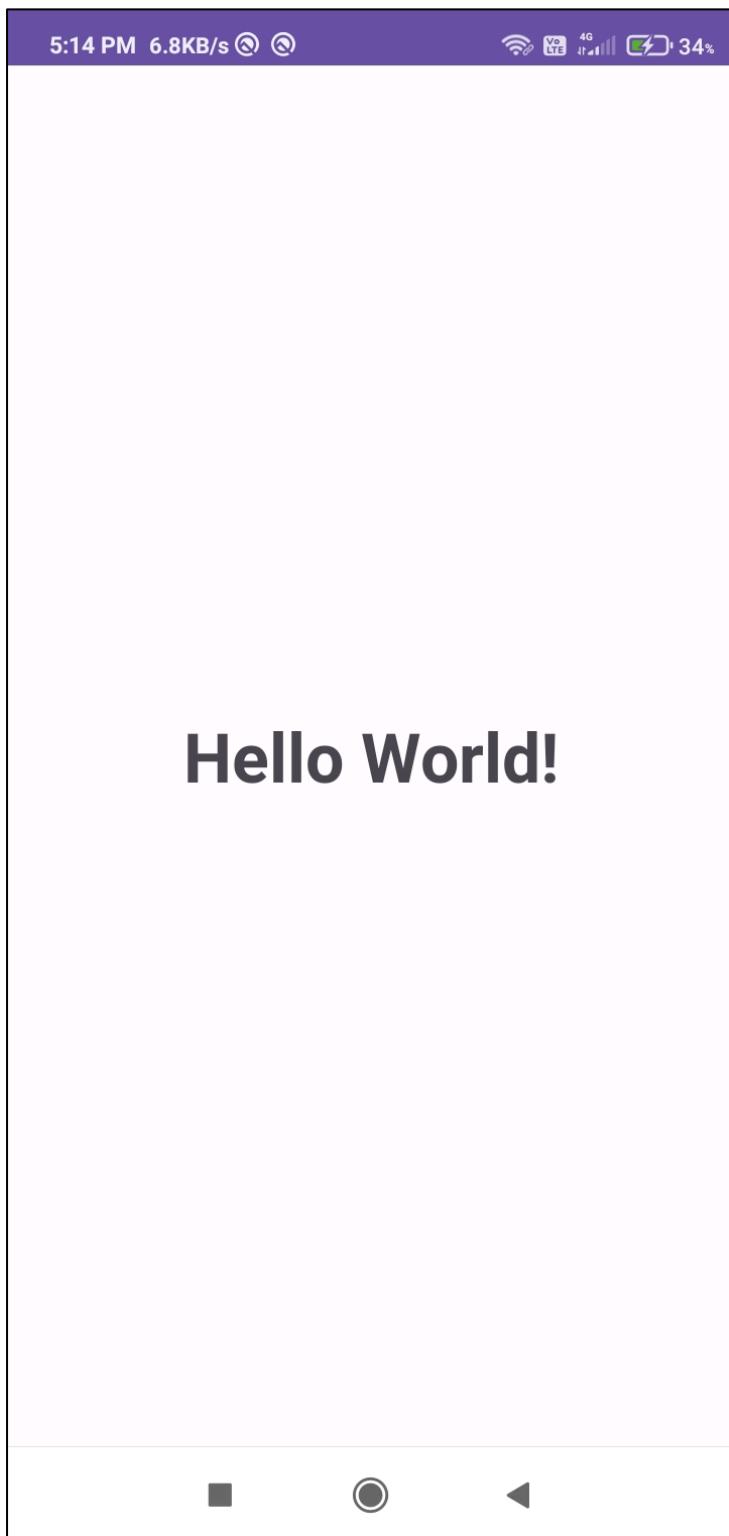
Activity_main.xml File :

```
<?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="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        android:textSize="34sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

Output :



2) Develop simple app in android using Service Component.

MainActivity.java File :

```
package com.example.servicesexample;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.View;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        getMenuInflater().inflate(R.menu.activiy_main, menu);
        return true;
    }
    // Method to start the service
    public void startService(View view) {
        startService(new Intent(getApplicationContext(), MyService.class));
    }
    // Method to stop the service
    public void stopService(View view) {
        stopService(new Intent(getApplicationContext(), MyService.class));
    }
}
```

Activity_main.xml File :

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical"
    android:paddingTop="200dp">
    <Button
        android:id="@+id	btnStartService"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:onClick="startService"
        android:text="@string/start_service" />
    <Button
        android:id="@+id	btnStopService"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:onClick="stopService"
        android:text="@string/stop_service" />
</LinearLayout>
```

MyService.java File :

```
package com.example.servicesexample;

import android.app.Service;
import android.content.Intent;
import android.os.IBinder;
import android.widget.Toast;
public class MyService extends Service {
    @Override
    public IBinder onBind(Intent arg0) {
        return null;
    }
    @Override
    public int onStartCommand(Intent intent, int flags, int startId) {
        // Let it continue running until it is stopped.
        Toast.makeText(this, "Service Started", Toast.LENGTH_LONG).show();
        return START_STICKY;
    }
    @Override
    public void onDestroy() {
        super.onDestroy();
        Toast.makeText(this, "Service Destroyed",
                Toast.LENGTH_LONG).show();
    }
}
```

