MAD

(BE031000081)

LABORATORY MANUAL

B.E. Semester-III

Prepared By:-
CE/IT Department
Vadodara Institute of Engineering (080)
Kotambi, Vadodara – 391510
Academic Year : 2025-2026

Vadodara Institute of Engineering (080)

Mobile Application Development(3170726)

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Vadodara Institute of Engineering (080)
Mobile Application Development(3170726)

Software Requirements

Sr No	Software Requirement	Hardware Requirement
1	Android Studio	64-bit OS
		RAM-16 GB
		Processor (Intel i5/i7, AMD Ryzen, etc.)
		Hard Disk- 512 GB

Date:

Practical 1

AIM: Write Android program to display "Welcome to android".

```
<!-- res/layout/activity_main.xml -->
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:orientation="vertical">
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Welcome to android"
        android:textSize="24sp"
        android:textStyle="bold"/>
  </LinearLayout>
```

Application:

1. Which method is called when an activity is created?

2. Which XML tag is used to display text in Android?

Date:

Practical 2

AIM: Write android program to demonstrate usage of string.

Program:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    android:padding="20dp"
    android:background="#FFFFFF">

    <TextView
        android:id="@+id/textViewResult"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="String Example"
        android:textSize="22sp"
        android:textColor="#000000" />
</LinearLayout>
```

Main Activity.java

```
    package com.example.stringdemo;

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

    public class MainActivity extends AppCompatActivity {

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

```
        TextView textView = findViewById(R.id.textViewResult);

        // String usage demonstration
        String firstName = "Android";
        String lastName = "Programming";

        // Concatenation
        String fullName = firstName + " " + lastName;

        // Display result
        textView.setText("Concatenated String: " + fullName);
    }
}
```

Application:

1. Which operator is used to concatenate strings in Java?

2. Which class is used to store text in Java?

Date:

Practical 3

AIM: Write android program to demonstrate activity life cycle.

Program:

XML Layout (activity_main.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    android:background="#FFFFFF"
    android:padding="20dp">

    <TextView
        android:id="@+id/textViewLifeCycle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Activity Life Cycle Demo"
        android:textSize="20sp"
        android:textColor="#000000"/>
</LinearLayout>
```

Java Code (MainActivity.java)

```
package com.example.lifecycleapp;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.util.Log;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    private static final String TAG = "ActivityLifeCycle";
    TextView textView;

    @Override
```

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

        textView = findViewById(R.id.textViewLifeCycle);
        textView.setText("onCreate() called");
        Log.d(TAG, "onCreate() called");
    }

    @Override
    protected void onStart() {
        super.onStart();
        Log.d(TAG, "onStart() called");
    }

    @Override
    protected void onResume() {
        super.onResume();
        Log.d(TAG, "onResume() called");
    }

    @Override
    protected void onPause() {
        super.onPause();
        Log.d(TAG, "onPause() called");
    }

    @Override
    protected void onStop() {
        super.onStop();
        Log.d(TAG, "onStop() called");
    }

    @Override
    protected void onRestart() {
        super.onRestart();
        Log.d(TAG, "onRestart() called");
    }

    @Override
    protected void onDestroy() {
        super.onDestroy();
        Log.d(TAG, "onDestroy() called");
    }
}
```

Application:

1. Which method is called when the activity is first created?

2. Which method is called before an activity is destroyed?

Date:

Practical 4

AIM: Write android program to change the background of activity.

Program:

XML Layout (activity_main.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    android:padding="20dp"
    android:id="@+id/mainLayout">

    <Button
        android:id="@+id/btnChangeColor"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Change Background" />
</LinearLayout>
```

Java Code (MainActivity.java)

```
package com.example.backgrounddemo;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.graphics.Color;
import android.view.View;
import android.widget.Button;
import android.widget.LinearLayout;

public class MainActivity extends AppCompatActivity {

    LinearLayout mainLayout;
```

```
    Button btnChange;

