Develop an application to change the font and color of the text and display toast message when the user presses the button

AIM:

      To Develop an application to change the font and color of the text and display toast message when the user presses the button.

PROCEDURE:

Step 1: File → NewProject
      Provide the application name and Click "Next"

Step 2: Select the target android devices,
      Select the minimum SDK to run the application. Click "Next".

Step 3: Choose the activity for the application (By default choose "Blank Activity). Click "Next".

Step 4: Enter activity name and click "Finish".

Step 5: Edit the program.

Step 6: Run the application, 2-ways to run the application
      1. Running through emulator
      2. Running through mobile device

PROGRAM:

AndroidManifest.xml
```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example. it17611_exptno_1">

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

</manifest>
```

activity_main.xml

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Font"
        android:typeface="serif"
        android:textSize="40px"
        android:layout_marginLeft="25dp"
        android:layout_marginTop="60dp"
        android:id="@+id/T1"   />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```xml
        android:text="Color"
        android:typeface="serif"
        android:textSize="40px"
        android:layout_marginLeft="25dp"
        android:layout_marginTop="160dp"
        android:id="@+id/T2"        />


    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Change Font"
        android:layout_marginLeft="200dp"
        android:layout_marginTop="50dp"
        android:id="@+id/B1"        />


    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Change Color"
        android:layout_marginLeft="200dp"
        android:layout_marginTop="150dp"
        android:id="@+id/B2"        />
</RelativeLayout>
```

MainActivity.java

```java
package com.example. it17611_exptno_1;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.graphics.Color;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import android.widget.Toast;
```

```java
public class MainActivity extends AppCompatActivity {
    TextView T1,T2;
    Button B1,B2;

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


        T1=(TextView)findViewById(R.id.T1);
        T2=(TextView)findViewById(R.id.T2);
        B1=(Button)findViewById(R.id.B1);
        B2=(Button)findViewById(R.id.B2);

        B1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                T1.setTextSize(40);
                Toast.makeText(getApplicationContext(),
                                "Font Size Changed",Toast.LENGTH_LONG).show();
            }
        });
        B2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                T2.setTextColor(Color.RED);
                Toast.makeText(getApplicationContext(),
                                "Font Color Changed", Toast.LENGTH_LONG ).show();
            }
        });
    }
}
```
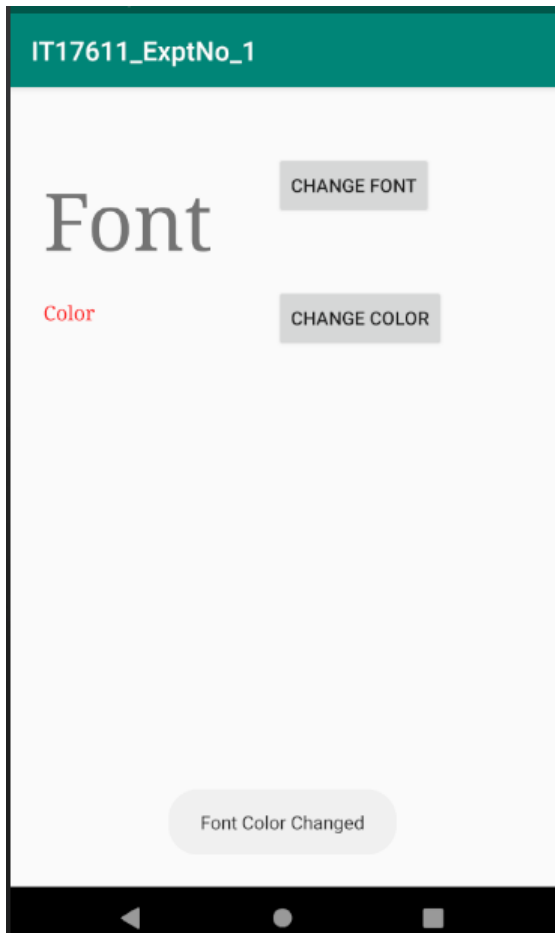
OUTPUT:

RESULT:

Thus, an android application to change the font and color of the text and display toast message when the user presses the button was successfully developed.

Expt. No. :   2   **Date :**

Reg. No. :

Develop a scientific calculator to perform arithmetic and mathematical functions using Math class. [Your scientific calculator should contain +, *, /, -, cos, sin, tan, pow, sqrt, log, lan and mod].

AIM:
        To develop an android application for a scientific calculator to perform arithmetic and mathematical functions using Math class.

PROCEDURE:

Step 1: File → NewProject
        Provide the application name and Click "Next"

Step 2: Select the target android devices,
        Select the minimum SDK to run the application. Click "Next".

Step 3: Choose the activity for the application (By default choose "Blank Activity). Click "Next".

Step 4: Enter activity name and click "Finish".

Step 5: Edit the program.

Step 6: Run the application, 2-ways to run the application
        1. Running through emulator
        2. Running through mobile device

PROGRAM:

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example. it17611_exptno_3">

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

</manifest>
```

activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#FCF8F8"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="0.3"
        android:orientation="vertical">

        <TextView
            android:id="@+id/input"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:textSize="30sp" />

    </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
```

```xml
        android:layout_weight="0.3"
        android:orientation="vertical"
        android:background="#EEF2F3">

    <TextView
        android:id="@+id/display"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:textSize="30sp" />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="0.2"
    android:orientation="horizontal">

    <Button
        android:id="@+id/buttonclr"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="Clear"
        android:textSize="20sp" />

    <Button
        android:id="@+id/buttoneql"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="="
        android:textSize="30sp" />

</LinearLayout>


<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="0.2"
    android:orientation="horizontal">

    <Button
        android:id="@+id/buttoncos"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="cos"
        android:textSize="20sp" />
```

```xml
    <Button
        android:id="@+id/buttonsin"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="sin"
        android:textSize="20sp" />