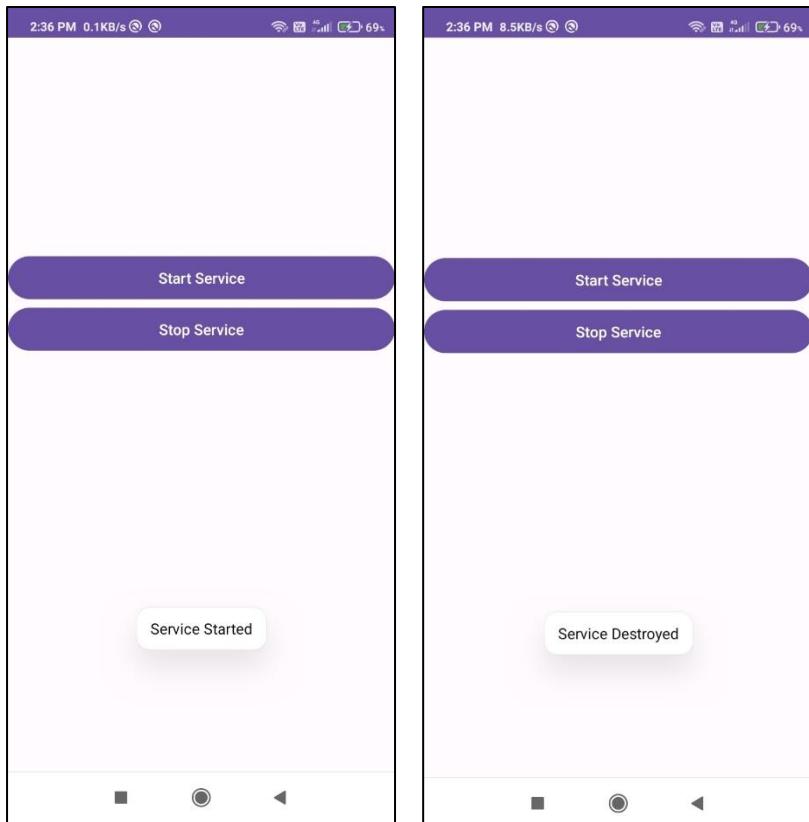
AndroidManifest.xml File :

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

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.ServicesExample"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

Output :



3) Develop simple app in android using Broadcast Receiver Component.

MainActivity.java File :

```
package com.example.broadcastreceiverexample;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.os.BatteryManager;
import android.os.Bundle;
import android.widget.TextView;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import androidx.constraintlayout.widget.ConstraintLayout;
public class MainActivity extends AppCompatActivity {
    private BroadcastReceiver batteryReceiver = new BroadcastReceiver() {
        @Override
        public void onReceive(Context context, Intent intent) {
            if (intent.getAction().equals(Intent.ACTION_BATTERY_LOW)) {
                Toast.makeText(context, "Battery is low!", Toast.LENGTH_SHORT).show();
            } else if (intent.getAction().equals(Intent.ACTION_BATTERY_CHANGED)) {
                // Retrieve battery percentage information
                int level = intent.getIntExtra(BatteryManager.EXTRA_LEVEL, -1);
                int scale = intent.getIntExtra(BatteryManager.EXTRA_SCALE, -1);
                // Calculate battery percentage
                float batteryPercentage = (level / (float) scale) * 100;
                // Update the TextView with battery percentage
                TextView batteryPercentageTextView =
                        findViewById(R.id.batteryPercentageTextView);
                batteryPercentageTextView.setText("Battery Percentage: " + batteryPercentage +
                        "%");
            }
        }
    };
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        // Register the BroadcastReceiver to listen for BATTERY_LOW and
        // BATTERY_CHANGED events
        IntentFilter filter = new IntentFilter();
        filter.addAction(Intent.ACTION_BATTERY_LOW);
        filter.addAction(Intent.ACTION_BATTERY_CHANGED);
        registerReceiver(batteryReceiver, filter);
    }
    @Override
    protected void onDestroy() {
        super.onDestroy();
        // Unregister the BroadcastReceiver when the activity is destroyed
        unregisterReceiver(batteryReceiver);
    }
}
```

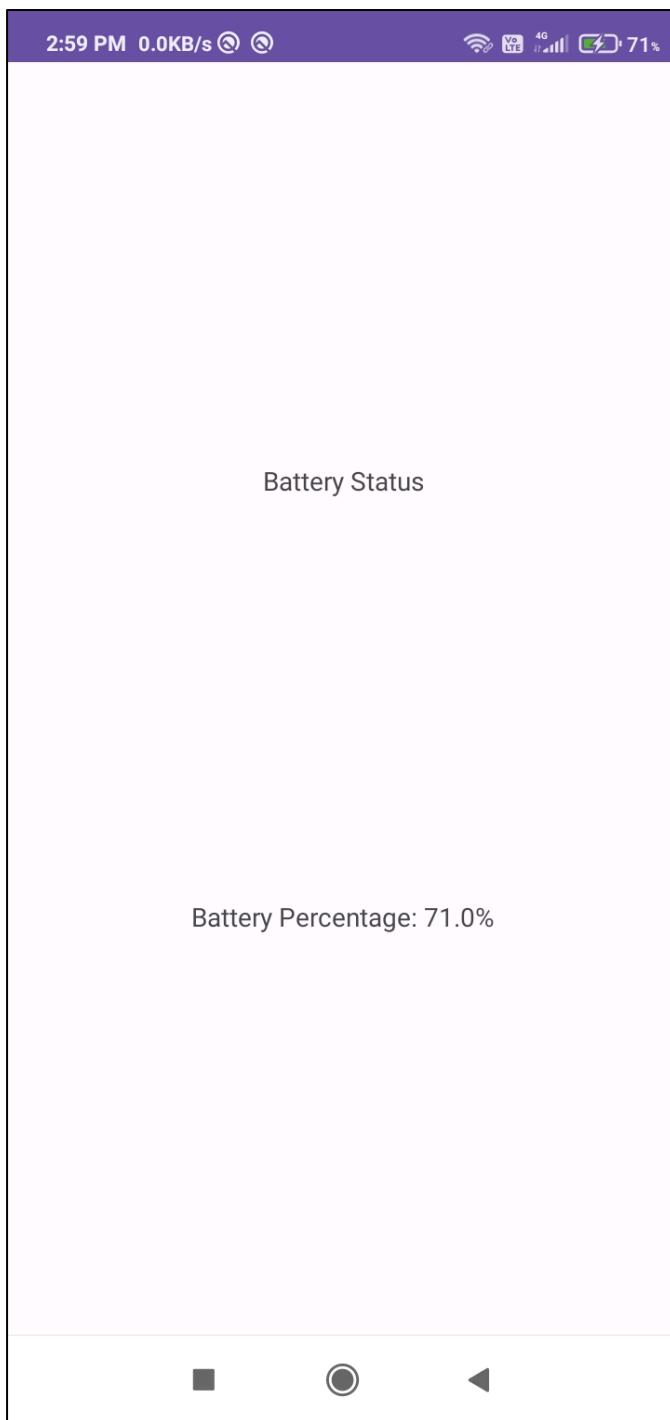
Activity_main.xml File :

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Battery Status"
        app:layout_constraintBottom_toTopOf="@+id/batteryPercentageTextView"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <TextView
        android:id="@+id/batteryPercentageTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text=""
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

AndroidManifest.xml File :

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

Output :



4) Develop simple app in android using Content Provider Component.