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

        mainLayout = findViewById(R.id.mainLayout);
        btnChange = findViewById(R.id.btnChangeColor);

        btnChange.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // Change background color on button click
                mainLayout.setBackgroundColor(Color.CYAN);
            }
        });
    }
}
```

Output :

Application:

1. Which method is used to set background color in Android?

2. Which class provides predefined color constants in Android?

Date:

Practical 5

AIM: Write android program to perform all operation in calculator.

Program:

XML Layout (activity_main.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="20dp"
    android:gravity="center"
    android:id="@+id/mainLayout">

    <EditText
        android:id="@+id/etNum1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter First Number"
        android:inputType="numberDecimal"
        android:layout_marginBottom="10dp"/>

    <EditText
        android:id="@+id/etNum2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Second Number"
        android:inputType="numberDecimal"
        android:layout_marginBottom="20dp"/>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:gravity="center"
        android:layout_marginBottom="20dp">

        <Button
            android:id="@+id/btnAdd"
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="+" />

    <Button
        android:id="@+id/btnSub"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="-"
        android:layout_marginLeft="10dp"/>

    <Button
        android:id="@+id/btnMul"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="×"
        android:layout_marginLeft="10dp"/>

    <Button
        android:id="@+id/btnDiv"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="÷"
        android:layout_marginLeft="10dp"/>
  </LinearLayout>

  <TextView
    android:id="@+id/tvResult"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Result will be shown here"
    android:textSize="20sp"
    android:textColor="#000000"/>
</LinearLayout>
```

Java Code (MainActivity.java)

```
package com.example.calculatordemo;

import androidx.appcompat.app.AppCompatActivity;
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 {

    EditText etNum1, etNum2;
    Button btnAdd, btnSub, btnMul, btnDiv;
    TextView tvResult;

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

        etNum1 = findViewById(R.id.etNum1);
        etNum2 = findViewById(R.id.etNum2);
        btnAdd = findViewById(R.id.btnAdd);
        btnSub = findViewById(R.id.btnSub);
        btnMul = findViewById(R.id.btnMul);
        btnDiv = findViewById(R.id.btnDiv);
        tvResult = findViewById(R.id.tvResult);

        btnAdd.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                calculate('+');
            }
        });

        btnSub.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                calculate('-');
            }
        });

        btnMul.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                calculate('*');
            }
        });

        btnDiv.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
```

```
            calculate('/');
        }
    });
}

private void calculate(char operator) {
    String num1Str = etNum1.getText().toString();
    String num2Str = etNum2.getText().toString();

    if (num1Str.isEmpty() || num2Str.isEmpty()) {
        Toast.makeText(this, "Please enter both numbers", Toast.LENGTH_SHORT).show();
        return;
    }

    double num1 = Double.parseDouble(num1Str);
    double num2 = Double.parseDouble(num2Str);
    double result = 0;

    switch (operator) {
        case '+':
            result = num1 + num2;
            break;
        case '-':
            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;
            }
            break;
    }

    tvResult.setText("Result: " + result);
}
}
```

Output :

Application:

1. Which method is used to handle button click events in Android?

2. How do you convert a string input to a number in Java?

Date:

Practical 6

AIM: Write android program to create multiple activities within an application.

Program:

XML Layout for MainActivity (activity_main.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    android:padding="20dp">

    <Button
        android:id="@+id/btnNext"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Go to Second Activity" />
</LinearLayout>
```

XML Layout for SecondActivity (activity_second.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    android:padding="20dp">

    <TextView
        android:id="@+id/tvMessage"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Welcome to Second Activity"
        android:textSize="20sp"
        android:textColor="#000000"/>
</LinearLayout>
```

Java Code for MainActivity.java

```
package com.example.multipleactivities;

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

public class MainActivity extends AppCompatActivity {

    Button btnNext;

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

        btnNext = findViewById(R.id.btnNext);

        btnNext.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // Intent to open SecondActivity
                Intent intent = new Intent(MainActivity.this, SecondActivity.class);
                startActivity(intent);
            }
        });
    }
}
```

Java Code for SecondActivity.java

```
package com.example.multipleactivities;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;

public class SecondActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_second);
    }
}
```

AndroidManifest.xml (Add Second Activity)

```
<application
    android:allowBackup="true"
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    android:supportsRtl="true"
    android:theme="@style/Theme.AppCompat.Light.NoActionBar">

    <activity android:name=".SecondActivity"></activity>
    <activity android:name=".MainActivity">
        <intent-filter>
            <action android:name="android.intent.action.MAIN" />
            <category android:name="android.intent.category.LAUNCHER" />
        </intent-filter>
    </activity>
</application>
```

Output :

Application:

1. Which class is used to navigate from one activity to another?

2. Which file must be updated to declare a new activity in Android?

Date:

Practical 7

AIM: Write android program to demonstrate action button by implementing ONCLICKLISTENER.