    <Button
        android:id="@+id/buttontan"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="tan"
        android:textSize="20sp" />

    <Button
        android:id="@+id/buttonsqrt"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="sqrt"
        android:textSize="20sp" />



</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="0.2"
    android:orientation="horizontal">

    <Button
        android:id="@+id/buttonsq"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="x^2"
        android:textSize="20sp" />

    <Button
        android:id="@+id/buttonpow"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="x^y"
```

```
            android:textSize="20sp" />

        <Button
            android:id="@+id/buttonlog"
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:layout_margin="1dp"
            android:layout_weight="0.25"
            android:text="log"
            android:textSize="20sp" />

        <Button
            android:id="@+id/buttonexp"
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:layout_margin="1dp"
            android:layout_weight="0.25"
            android:text="e^x"
            android:textSize="20sp" />

    </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="0.2"
        android:orientation="horizontal">

        <Button
            android:id="@+id/button7"
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:layout_margin="1dp"
            android:layout_weight="0.25"
            android:text="7"
            android:textSize="20sp" />

        <Button
            android:id="@+id/button8"
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:layout_margin="1dp"
            android:layout_weight="0.25"
            android:text="8"
            android:textSize="20sp" />

        <Button
            android:id="@+id/button9"
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:layout_margin="1dp"
            android:layout_weight="0.25"
            android:text="9"
```

```xml
        android:textSize="20sp" />

    <Button
        android:id="@+id/buttondiv"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="/"
        android:textSize="30sp" />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="0.2"
    android:orientation="horizontal">

    <Button
        android:id="@+id/button4"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="4"
        android:textSize="20sp" />

    <Button
        android:id="@+id/button5"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="5"
        android:textSize="20sp" />

    <Button
        android:id="@+id/button6"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="6"
        android:textSize="20sp" />

    <Button
        android:id="@+id/buttonmul"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="*"
```

```xml
                    android:textSize="30sp" />

        </LinearLayout>

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_weight="0.2"
            android:orientation="horizontal">

            <Button
                android:id="@+id/button1"
                android:layout_width="wrap_content"
                android:layout_height="match_parent"
                android:layout_margin="1dp"
                android:layout_weight="0.25"
                android:text="1"
                android:textSize="20sp" />

            <Button
                android:id="@+id/button2"
                android:layout_width="wrap_content"
                android:layout_height="match_parent"
                android:layout_margin="1dp"
                android:layout_weight="0.25"
                android:text="2"
                android:textSize="20sp" />

            <Button
                android:id="@+id/button3"
                android:layout_width="wrap_content"
                android:layout_height="match_parent"
                android:layout_margin="1dp"
                android:layout_weight="0.25"
                android:text="3"
                android:textSize="20sp" />

            <Button
                android:id="@+id/buttonsub"
                android:layout_width="wrap_content"
                android:layout_height="match_parent"
                android:layout_margin="1dp"
                android:layout_weight="0.25"
                android:text="-"
                android:textSize="30sp" />

        </LinearLayout>

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_weight="0.2"
            android:orientation="horizontal">
```

```xml
    <Button
        android:id="@+id/buttondot"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="."
        android:textSize="20sp" />

    <Button
        android:id="@+id/button0"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="0"
        android:textSize="20sp" />

    <Button
        android:id="@+id/buttonrem"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="%"
        android:textSize="30sp" />

    <Button
        android:id="@+id/buttonadd"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="+"
        android:textSize="30sp" />

    </LinearLayout>

</LinearLayout>
```

MainActivity.java

```java
package com.example.it17611_exptno_3;

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

```java
public class MainActivity extends AppCompatActivity {

    double input1 = 0, input2 = 0;
    TextView edt1,edt2;
    boolean Add, Sub, Mul, Div, Rem, dec, cos, sin, tan, pow, sq, sqrt, log, exp;
    Button button0, button1, button2, button3, button4, button5, button6, button7, button8,
            button9, buttonAdd, buttonSub, buttonMul, buttonDiv, buttonEqual, buttonClr,
            buttonDot, buttonRem, buttonCos, buttonSin, buttonTan, buttonPow, buttonSq,
            buttonSqrt, buttonLog, buttonExp;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        button0 = (Button) findViewById(R.id.button0);
        button1 = (Button) findViewById(R.id.button1);
        button2 = (Button) findViewById(R.id.button2);
        button3 = (Button) findViewById(R.id.button3);
        button4 = (Button) findViewById(R.id.button4);
        button5 = (Button) findViewById(R.id.button5);
        button6 = (Button) findViewById(R.id.button6);
        button7 = (Button) findViewById(R.id.button7);
        button8 = (Button) findViewById(R.id.button8);
        button9 = (Button) findViewById(R.id.button9);
        buttonDot = (Button) findViewById(R.id.buttondot);
        buttonAdd = (Button) findViewById(R.id.buttonadd);
        buttonSub = (Button) findViewById(R.id.buttonsub);
        buttonMul = (Button) findViewById(R.id.buttonmul);
        buttonDiv = (Button) findViewById(R.id.buttondiv);
        buttonRem = (Button) findViewById(R.id.buttonrem);

        buttonCos = (Button) findViewById(R.id.buttoncos);
        buttonSin = (Button) findViewById(R.id.buttonsin);
        buttonTan = (Button) findViewById(R.id.buttontan);
        buttonSqrt = (Button) findViewById(R.id.buttonsqrt);
        buttonPow = (Button) findViewById(R.id.buttonpow);
        buttonLog = (Button) findViewById(R.id.buttonlog);
        buttonExp = (Button) findViewById(R.id.buttonexp);
        buttonSq = (Button) findViewById(R.id.buttonsq);

        buttonClr = (Button) findViewById(R.id.buttonclr);
        buttonEqual = (Button) findViewById(R.id.buttoneql);
        edt1 = (TextView) findViewById(R.id.input);
        edt2 = (TextView) findViewById(R.id.display);
```

```java
button1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText() + "1");
    }
});

button2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText() + "2");
    }
});

button3.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText() + "3");
    }
});

button4.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText() + "4");
    }
});

button5.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText() + "5");
    }
});

button6.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText() + "6");
    }
});

button7.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText() + "7");
    }
});

button8.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edt1.setText(edt1.getText() + "8");
```

```java
        }
    });

    button9.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            edt1.setText(edt1.getText() + "9");
        }
    });

    button0.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            edt1.setText(edt1.getText() + "0");
        }
    });

    buttonAdd.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {
                input1 = Float.parseFloat(edt1.getText() + "");
                Add = true;
                dec = false;
                edt1.setText(null);
            }
        }
    });

    buttonSub.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {
                input1 = Float.parseFloat(edt1.getText() + "");
                Sub = true;
                dec = false;
                edt1.setText(null);
            }
        }
    });

    buttonMul.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {
                input1 = Float.parseFloat(edt1.getText() + "");
                Mul = true;
                dec = false;
                edt1.setText(null);
            }
        }
    });

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