MainActivity.java File :

```
package com.example.namesaver;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.content.ContentValues;
import android.database.Cursor;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.ListView;
import android.widget.SimpleCursorAdapter;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    private EditText nameEditText;
    private ListView nameListView;
    private SimpleCursorAdapter cursorAdapter;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        nameEditText = findViewById(R.id.nameEditText);
        nameListView = findViewById(R.id.nameListView);
        cursorAdapter = new SimpleCursorAdapter(this,
                android.R.layout.simple_list_item_1, null,
                new String[]{NameProvider.COLUMN_NAME},
                new int[]{android.R.id.text1}, 0);
        nameListView.setAdapter(cursorAdapter);
        refreshNamesList();
    }
    public void onSaveButtonClick(View view) {
        String name = nameEditText.getText().toString().trim();
        if (!name.isEmpty()) {
            ContentValues values = new ContentValues();
            values.put(NameProvider.COLUMN_NAME, name);
            Uri uri = getContentResolver().insert(NameProvider.CONTENT_URI, values);
            if (uri != null) {
                Toast.makeText(this, "Name saved successfully", Toast.LENGTH_SHORT).show();
                nameEditText.setText("");
                refreshNamesList();
            }
        } else {
            Toast.makeText(this, "Please enter a name", Toast.LENGTH_SHORT).show();
        }
    }
    private void refreshNamesList() {
        Cursor cursor = getContentResolver().query(NameProvider.CONTENT_URI,
                null, null, null, null);
        cursorAdapter.swapCursor(cursor);
    }
}
```

NameProvider.java File :

```
package com.example.namesaver;
import android.content.*;
import android.database.*;
import android.net.Uri;
import androidx.annotation.*;
public class NameProvider extends ContentProvider {
    public static final String COLUMN_NAME ="name" ;
    private static final String AUTHORITY = "com.example.namesaver";
    private static final String BASE_PATH = "names";
    public static final Uri CONTENT_URI = Uri.parse("content://" + AUTHORITY + "/" +
BASE_PATH);
    private static final int NAMES = 1;
    private static final int NAME_ID = 2;
    private static final UriMatcher uriMatcher = new UriMatcher(UriMatcher.NO_MATCH);
    static {
        uriMatcher.addURI(AUTHORITY, BASE_PATH, NAMES);
        uriMatcher.addURI(AUTHORITY, BASE_PATH + "/#", NAME_ID); }
    private SQLiteDatabase database;
    @Override
    public boolean onCreate() {
        DatabaseHelper dbHelper = new DatabaseHelper(getContext());
        database = dbHelper.getWritableDatabase();
        return database != null; }
    @Override
    public Cursor query(Uri uri, String[] projection, String selection,
            String[] selectionArgs, String sortOrder) {
        Cursor cursor;
        switch (uriMatcher.match(uri)) {
            case NAMES:
                cursor = database.query(DatabaseHelper.TABLE_NAMES,
                        DatabaseHelper.ALL_COLUMNS, selection, null, null, null, sortOrder);
                break;
            default:
                throw new IllegalArgumentException("Invalid URI: " + uri);
        }
        cursor.setNotificationUri(getContext().getContentResolver(), uri);
        return cursor; }
    @Override
    public String getType(@NonNull Uri uri) {
        return null; }
    @Override
    public Uri insert(Uri uri, ContentValues values) {
        long id = database.insert(DatabaseHelper.TABLE_NAMES, null, values);
        if (id > 0) {
            getContext().getContentResolver().notifyChange(uri, null);
            return Uri.parse(BASE_PATH + "/" + id);
        } else {
            throw new SQLException("Failed to insert row into " + uri); }}
    @Override
    public int delete(@NonNull Uri uri, @Nullable String s, @Nullable String[] strings) {
        return 0; }
    @Override
    public int update(@NonNull Uri uri, @Nullable ContentValues contentValues, @Nullable
String s, @Nullable String[] strings) {return 0; }
    // Implement the remaining required methods for ContentProvider (update, delete, getType).}
```

DatabaseHelper.java File :

```
package com.example.namesaver;
import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
public class DatabaseHelper extends SQLiteOpenHelper {
    public static final String DATABASE_NAME = "names.db";
    public static final String TABLE_NAMES = "names";
    public static final String COLUMN_ID = "_id";
    public static final String COLUMN_NAME = "name";
    private static final int DATABASE_VERSION = 1;
    public static final String[] ALL_COLUMNS = {COLUMN_ID, COLUMN_NAME};
    private static final String TABLE_CREATE =
        "CREATE TABLE " + TABLE_NAMES + " (" +
        COLUMN_ID + " INTEGER PRIMARY KEY AUTOINCREMENT, " +
        COLUMN_NAME + " TEXT NOT NULL);";
    public DatabaseHelper(Context context) {
        super(context, DATABASE_NAME, null, DATABASE_VERSION); }
    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL(TABLE_CREATE);}
    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        db.execSQL("DROP TABLE IF EXISTS " + TABLE_NAMES);
        onCreate(db);}}
```