Program:

XML Layout (activity_main.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    android:padding="20dp">

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

    <TextView
        android:id="@+id/tvResult"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Result will appear here"
        android:textSize="20sp"
        android:layout_marginTop="20dp"/>
</LinearLayout>
```

Java Code (MainActivity.java)

```
package com.example.onclickdemo;

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 implements View.OnClickListener {

    Button btnClickMe;
    TextView tvResult;

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

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

        // Set OnClickListener
        btnClickMe.setOnClickListener(this);
    }

    @Override
    public void onClick(View v) {
        if (v.getId() == R.id.btnClickMe) {
            tvResult.setText("Button Clicked Successfully!");
        }
```

Output :

Application:

1. Which interface is used to handle button clicks in Android?

2. Which method is called when a button is clicked?

ate:

Practical 8

AIM: Write android program to demonstrate sound button application.

Program:

XML Layout (activity_main.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    android:padding="20dp">

    <Button
        android:id="@+id/btnPlaySound"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Play Sound" />
</LinearLayout>
```

Java Code (MainActivity.java)

```
package com.example.soundbuttonapp;

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

public class MainActivity extends AppCompatActivity {

    Button btnPlaySound;
    MediaPlayer mediaPlayer;

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

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

        // Initialize MediaPlayer with sound file from res/raw
        mediaPlayer = MediaPlayer.create(this, R.raw.clicksound);

        btnPlaySound.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // Play sound when button clicked
                if (mediaPlayer != null) {
                    mediaPlayer.start();
                }
            }
        });
    }

    @Override
    protected void onDestroy() {
        super.onDestroy();
        if (mediaPlayer != null) {
            mediaPlayer.release();
            mediaPlayer = null;
        }
    }
}
```

Output :

Application:

1. Which Android class is used to play sound files?

2. In which folder should you store raw media files in Android?

Date:

Practical 9

AIM: Write an Android application to convert into different currencies for example, Rupees to dollar.

Program:

XML Layout (activity_main.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    android:padding="20dp">

    <EditText
        android:id="@+id/etRupees"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter amount in Rupees"
        android:inputType="numberDecimal"
        android:layout_marginBottom="15dp"/>

    <Button
        android:id="@+id/btnConvert"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Convert to Dollar" />

    <TextView
        android:id="@+id/tvResult"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Result will appear here"
        android:textSize="20sp"
        android:layout_marginTop="20dp"/>
</LinearLayout>
```

Java Code (MainActivity.java)

```
package com.example.currencyconverter;

import androidx.appcompat.app.AppCompatActivity;
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 {

    EditText etRupees;
    Button btnConvert;
    TextView tvResult;

    // Conversion rate (Example: 1 Rupee = 0.012 USD)
    final double DOLLAR_RATE = 0.012;

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

        etRupees = findViewById(R.id.etRupees);
        btnConvert = findViewById(R.id.btnConvert);
        tvResult = findViewById(R.id.tvResult);

        btnConvert.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String rupeesStr = etRupees.getText().toString();

                if (rupeesStr.isEmpty()) {
                    Toast.makeText(MainActivity.this, "Please enter amount in Rupees",
Toast.LENGTH_SHORT).show();
                    return;
                }

                double rupees = Double.parseDouble(rupeesStr);
                double dollars = rupees * DOLLAR_RATE;
```

```
                tvResult.setText("USD: $" + String.format("%.2f", dollars));
            }
        });
    }
}
```

Output :

Application:

1. Which widget is used to accept numeric input in Android?

2. How do you convert a string value from EditText into a number?

Date:

Practical 10

AIM: Write an android application to count library overdue.

Program:

XML Layout (activity_main.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    android:padding="20dp">

    <EditText
        android:id="@+id/etDays"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter number of overdue days"
        android:inputType="number"
        android:layout_marginBottom="15dp"/>

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

    <TextView
        android:id="@+id/tvResult"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Fine will appear here"
        android:textSize="20sp"
        android:layout_marginTop="20dp"/>
</LinearLayout>
```