```java
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {
                input1 = Float.parseFloat(edt1.getText() + "");
                Div = true;
                dec = false;
                edt1.setText(null);
            }
        }
    });


    buttonRem.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {
                input1 = Float.parseFloat(edt1.getText() + "");
                Rem = true;
                dec = false;
                edt1.setText(null);
            }
        }
    });


    buttonCos.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {
                input1=Float.parseFloat(edt1.getText() + "");
                cos = true;
                dec = false;
                edt1.setText(null);
            }
        }
    });

    buttonSin.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {
                input1=Float.parseFloat(edt1.getText() + "");
                sin = true;
                dec = false;
                edt1.setText(null);
            }
        }
    });

    buttonTan.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {
                input1=Float.parseFloat(edt1.getText() + "");
```

```java
                tan = true;
                dec = false;
                edt1.setText(null);
            } }

    });


    buttonPow.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {
                input1 = Float.parseFloat(edt1.getText() + "");
                pow = true;
                dec = false;
                edt1.setText(null);
            }
        }
    });

    buttonSq.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {

                input1 = Float.parseFloat(edt1.getText() + "");
                sq = true;
                dec = false;
                edt1.setText(null);
            }
        }
    });

    buttonSqrt.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {
                input1 = Float.parseFloat(edt1.getText() + "");
                sqrt = true;
                dec = false;
                edt1.setText(null);
            }
        }
    });

    buttonLog.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {
                input1 = Float.parseFloat(edt1.getText() + "");
                log = true;
                dec = false;
                edt1.setText(null);
```

```java
                }
            }
        });


    buttonExp.setOnClickListener(new View.OnClickListener() {
    @Override
            public void onClick(View v) {
                if (edt1.getText().length() != 0) {
                    input1 = Float.parseFloat(edt1.getText() + "");
                    exp = true;
                    dec = false;
                    edt1.setText(null);
                }
            }
        });


        buttonDot.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (dec) {
                    //do nothing or you can show the error
                } else {
                    edt1.setText(edt1.getText() + ".");
                    dec = true;
                }

            }
        });

        buttonClr.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                edt1.setText("");
                edt2.setText("");
                input1 = 0.0;
                input2 = 0.0;
            }
        });

        buttonEqual.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (Add || Sub || Mul || Div || Rem || pow) {
                    input2 = Float.parseFloat(edt1.getText() + "");
                }

                if (Add) {
                    edt1.setText((int)input1+"+"+(int)input2);
                    double radd=input1+input2;
                    edt2.setText((int)radd+"");
                    Add = false;
                }
```

```java
        if (Sub) {
            edt1.setText((int)input1+"-"+(int)input2);
            double rsub=input1-input2;

            edt2.setText((int)rsub+"");
            Sub = false;
        }

        if (Mul) {
            edt1.setText((int)input1+"*"+(int)input2);
            double rmul=input1*input2;
            edt2.setText((int)rmul+"");
            Mul = false;
        }

        if (Div) {
            edt1.setText((int)input1+"/"+(int)input2);
            double rdiv=input1/input2;
            edt2.setText(rdiv+"");
            Div = false;
        }
        if (Rem) {
            edt1.setText((int)input1+"%"+(int)input2);
            double rrem=input1%input2;
            edt2.setText((int)rrem+"");
            Rem = false;
        }

        if(cos){
            edt1.setText("cos("+(int)input1+")");
            double ceql=Math.cos(Math.toRadians(input1));
            edt2.setText(ceql+"");
            cos = false;
        }

        if(sin){
            edt1.setText("sin("+(int)input1+")");
            double seql=Math.sin(Math.toRadians(input1));
            edt2.setText(seql+"");
            sin = false;
        }

        if(tan){
            edt1.setText("tan("+(int)input1+")");
            double teql=Math.tan(Math.toRadians(input1));
            edt2.setText(teql+"");
            tan = false;
        }

        if(sqrt){
            edt1.setText("sqrt("+(int)input1+")");
            double sqrteql=Math.sqrt(input1);
            edt2.setText(sqrteql+"");
```