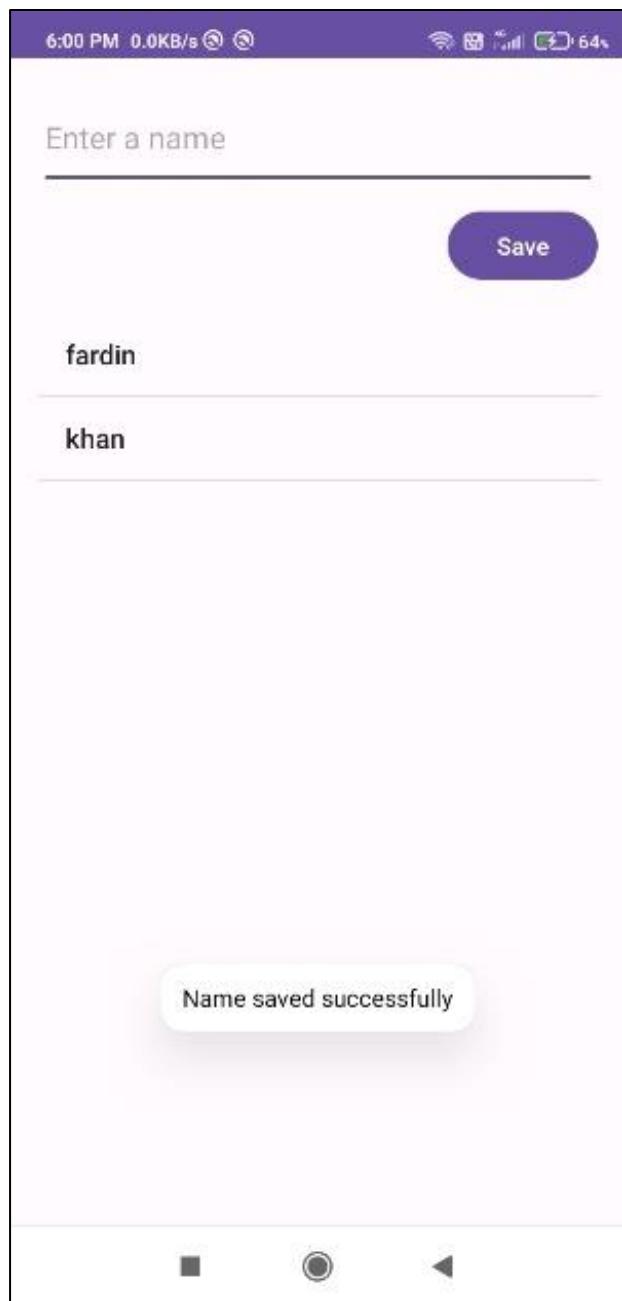
Activity_main.xml File :

```
<?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="16dp"
    tools:context=".MainActivity">
    <EditText
        android:id="@+id/nameEditText"
        android:layout_width="391dp"
        android:layout_height="62dp"
        android:hint="Enter a name" />
    <Button
        android:id="@+id/saveButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/nameEditText"
        android:layout_alignParentEnd="true"
        android:layout_marginTop="8dp"
        android:text="Save"
        android:onClick="onSaveButtonClick" />
    <ListView
        android:id="@+id/nameListView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_below="@+id/saveButton"
        android:layout_marginTop="16dp" />
</RelativeLayout>
```

AndroidManifest.xml File :

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

Output :



5) Develop a simple app in android using Explicit Intent.

MainActivity.java File :

```
package com.example.explicitintendemo;
import androidx.appcompat.app.AppCompatActivity;
import android.annotation.SuppressLint;
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 {
    private EditText name;
    private Button showName;
    @SuppressLint("MissingInflatedId")
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        name=findViewById(R.id.editTextText);
        showName=findViewById(R.id.button);
        showName.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String textName=name.getText().toString();
                Intent intent=new Intent(MainActivity.this, DisplayName.class);
                intent.putExtra("name",textName);
                startActivity(intent);
            }
        });
    }
}
```

DisplayName.java File (Second Activity) :

```
package com.example.explicitintendemo;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;
public class DisplayName extends AppCompatActivity {
    private TextView textView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_display_name);

        textView=findViewById(R.id.textView);
        Intent intent=getIntent();
        String name=intent.getStringExtra("name");
        textView.setText(name);

    }
}
```

Activity_main.xml File :

```
<?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">

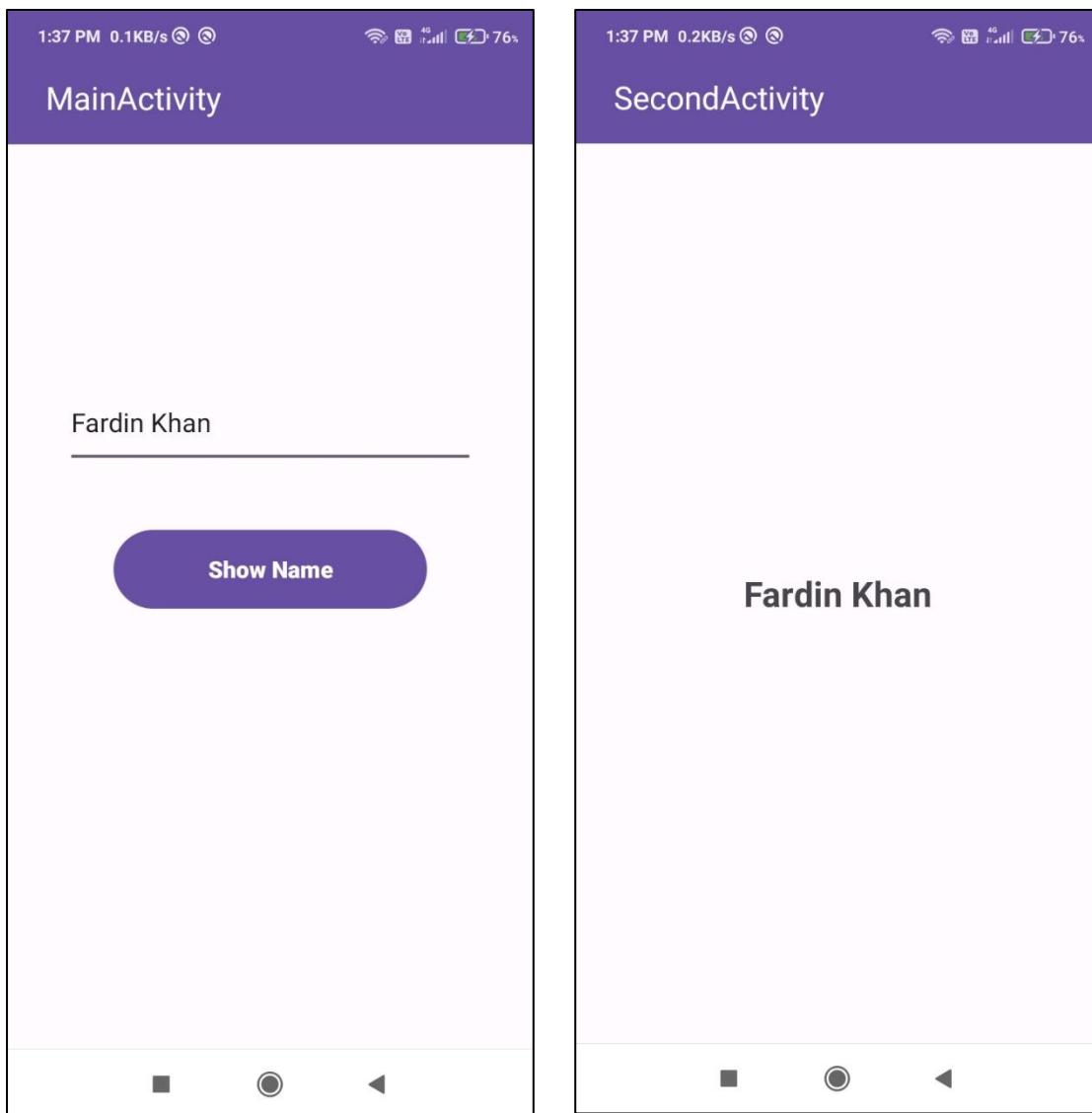
    <EditText
        android:id="@+id/editTextText"
        android:layout_width="281dp"
        android:layout_height="62dp"
        android:layout_marginTop="160dp"
        android:ems="10"
        android:hint="Enter Your Name Here"
        android:inputType="text"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/toolbar" />
    <Button
        android:id="@+id/button"
        android:layout_width="215dp"
        android:layout_height="62dp"
        android:text="Show Name"
        android:textSize="16sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editTextText"
        app:layout_constraintVertical_bias="0.115" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Activity_display_name.xml File :