Java Code (MainActivity.java)

```
package com.example.libraryfine;

import androidx.appcompat.app.AppCompatActivity;
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 {

   EditText etDays;
   Button btnCalculate;
   TextView tvResult;

   // Fine rate per day
   final int FINE_RATE = 2;

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

      etDays = findViewById(R.id.etDays);
      btnCalculate = findViewById(R.id.btnCalculate);
      tvResult = findViewById(R.id.tvResult);

      btnCalculate.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View v) {
            String daysStr = etDays.getText().toString();

            if (daysStr.isEmpty()) {
               Toast.makeText(MainActivity.this, "Please enter overdue days",
Toast.LENGTH_SHORT).show();
               return;
            }

            int days = Integer.parseInt(daysStr);
            int fine = days * FINE_RATE;

            tvResult.setText("Total Fine: ₹" + fine);
```

```
            }
        });
    }
}
```

Output :

Application:

1. Which widget is best to display calculated result in Android?

2. How do you display short popup messages in Android?

Date:

Practical 11

AIM: Write an application to mark the daily route of travel in map.

Program:

XML Layout (activity_main.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<fragment xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/map"
    android:name="com.google.android.gms.maps.SupportMapFragment"
    android:layout_width="match_parent"
android:layout_height="match_parent"/>
```

Java Code (MainActivity.java)

```
package com.example.dailyroute;

import androidx.fragment.app.FragmentActivity;
import android.os.Bundle;

import com.google.android.gms.maps.CameraUpdateFactory;
import com.google.android.gms.maps.GoogleMap;
import com.google.android.gms.maps.OnMapReadyCallback;
import com.google.android.gms.maps.SupportMapFragment;
import com.google.android.gms.maps.model.LatLng;
import com.google.android.gms.maps.model.MarkerOptions;
import com.google.android.gms.maps.model.PolylineOptions;

public class MainActivity extends FragmentActivity implements OnMapReadyCallback {

    private GoogleMap mMap;

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

        SupportMapFragment mapFragment = (SupportMapFragment) getSupportFragmentManager()
                .findFragmentById(R.id.map);
        if (mapFragment != null) {
            mapFragment.getMapAsync(this);
```

```
        }
    }

    @Override
    public void onMapReady(GoogleMap googleMap) {
        mMap = googleMap;

        // Example route: Home -> Bus Stop -> Office
        LatLng home = new LatLng(28.6139, 77.2090);     // Delhi example
        LatLng busStop = new LatLng(28.6200, 77.2100);
        LatLng office = new LatLng(28.6250, 77.2150);

        // Add markers
        mMap.addMarker(new MarkerOptions().position(home).title("Home"));
        mMap.addMarker(new MarkerOptions().position(busStop).title("Bus Stop"));
        mMap.addMarker(new MarkerOptions().position(office).title("Office"));

        // Draw route with Polyline
        mMap.addPolyline(new PolylineOptions()
                .add(home, busStop, office)
                .width(8)
                .color(0xFF2196F3)); // Blue

        // Move camera to Home
        mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(home, 14));
    }
}
```

Output :

Application:

1. ~~Which Android component is used to integrate Google Maps?~~

2. Which class is used to draw lines on the map?

Date:

Practical 13

AIM: Write an application to record video and audio on topic "Intent" and play the audio and video.

Program:

AndroidManifest.xml

```
<uses-permission android:name="android.permission.CAMERA"/>
<uses-permission android:name="android.permission.RECORD_AUDIO"/>
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>
<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"/>

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

XML Layout (activity_main.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
   android:orientation="vertical"
   android:gravity="center"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:padding="20dp">

   <Button
      android:id="@+id/btnRecordAudio"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Record Audio"/>

   <Button
      android:id="@+id/btnRecordVideo"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Record Video"
```

```
        android:layout_marginTop="15dp"/>

    <Button
        android:id="@+id/btnPlayAudio"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Play Audio"
        android:layout_marginTop="15dp"/>

    <Button
        android:id="@+id/btnPlayVideo"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Play Video"
        android:layout_marginTop="15dp"/>
</LinearLayout>
```

Java Code (MainActivity.java)