```java
                    sqrt = false;
                }

                if(sq){
                    edt1.setText((int)input1+"^2");

                    double sqeql=input1 * input1;
                    edt2.setText(sqeql+"");
                    log = false;
                }

                if(pow){
                    edt1.setText((int)input1+"^"+(int)input2);
                    double peql=Math.pow(input1,input2);
                    edt2.setText(peql+"");
                    pow = false;
                }

                if(log){
                    edt1.setText("log("+(int)input1+")");
                    double lgeql=Math.log10(input1);
                    edt2.setText(lgeql+"");
                    log = false;
                }

                if(exp){
                    edt1.setText("e^"+(int)input1);
                    double expeql=Math.exp(input1);
                    edt2.setText(expeql+"");
                    exp = false;
                }
            }
        });
    }
}
```

OUTPUT:

it17611_exptno_3

5^3

125.0

CLEAR	=

COS	SIN	TAN	SQRT
X^2	X^Y	LOG	E^X
7	8	9	/
4	5	6	*
1	2	3	-
.	0	%	+

RESULT:

Thus, an android application that as a scientific calculator to perform arithmetic and mathematical functions using Math class was developed successfully.

Develop an android application to draw the circle, ellipse, rectangle and some text using Android Graphical primitives

AIM:

To develop an android application to draw the circle, ellipse, rectangle and some text using Android Graphical primitives.

PROCEDURE:

Step 1: File → NewProject
Provide the application name and Click "Next"

Step 2: Select the target android devices,
Select the minimum SDK to run the application. Click "Next".

Step 3: Choose the activity for the application (By default choose "Blank Activity). Click "Next".

Step 4: Enter activity name and click "Finish".

Step 5: Edit the program.

Step 6: Run the application, 2-ways to run the application
1. Running through emulator
2. Running through mobile device

PROGRAM:

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package=" com.example.it17611_exptno_4 ">

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

</manifest>
```

activity_main.xml

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

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="50dp"
        android:orientation="horizontal"
        android:layout_gravity="bottom">

        <TextView
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:text="Graphical Primitives"
            android:textSize="30dp"/>
    </LinearLayout>


    <com.example.it17611_exptno_4.TouchScreen
        android:id="@+id/t1"
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"
```

```
              android:layout_weight="1" />
          <LinearLayout
              android:layout_width="match_parent"
              android:layout_height="50dp"
              android:orientation="horizontal"
              android:layout_gravity="bottom">
              <Button
                  android:id="@+id/b1"
                  android:layout_width="wrap_content"
                  android:layout_height="wrap_content"
                  android:text="Circle/Ellipse"
                  android:singleLine="false"/>
              <Button
                  android:id="@+id/b2"
                  android:layout_width="wrap_content"
                  android:layout_height="wrap_content"
                  android:text="Square/Rect"/>
              <Button
                  android:id="@+id/b3"
                  android:layout_width="wrap_content"
                  android:layout_height="wrap_content"
                  android:text="Text"/>
              <Button
                  android:id="@+id/b4"
                  android:layout_width="wrap_content"
                  android:layout_height="wrap_content"
                  android:text="Clear"/>
          </LinearLayout>
</LinearLayout>
```

MainActivity.java
```java
package com.example.it17611_exptno_4;

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

public class MainActivity extends AppCompatActivity {
    TouchScreen t1;
    Button b1,b2,b3,b4;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        t1=(TouchScreen)findViewById(R.id.t1);
        b1=(Button)findViewById(R.id.b1);
        b2=(Button)findViewById(R.id.b2);
        b3=(Button)findViewById(R.id.b3);
        b4=(Button)findViewById(R.id.b4);

        b1.setOnClickListener(new View.OnClickListener() {
```

```java
                @Override
                public void onClick(View v) {
                    t1.setDrawint(0);}
            });
        b2.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    t1.setDrawint(1);
                }
            });
        b3.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    t1.setDrawint(2);
                }
            });
        b4.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    t1.startDrawing();
                }
            });
    }
}
```

TouchScreen.java

```java
package com.example.it17611_exptno_4;

import android.content.Context;
import android.graphics.Canvas;
import android.graphics.Color;
import android.graphics.Paint;
import android.graphics.Path;
import android.graphics.RectF;
import android.util.AttributeSet;
import android.view.MotionEvent;
import android.view.View;
public class TouchScreen extends View {
    Paint paint=new Paint();
    Path path=new Path();
    float x,y,x1,y1;
    int flag;
    public TouchScreen(Context context, AttributeSet attributeSet)
    {
        super(context,attributeSet);
        paint.setColor(Color.RED);
        paint.setAntiAlias(true);
        paint.setStrokeJoin(Paint.Join.ROUND);
        paint.setStyle(Paint.Style.STROKE);
        paint.setStrokeWidth(5f);
    }
    @Override
    public void onDraw(Canvas canvas)
```

```java
            {canvas.drawPath(path,paint);
            }
            @Override
            public boolean onTouchEvent(MotionEvent event)
            {
                if(flag==2) {
                    float X = event.getX();
                    float Y = event.getY();
                    switch (event.getAction())
                    {
                        case MotionEvent.ACTION_DOWN:
                            path.moveTo(X, Y);
                            return true;
                        case MotionEvent.ACTION_MOVE:
                            path.lineTo(X, Y);
                            break;
                        case MotionEvent.ACTION_UP:
                            break;
                        default:
                            return false;
                    }
                }
                if(flag == 0 || flag == 1){
                    switch (event.getAction()) {
                        case MotionEvent.ACTION_DOWN:
                            x = event.getX();
                            y = event.getY();
                            return true;
                        case MotionEvent.ACTION_MOVE:
                            break;
                        case MotionEvent.ACTION_UP:
                            x1 = event.getX();
                            y1 = event.getY();
                            RectF rectF = new RectF(x, y, x1, y1);
                            if(flag == 0)
                                path.addOval(rectF, Path.Direction.CCW);
                            if(flag == 1)
                                path.addRect(rectF, Path.Direction.CCW);
                            break;
                        default:
                            return false;
                    }
                }
                invalidate();
                return true;
            }
            public void setDrawint(int F)
            {
                flag=F;
            }
            public void startDrawing()
            {
                path.rewind();
                invalidate();
```