```
xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".DisplayName">

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/toolbar2"
        app:layout_constraintVertical_bias="0.5" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output :



6) Develop simple app in android using Implicit Intent.

MainActivity.java File :

```
package com.example.implicitintendemo;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
public class MainActivity extends AppCompatActivity {
    private EditText website;
    private Button open;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        website=findViewById(R.id.editTextText);
        open=findViewById(R.id.button);
        open.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String url=website.getText().toString();
                Intent intent=new Intent(Intent.ACTION_VIEW, Uri.parse(url));
                if(intent.resolveActivity(getPackageManager()) != null){
                    startActivity(intent);}}});
```

```
}}
```

AndroidManifest.xml File :

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

Activity_main.xml File :

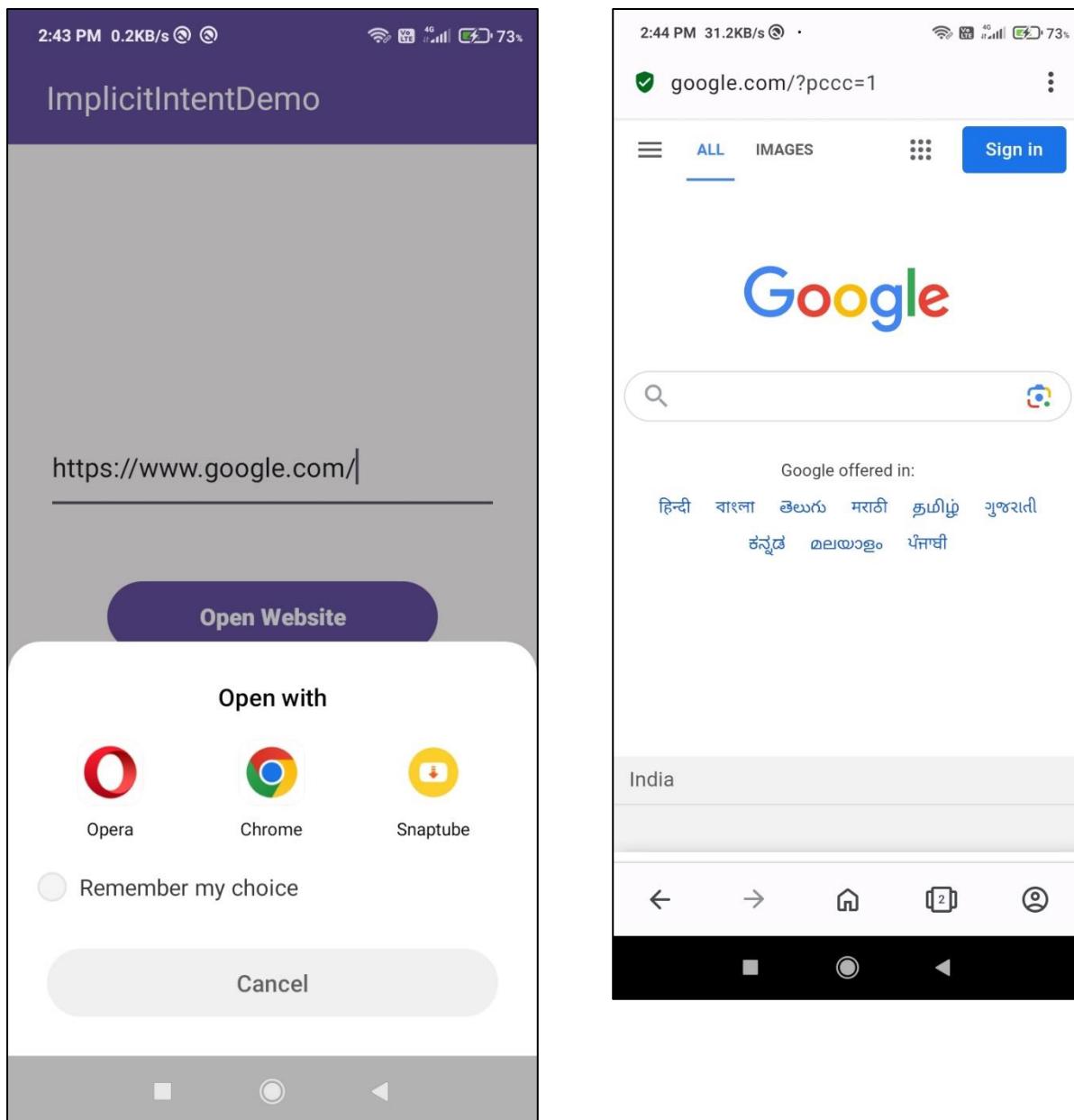
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"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

    <androidx.appcompat.widget.Toolbar
        android:id="@+id/toolbar"
        android:layout_width="409dp"
        android:layout_height="wrap_content"
        android:background="?attr/colorPrimary"
        android:minHeight="?attr/actionBarSize"
        android:theme="?attr/actionBarTheme"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:title="@string/app_name"
        app:titleMarginStart="50dp"
        app:titleTextColor="@color/white" />

    <EditText
        android:id="@+id/editTextText"
        android:layout_width="308dp"
        android:layout_height="64dp"
        android:layout_marginTop="188dp"
        android:ems="10"
        android:hint="Enter URL"
        android:inputType="text"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/toolbar" />

    <Button
        android:id="@+id/button"
        android:layout_width="225dp"
        android:layout_height="56dp"
        android:text="Open Website"
        android:textSize="16sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editTextText"
        app:layout_constraintVertical_bias="0.133" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output :



7) Develop simple app in android using Fragments.