```
package com.example.intentmediaapp;

import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.provider.MediaStore;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    Button btnRecordAudio, btnRecordVideo, btnPlayAudio, btnPlayVideo;
    Uri audioUri, videoUri;
    final int AUDIO_REQUEST = 1;
    final int VIDEO_REQUEST = 2;

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

        btnRecordAudio = findViewById(R.id.btnRecordAudio);
        btnRecordVideo = findViewById(R.id.btnRecordVideo);
        btnPlayAudio = findViewById(R.id.btnPlayAudio);
```

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

        // Record Audio
        btnRecordAudio.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

                Intent audioIntent = new Intent(MediaStore.Audio.Media.RECORD_SOUND_ACTION);
                try {
                    startActivityForResult(audioIntent, AUDIO_REQUEST);
                } catch (Exception e) {
                    Toast.makeText(MainActivity.this, "No app found to record audio",
Toast.LENGTH_SHORT).show();
                }
            }
        });

        // Record Video
        btnRecordVideo.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

                Intent videoIntent = new Intent(MediaStore.ACTION_VIDEO_CAPTURE);
                try {
                    startActivityForResult(videoIntent, VIDEO_REQUEST);
                } catch (Exception e) {
                    Toast.makeText(MainActivity.this, "No app found to record video",
Toast.LENGTH_SHORT).show();
                }
            }
        });

        // Play Audio
        btnPlayAudio.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (audioUri != null) {
                    Intent playAudio = new Intent(Intent.ACTION_VIEW);
                    playAudio.setDataAndType(audioUri, "audio/*");
                    startActivity(playAudio);
                } else {
                    Toast.makeText(MainActivity.this, "No audio recorded", Toast.LENGTH_SHORT).show();
                }
            }
        });
```

```
        // Play Video
        btnPlayVideo.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (videoUri != null) {
                    Intent playVideo = new Intent(Intent.ACTION_VIEW);
                    playVideo.setDataAndType(videoUri, "video/*");
                    startActivity(playVideo);
                } else {
                    Toast.makeText(MainActivity.this, "No video recorded", Toast.LENGTH_SHORT).show();
                }
            }
        });
    }

    @Override
    protected void onActivityResult(int requestCode, int resultCode, Intent data) {
        super.onActivityResult(requestCode, resultCode, data);
        if (resultCode == RESULT_OK) {
            if (requestCode == AUDIO_REQUEST) {
                audioUri = data.getData();
            } else if (requestCode == VIDEO_REQUEST) {
                videoUri = data.getData();
            }
        }
    }
}
```

Output :

Application:

1. Which Intent action is used to record audio?

2. Which Intent action is used to record video?

Date:

Practical 14

AIM: Write android program to set the wallpaper of your device using bitmap class.

Program:

XML Layout (activity_main.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:gravity="center"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="20dp">

    <Button
        android:id="@+id/btnSetWallpaper"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Set Wallpaper"/>
</LinearLayout>
```

Java Code (MainActivity.java)

```
package com.example.wallpaperapp;

import androidx.appcompat.app.AppCompatActivity;
import android.app.WallpaperManager;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;
import java.io.IOException;

public class MainActivity extends AppCompatActivity {

    Button btnSetWallpaper;

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

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

        btnSetWallpaper = findViewById(R.id.btnSetWallpaper);

        btnSetWallpaper.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

                // Load bitmap from drawable
                Bitmap bitmap = BitmapFactory.decodeResource(getResources(),
R.drawable.wallpaper_image);

                // Set wallpaper using WallpaperManager
                WallpaperManager wallpaperManager =
WallpaperManager.getInstance(getApplicationContext());
                try {
                    wallpaperManager.setBitmap(bitmap);
                    Toast.makeText(MainActivity.this, "Wallpaper Set Successfully",
Toast.LENGTH_SHORT).show();
                } catch (IOException e) {
                    e.printStackTrace();
                    Toast.makeText(MainActivity.this, "Failed to Set Wallpaper",
Toast.LENGTH_SHORT).show();
                }
            }
        });
    }
}
```

Output :

Application:

1. Which class is used to set device wallpaper in Android?

2. How do you load an image resource as a bitmap?