```
        }
}
```

OUTPUT:
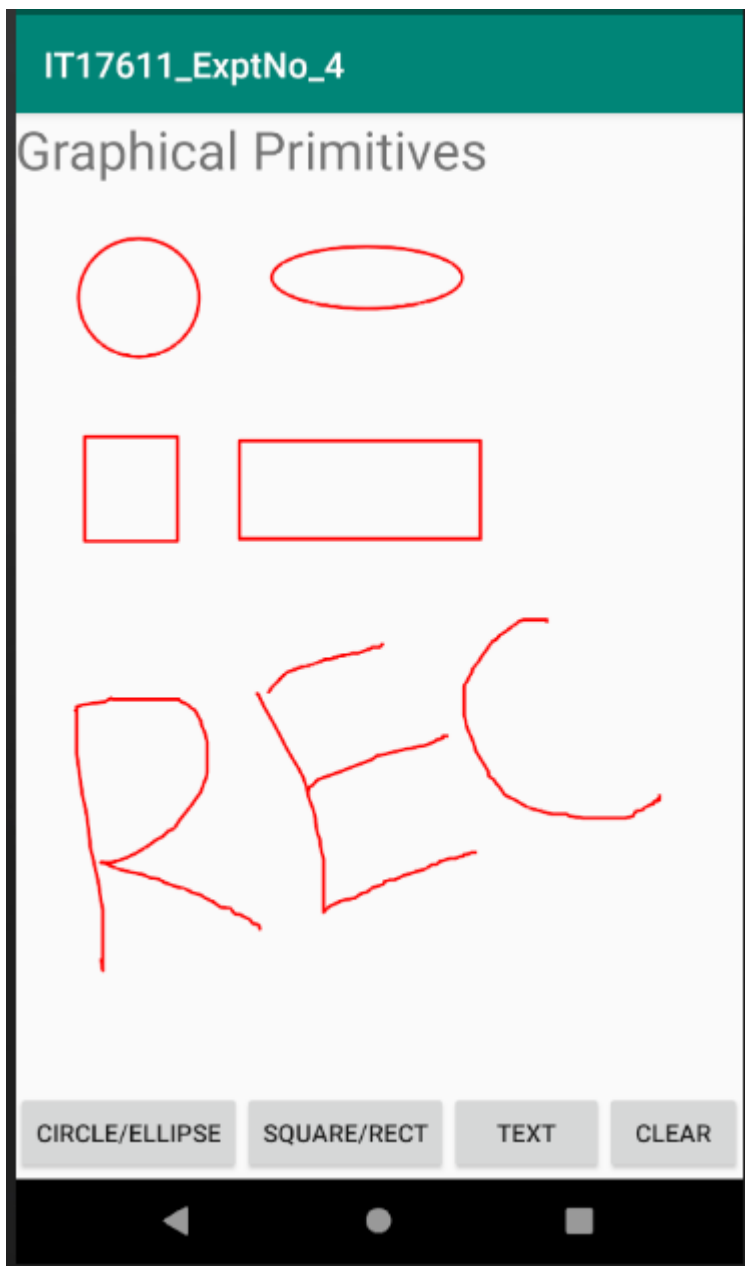
RESULT:

      Thus, an android application to draw the circle, ellipse, rectangle and some text using Android Graphical primitives was developed successfully.

Develop an android application to create Two activity named as StudentBasicDetailsActivity (name, age, address) and StudentMarkActivity (Marks, Total, Grade, Status). Write an android code to combine these two activities in single screen using android fragment.

AIM:
      To develop an android application to combine two activities in single screen using android fragment.

PROCEDURE:

Step 1: File → NewProject
      Provide the application name and Click "Next"

Step 2: Select the target android devices,
      Select the minimum SDK to run the application. Click "Next".

Step 3: Choose the activity for the application (By default choose "Blank Activity). Click "Next".

Step 4: Enter activity name and click "Finish".

Step 5: Edit the program.

Step 6: Run the application, 2-ways to run the application
      1. Running through emulator
      2. Running through mobile device

PROGRAM:

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.it17611_expt_16">

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

activity_main.xml

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Students Details using Fragment"
        android:layout_marginLeft="50dp"
        android:layout_marginTop="20dp"
        android:textSize="20dp"
        android:textStyle="bold"
        android:textColor="@color/colorAccent"/>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginTop="30dp">

        <fragment
            android:id="@+id/fragment1"
            android:name="com.example.it17611_expt_16.StudentBasicDetailsActivity"
```

```xml
            android:layout_width="0px"
            android:layout_height="match_parent"
            android:layout_weight="1" />

        <fragment
            android:id="@+id/fragment2"
            android:name="com.example.it17611_expt_16.StudentMarkActivity"
            android:layout_width="0px"
            android:layout_height="match_parent"
            android:layout_weight="1" />

    </LinearLayout>
</LinearLayout>
```

fragment_student_basic_details.xml

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Basic Details"
        android:layout_marginTop="20dp"
        android:layout_marginLeft="40dp"
        android:textStyle="bold"
        android:textSize="15dp"
        android:textColor="@color/colorPrimary"/>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Name        : Aravind"
        android:layout_marginTop="90dp"
        android:layout_marginLeft="20dp"/>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Roll No     : 2017101"
        android:layout_marginTop="150dp"
        android:layout_marginLeft="20dp"/>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Age         : 22"
        android:layout_marginTop="210dp"
        android:layout_marginLeft="20dp"/>
```

```xml
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Address : Chennai"
        android:layout_marginTop="270dp"
        android:layout_marginLeft="20dp"/>

</FrameLayout>
```

fragment_student_mark.xml
```xml
<?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=".StudentMarkActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Mark Details"
        android:layout_marginTop="20dp"
        android:layout_marginLeft="40dp"
        android:textStyle="bold"
        android:textSize="15dp"
        android:textColor="@color/colorPrimary"/>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Mark 1    : 95"
        android:layout_marginTop="90dp"
        android:layout_marginLeft="20dp"/>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Mark 2    : 89"
        android:layout_marginTop="150dp"
        android:layout_marginLeft="20dp"/>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Mark 3    : 91"
        android:layout_marginTop="210dp"
        android:layout_marginLeft="20dp"/>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Total     : 275"
```