MainActivity.java File :

```
package com.example.fragmentsdemo;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        if (savedInstanceState == null) {
            // Check the current orientation and load the appropriate fragment
            int orientation = getResources().getConfiguration().orientation;
            if (orientation == android.content.res.Configuration.ORIENTATION_PORTRAIT) {
                PortraitFragment portraitFragment = new PortraitFragment();
                getSupportFragmentManager().beginTransaction()
                    .replace(R.id.fragment_container, portraitFragment)
                    .commit();
            } else {
                LandscapeFragment landscapeFragment = new LandscapeFragment();
                getSupportFragmentManager().beginTransaction()
                    .replace(R.id.fragment_container, landscapeFragment)
                    .commit();
            }
        }
    }
}
```

Activity_main.xml File :

```
<?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">

    <FrameLayout
        android:id="@+id/fragment_container"
        android:layout_width="0dp"
        android:layout_height="0dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

PortraitFragment.java File :

```
package com.example.fragmentsdemo;
import android.os.Bundle;
import androidx.fragment.app.Fragment;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;

public class PortraitFragment extends Fragment {
    private static final String ARG_PARAM1 = "param1";
    private static final String ARG_PARAM2 = "param2";
    private String mParam1;
    private String mParam2;
    public PortraitFragment() {
        // Required empty public constructor
    }
    public static PortraitFragment newInstance(String param1, String param2) {
        PortraitFragment fragment = new PortraitFragment();
        Bundle args = new Bundle();
        args.putString(ARG_PARAM1, param1);
        args.putString(ARG_PARAM2, param2);
        fragment.setArguments(args);
        return fragment;
    }
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        if (getArguments() != null) {
            mParam1 = getArguments().getString(ARG_PARAM1);
            mParam2 = getArguments().getString(ARG_PARAM2);
        }
    }
    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                           Bundle savedInstanceState) {
        // Inflate the layout for this fragment
        return inflater.inflate(R.layout.fragment_portrait, container, false);
    }
}
```

Fragment_portrait.xml File :

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout 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=".PortraitFragment">
    <!-- TODO: Update blank fragment layout -->
    <TextView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:text="This is Portrait Mode Fragment"
        android:textSize="24sp"
        android:textStyle="bold" />
</FrameLayout>
```

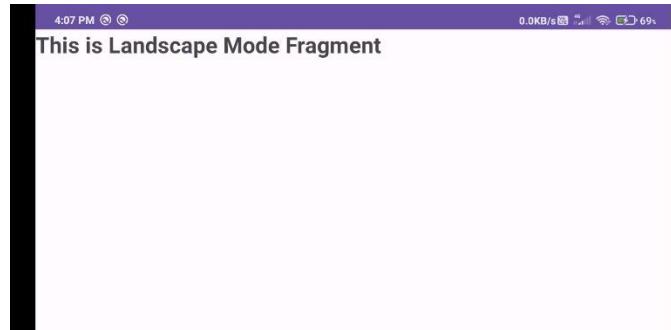
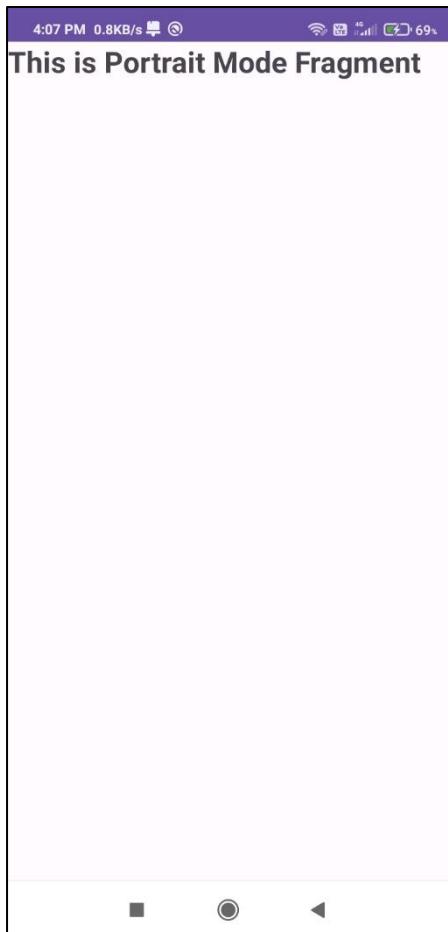
LandscapeFragment.java File :

```
package com.example.fragmentsdemo;
import android.os.Bundle;
import androidx.fragment.app.Fragment;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
public class LandscapeFragment extends Fragment {
    private static final String ARG_PARAM1 = "param1";
    private static final String ARG_PARAM2 = "param2";
    private String mParam1;
    private String mParam2;
    public LandscapeFragment() {
        // Required empty public constructor
    }
    public static LandscapeFragment newInstance(String param1, String param2) {
        LandscapeFragment fragment = new LandscapeFragment();
        Bundle args = new Bundle();
        args.putString(ARG_PARAM1, param1);
        args.putString(ARG_PARAM2, param2);
        fragment.setArguments(args);
        return fragment;
    }
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        if (getArguments() != null) {
            mParam1 = getArguments().getString(ARG_PARAM1);
            mParam2 = getArguments().getString(ARG_PARAM2);
        }
    }
    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                           Bundle savedInstanceState) {
        // Inflate the layout for this fragment
        return inflater.inflate(R.layout.fragment_landscape, container, false);
    }
}
```

Fragment_landscape.xml File :

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout 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=".LandscapeFragment">
    <!-- TODO: Update blank fragment layout -->
    <TextView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:text="This is Landscape Mode Fragment"
        android:textSize="24sp"
        android:textStyle="bold" />
</FrameLayout>
```

Output :



8) Develop simple app in android using Linear Layout.

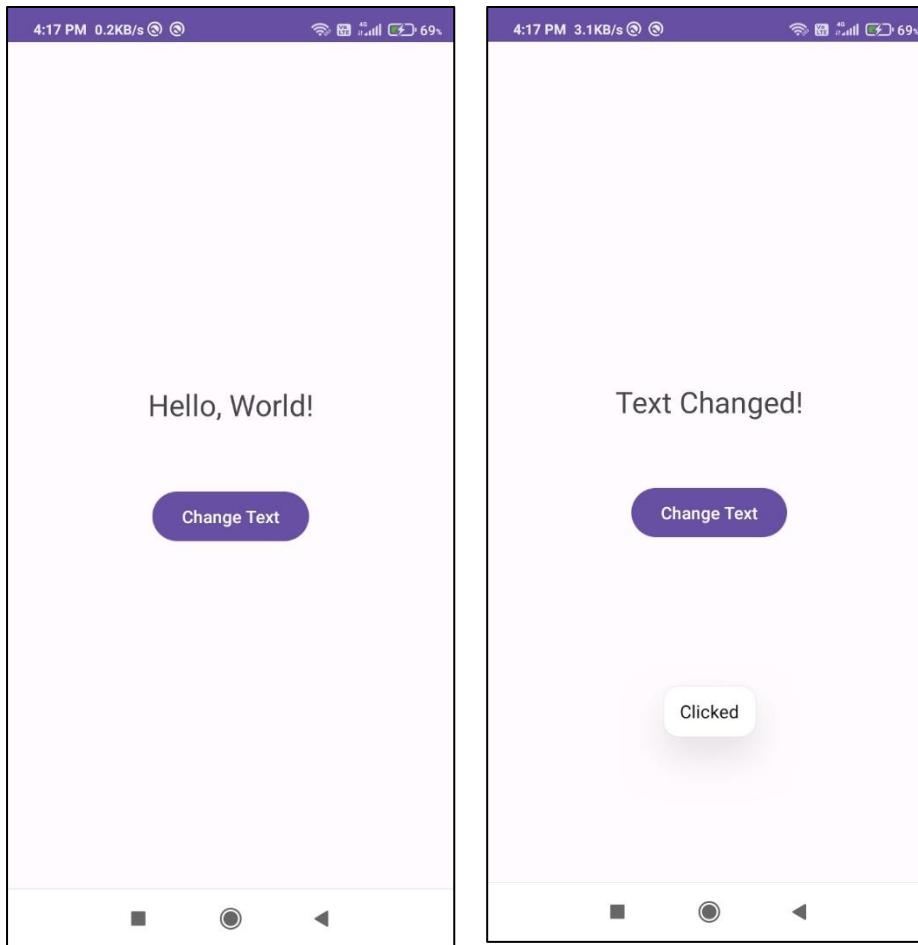
MainActivity.java File :

```
package com.example.linearLayoutdemo;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    private TextView textView;
    private Button button;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        textView = findViewById(R.id.textView);
        button = findViewById(R.id.button);
        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                // Change the text when the button is clicked
                textView.setText("Text Changed!");
                Toast.makeText(MainActivity.this, "Clicked", Toast.LENGTH_SHORT).show();
            }
        });
    }
}
```

Activity_main.xml File :

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/container"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello, World!"
        android:textSize="24sp"
        android:layout_gravity="center"/>
    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="50dp"
        android:text="Change Text" />
</LinearLayout>
```

Output :



9) Develop simple app in android using Relative Layout.

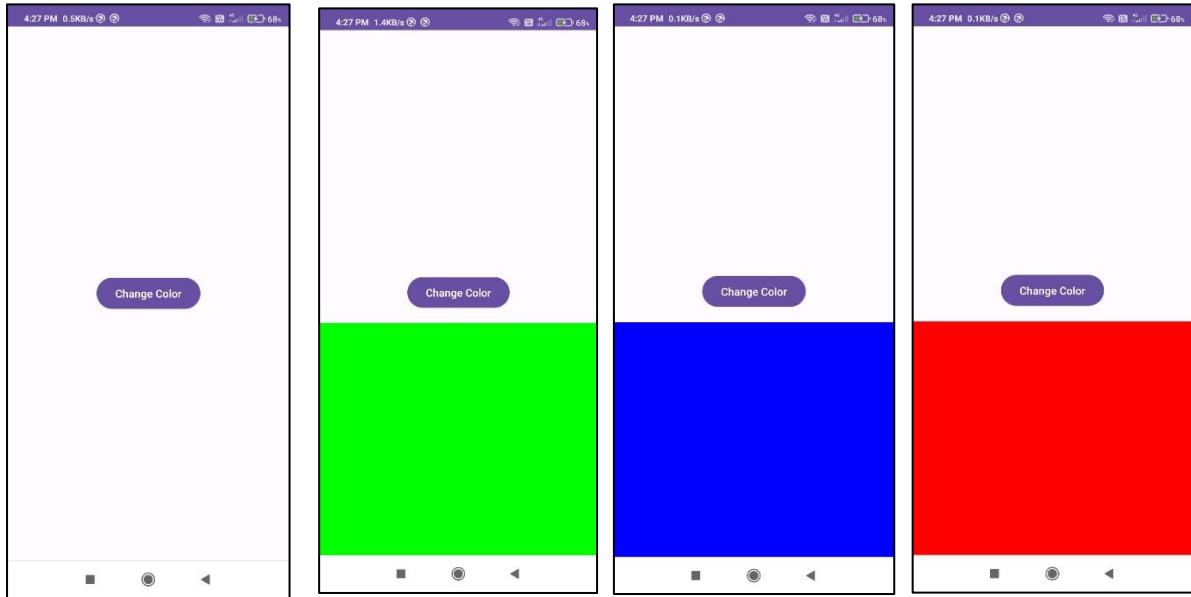
MainActivity.java File :

```
package com.example.relativelayoutdemo;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
public class MainActivity extends AppCompatActivity {
    private View colorView;
    private Button changeColorButton;
    private int[] colors = {0xFFFF0000, 0xFF00FF00, 0xFF0000FF}; // Red, Green, Blue
    private int currentIndex = 0;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        colorView = findViewById(R.id.colorView);
        changeColorButton = findViewById(R.id.changeColorButton);
        changeColorButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                if (currentIndex < colors.length - 1) {
                    currentIndex++;
                } else {
                    currentIndex = 0;
                }
                colorView.setBackgroundColor(colors[currentIndex]);
            }
        });
    }
}
```

Activity_main.xml File :

```
<?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">
    <Button
        android:id="@+id/changeColorButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Change Color"
        android:layout_centerInParent="true"/>
    <View
        android:id="@+id/colorView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_below="@+id/changeColorButton"
        android:layout_marginTop="16dp"/>
</RelativeLayout>
```

Output :



10) Develop simple app in android using List View Layout.