```xml
    android:layout_marginTop="270dp"
    android:layout_marginLeft="20dp"/>
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Grade     : S"
    android:layout_marginTop="330dp"
    android:layout_marginLeft="20dp"/>

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Status    : Pass"
    android:layout_marginTop="400dp"
    android:layout_marginLeft="20dp"/>
</FrameLayout>
```

MainActivity.java

```java
package com.example.it17611_expt_16;

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);
    }
}
```

StudentBasicDetailsActivity.java

```java
package com.example.it17611_expt_16;

import android.os.Bundle;
import androidx.annotation.NonNull;
import androidx.annotation.Nullable;
import androidx.fragment.app.Fragment;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;

public class StudentBasicDetailsActivity extends Fragment {
    public static StudentBasicDetailsActivity newInstance() {
        return new StudentBasicDetailsActivity();
    }
    @Override
    public View onCreateView(@NonNull LayoutInflater inflater, @Nullable ViewGroup container,
@Nullable Bundle savedInstanceState) {
        return inflater.inflate(R.layout.fragment_student_basic_details, container, false);
```

```
        }

    }
```

StudentMarkActivity.java

```java
package com.example.it17611_expt_16;

import android.os.Bundle;

import androidx.annotation.NonNull;
import androidx.annotation.Nullable;
import androidx.fragment.app.Fragment;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;

public class StudentMarkActivity extends Fragment {

    public static StudentMarkActivity newInstance() {
        return new StudentMarkActivity();
    }

    @Override
    public View onCreateView(@NonNull LayoutInflater inflater, @Nullable ViewGroup container,
@Nullable Bundle savedInstanceState) {
        return inflater.inflate(R.layout.fragment_student_mark, container, false);
    }

}
```

OUTPUT:

RESULT:

Thus, an android application to combine the two activities in single screen using android fragment was developed successfully.

Create a Database table with the following structure using SQLite: Student (Name, roll no, Marks). Develop an android application to perform the following operation (1. Insert student Details 2. Update the student Record 3. Delete the student record by Roll no 4. View the details)

AIM:

To Create a Database table with the following structure using SQLite: Student (Name, roll no, Marks). Develop an android application to perform the following operation (1. Insert student Details 2. Update the student Record 3. Delete the student record by Roll no 4. View the details).

PROCEDURE:

Step 1: File → NewProject
  Provide the application name and Click "Next"

Step 2: Select the target android devices,
  Select the minimum SDK to run the application. Click "Next".

Step 3: Choose the activity for the application (By default choose "Blank Activity). Click "Next".

Step 4: Enter activity name and click "Finish".

Step 5: Edit the program.

Step 6: Run the application, 2-ways to run the application
  1. Running through emulator
  2. Running through mobile device

PROGRAM:

AndroidManifest.xml
```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package=" com.example.it17611_exptno_5">

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

</manifest>
```

activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout 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:text="Student Details"
        android:layout_x="150dp"
        android:layout_y="20dp"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>

    <TextView
        android:text="Enter Roll No."
        android:layout_x="30dp"
        android:layout_y="60dp"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>

    <EditText
        android:id="@+id/editRollno"
        android:inputType="number"
        android:layout_x="150dp"
        android:layout_y="50dp"
```

```xml
        android:layout_width="150dp"
        android:layout_height="40dp"/>

    <TextView
        android:text="Enter Name"
        android:layout_x="30dp"
        android:layout_y="120dp"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>

    <EditText
        android:id="@+id/editName"
        android:inputType="text"
        android:layout_x="150dp"
        android:layout_y="110dp"
        android:layout_width="150dp"
        android:layout_height="40dp"/>

    <TextView
        android:text="Enter Marks"
        android:layout_x="30dp"
        android:layout_y="180dp"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>

    <EditText
        android:id="@+id/editMarks"
        android:inputType="number"
        android:layout_x="150dp"
        android:layout_y="160dp"
        android:layout_width="150dp"
        android:layout_height="40dp"/>

    <Button
        android:id="@+id/btnInsert"
        android:text="Insert"
        android:layout_x="30dp"
        android:layout_y="250dp"
        android:layout_width="100dp"
        android:layout_height="40dp"/>

    <Button
        android:id="@+id/btnUpdate"
        android:text="Update"
        android:layout_x="140dp"
        android:layout_y="250dp"
        android:layout_width="100dp"
        android:layout_height="40dp"/>

    <Button
        android:id="@+id/btnDelete"
        android:text="Delete"
        android:layout_x="250dp"
```

```xml
            android:layout_y="250dp"
            android:layout_width="100dp"
            android:layout_height="40dp"/>

    <Button
            android:id="@+id/btnView"
            android:text="View Single Record"
            android:layout_x="30dp"
            android:layout_y="350dp"
            android:layout_width="100dp"
            android:layout_height="40dp"/>

    <Button
            android:id="@+id/btnViewAll"
            android:text="View All Record"
            android:layout_x="140dp"
            android:layout_y="350dp"
            android:layout_width="100dp"
            android:layout_height="40dp"/>

</AbsoluteLayout>
```