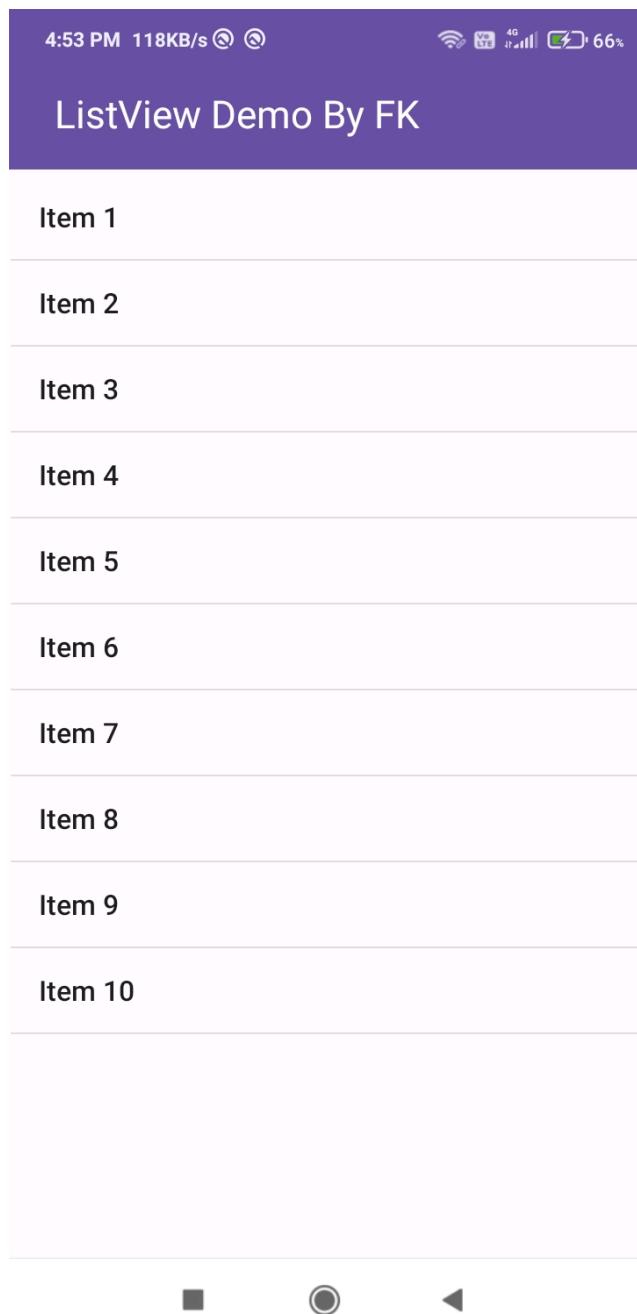
MainActivity.java File :

```
package com.example.listviewdemo;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        String[] items = {
            "Item 1",
            "Item 2",
            "Item 3",
            "Item 4",
            "Item 5",
            "Item 6",
            "Item 7",
            "Item 8",
            "Item 9",
            "Item 10"
        };
        ListView listView = findViewById(R.id.listView);
        ArrayAdapter<String> adapter = new ArrayAdapter<>(this,
        android.R.layout.simple_list_item_1, items);
        listView.setAdapter(adapter);
    }
}
```

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">
    <ListView
        android:id="@+id/listView"
        android:layout_width="409dp"
        android:layout_height="665dp"
        android:padding="25dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/toolbar"
        app:layout_constraintVertical_bias="0.5" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output :



11) Develop simple app in android using Grid Layout.

MainActivity.java File :

```
package com.example.gridviewdemo;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Context;
import android.os.Bundle;
import android.view.View;
import android.view.ViewGroup;
import android.widget.*;
public class MainActivity extends AppCompatActivity {
    private GridView gridView;
    private final int[] imageIds = {
        R.drawable.image1,R.drawable.image2, R.drawable.image3, R.drawable.image4,
        R.drawable.image5,R.drawable.image6,R.drawable.image7, };
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        gridView = findViewById(R.id.gridView);
        ImageAdapter adapter = new ImageAdapter(this);
        gridView.setAdapter(adapter);
        gridView.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> parent, View view, int position, long id) {
                Toast.makeText(MainActivity.this, "Item clicked: " + position,
                        Toast.LENGTH_SHORT).show(); } });
    }
    private class ImageAdapter extends BaseAdapter {
        private Context mContext;
        ImageAdapter(Context context) {
            mContext = context;
        }
        @Override
        public int getCount() {
            return imageIds.length;
        }
        @Override
        public Object getItem(int position) {
            return imageIds[position];
        }
        @Override
        public long getItemId(int position) {
            return position;
        }
        @Override
        public View getView(int position, View convertView, ViewGroup parent) {
            ImageView imageView;
            if (convertView == null) {
                imageView = new ImageView(mContext);
                imageView.setLayoutParams(new GridView.LayoutParams(200, 200));
                imageView.setScaleType(ImageView.ScaleType.CENTER_CROP);
                imageView.setPadding(8, 8, 8, 8);
            } else {
                imageView = (ImageView) convertView;
            }
            imageView.setImageResource(imageIds[position]);
            return imageView;
        }
    }
}
```

Activity_main.xml File :

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

    <GridView
        android:id="@+id/gridView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:numColumns="3"
        android:horizontalSpacing="8dp"
        android:verticalSpacing="8dp"/>

</RelativeLayout>
```

Output :



12) Develop simple app in android using Event Handling.

MainActivity.java File :

```
package com.example.eventhandlingdemo;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity {
    private TextView countTextView;
    private Button incrementButton;
    private int count = 0;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        countTextView = findViewById(R.id.countTextView);
        incrementButton = findViewById(R.id.incrementButton);
        incrementButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                // Increment the count and update the TextView
                count++;
                countTextView.setText("Count: " + count);
            }
        });
    }
}
```

Activity_main.xml File :

```
<?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"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/countTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Count: 0"
        android:textSize="24sp"/>
    <Button
        android:id="@+id/incrementButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Increment Count"/>
</LinearLayout>
```

Output :