MainActivity.java

```java
package com.example.it17611_exptno_5;

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

import android.app.AlertDialog.Builder;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity implements OnClickListener
{
    EditText editRollno,editName,editMarks;
    Button btnInsert,btnUpdate, btnDelete,btnView,btnViewAll;
    SQLiteDatabase db;

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

        editRollno=(EditText)findViewById(R.id.editRollno);
        editName=(EditText)findViewById(R.id.editName);
        editMarks=(EditText)findViewById(R.id.editMarks);
```

```java
        btnInsert=(Button)findViewById(R.id.btnInsert);
        btnUpdate=(Button)findViewById(R.id.btnUpdate);
        btnDelete=(Button)findViewById(R.id.btnDelete);

        btnView=(Button)findViewById(R.id.btnView);
        btnViewAll=(Button)findViewById(R.id.btnViewAll);

        btnInsert.setOnClickListener(this);
        btnUpdate.setOnClickListener(this);
        btnDelete.setOnClickListener(this);
        btnView.setOnClickListener(this);
        btnViewAll.setOnClickListener(this);

        db=openOrCreateDatabase("StudentDB", Context.MODE_PRIVATE, null);
        db.execSQL("CREATE TABLE IF NOT EXISTS student(rollno VARCHAR,name
VARCHAR,marks VARCHAR);");
    }
    public void onClick(View view)
    {
        if(view==btnInsert)
        {
            if(editRollno.getText().toString().trim().length()==0||
editName.getText().toString().trim().length()==0||
                  editMarks.getText().toString().trim().length()==0)
            {
                showMessage("Error", "Please enter all values");
                return;
            }
            db.execSQL("INSERT INTO student
VALUES('"+editRollno.getText()+"','"+editName.getText()+ "','"+editMarks.getText()+"');");
            showMessage("Success", "Record added");
            clearText();
        }

        if(view==btnUpdate)
        {
            if(editRollno.getText().toString().trim().length()==0)
            {
                showMessage("Error", "Please enter Rollno");
                return;
            }
            Cursor c=db.rawQuery("SELECT * FROM student WHERE
rollno='"+editRollno.getText()+"'", null);
            if(c.moveToFirst())
            {
                db.execSQL("UPDATE student SET
name='"+editName.getText()+"',marks='"+editMarks.getText()+
                                    "' WHERE rollno='"+editRollno.getText()+"'");
                showMessage("Success", "Record Modified");
            }
            else
            {
                showMessage("Error", "Invalid Rollno");
            }
            clearText();
```

```java
      }

      if(view==btnDelete)
      {
         if(editRollno.getText().toString().trim().length()==0)
         {
            showMessage("Error", "Please enter Rollno");
            return;
         }
         Cursor c=db.rawQuery("SELECT * FROM student WHERE
rollno='"+editRollno.getText()+"'", null);
         if(c.moveToFirst())
         {
            db.execSQL("DELETE FROM student WHERE rollno='"+editRollno.getText()+"'");
            showMessage("Success", "Record Deleted");
         }
         else
         {
            showMessage("Error", "Invalid Rollno");
         }
         clearText();
      }

      if(view==btnView)
      {
         if(editRollno.getText().toString().trim().length()==0)
         {
            showMessage("Error", "Please enter Rollno");
            return;
         }
         Cursor c=db.rawQuery("SELECT * FROM student WHERE
rollno='"+editRollno.getText()+"'", null);
         if(c.moveToFirst())
         {
            editName.setText(c.getString(1));
            editMarks.setText(c.getString(2));
         }
         else
         {
            showMessage("Error", "Invalid Rollno");
            clearText();
         }
      }

      if(view==btnViewAll)
      {
         Cursor c=db.rawQuery("SELECT * FROM student", null);
         if(c.getCount()==0)
         {
            showMessage("Error", "No records found");
            return;
         }
         StringBuffer buffer=new StringBuffer();
```

```java
        while(c.moveToNext())
        {
            buffer.append("Rollno: "+c.getString(0)+"\n");
            buffer.append("Name: "+c.getString(1)+"\n");
            buffer.append("Marks: "+c.getString(2)+"\n\n");
        }
        showMessage("Student Details", buffer.toString());
    }
}

public void showMessage(String title,String message)
{
    Builder builder=new Builder(this);
    builder.setCancelable(true);
    builder.setTitle(title);
    builder.setMessage(message);
    builder.show();
}

public void clearText()
{
    editRollno.setText("");
    editName.setText("");
    editMarks.setText("");
    editRollno.requestFocus();
}
}
```

OUTPUT:

RESULT:

Thus, an android application to Create a Database table with the following structure using SQLite: Student (Name, roll no, Marks). was developed successfully.

Design an android activity with a text box (username) where the user can enter a name and another text box (ID) where the user enters only four-digit ID NO and a button "validate". Validate the entered username and ID field for the following using android code. i) Both the fields should not be empty, ii) Name field should have alphabets, iii) ID field should have numeric

AIM:
       To implement an android application to Validate the entered username and ID field.

PROCEDURE:

Step 1: File → NewProject
       Provide the application name and Click "Next"

Step 2: Select the target android devices,
       Select the minimum SDK to run the application. Click "Next".

Step 3: Choose the activity for the application (By default choose "Blank Activity). Click "Next".

Step 4: Enter activity name and click "Finish".

Step 5: Edit the program.

Step 6: Run the application, 2-ways to run the application
       1. Running through emulator
       2. Running through mobile device

PROGRAM:

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package=" com.example.it17611_exptno_7">

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

</manifest>
```

activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout 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:text="User Name"
        android:layout_x="30dp"
        android:layout_y="60dp"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>

    <EditText
        android:id="@+id/editUName"

        android:layout_x="150dp"
        android:layout_y="50dp"
        android:layout_width="150dp"
        android:layout_height="40dp"/>

    <TextView
        android:text="ID NO"
        android:layout_x="30dp"
        android:layout_y="120dp"
```

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

        <EditText
            android:id="@+id/editIDNo"

            android:layout_x="150dp"
            android:layout_y="110dp"
            android:layout_width="150dp"
            android:layout_height="40dp"/>

        <Button
            android:id="@+id/btnValidate"
            android:text="Validate"
            android:layout_x="30dp"
            android:layout_y="250dp"
            android:layout_width="150dp"
            android:layout_height="40dp"/>

</AbsoluteLayout>
```

MainActivity.java

```java
package com.example.it17611_exptno_7;

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

public class MainActivity extends AppCompatActivity {
    EditText editUName, editIDNo;
    Button btnValidate;

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

        editUName=(EditText)findViewById(R.id.editUName);
        editIDNo=(EditText)findViewById(R.id.editIDNo);
        btnValidate=(Button)findViewById(R.id.btnValidate);

        btnValidate.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View view) {
                if(editUName.getText().toString().matches("[a-zA-Z ]+") &&
                            (editIDNo.getText().toString().matches("[\\d]+")&&
                                    editIDNo.getText().toString().trim().length()==4))
                    Toast.makeText(getApplicationContext(), "Validation Successful",
                    Toast.LENGTH_LONG).show();
```
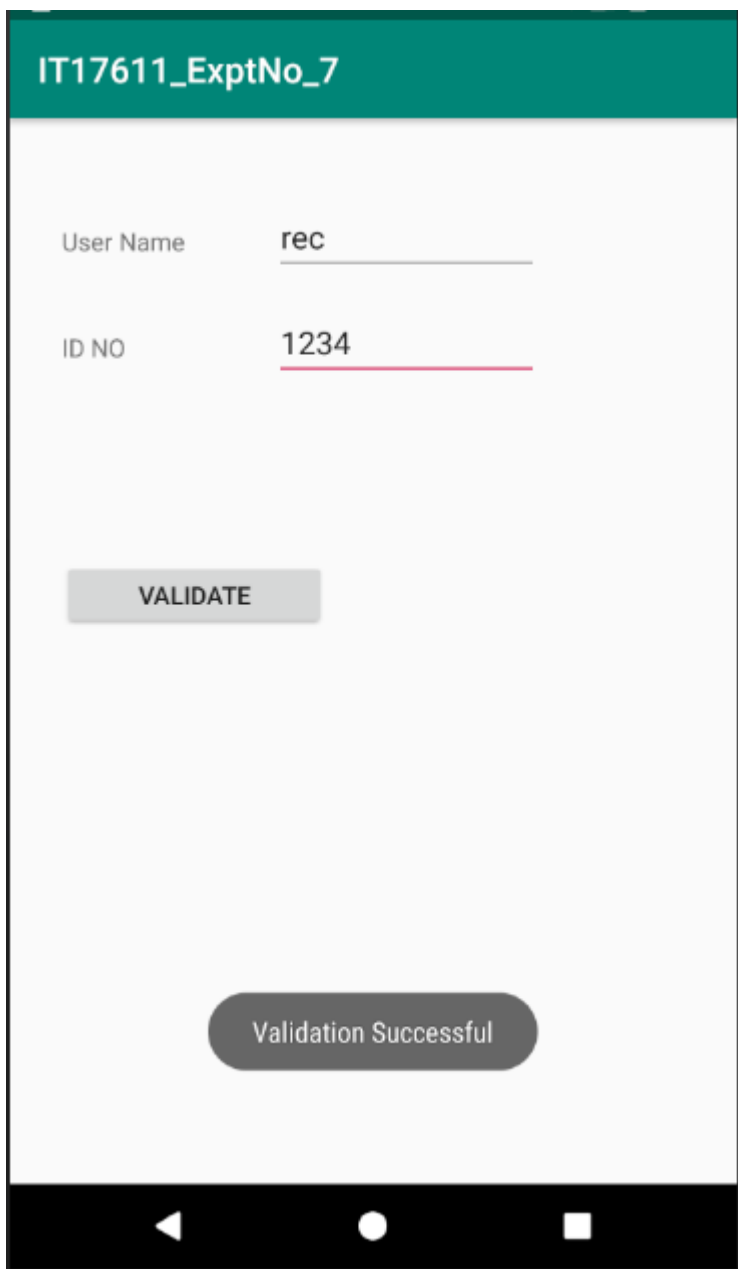
```java
        if(editUName.getText().toString().trim().length()==0 ||
                                editIDNo.getText().toString().trim().length()==0)
        Toast.makeText(getApplicationContext(),"Please enter allvalues",
        Toast.LENGTH_LONG).show();

        if(!(editUName.getText().toString().trim().matches("[a-zA-Z ]+")))
            Toast.makeText(getApplicationContext(),"Please enter only
            alphabets",Toast.LENGTH_LONG).show();

        if(!(editIDNo.getText().toString().trim().matches("[\\d ]+")) ||
                    editIDNo.getText().toString().trim().length()!=4)
        Toast.makeText(getApplicationContext(),"Please enter only four digit number",
        Toast.LENGTH_LONG).show();
    }
  });
 }
}
```

OUTPUT:

RESULT:

Thus, an android application that Validate the entered username and ID field was developed successfully.

Develop an application to get the Latitude, Longitudes of the current location using android Location Manager and also convert the Latitude/Longitude to address format using Geocoder Class.

AIM:

To develop a native application to get the Latitude, Longitudes of the current location using Geocoder Class.

PROCEDURE:

Step 1: File → NewProject
Provide the application name and Click "Next"

Step 2: Select the target android devices,
Select the minimum SDK to run the application. Click "Next".

Step 3: Choose the activity for the application (By default choose "Blank Activity). Click "Next".

Step 4: Enter activity name and click "Finish".

Step 5: Edit the program.

Step 6: Run the application, 2-ways to run the application
1. Running through emulator
2. Running through mobile device

PROGRAM:

AndroidManifest.xml
```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.it17611_expt_8">

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

activity_main.xml

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="50dp"
        android:text="GPS Location"
        android:textStyle="bold"/>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="20dp"
        android:layout_marginTop="120dp"
        android:text="Longitude and Latitude"
        android:textStyle="bold"/>

    <TextView
        android:layout_width="wrap_content"
```

```xml
    android:layout_height="wrap_content"
    android:layout_marginLeft="180dp"
    android:layout_marginTop="120dp"
    android:text=""
    android:id="@+id/t1"
    android:padding="5dp"/>

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginLeft="20dp"
    android:layout_marginTop="200dp"
    android:text="GPS Location Address"
    android:textStyle="bold" />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginLeft="180dp"
    android:layout_marginTop="200dp"
    android:text=""
    android:id="@+id/t2"
    android:padding="5dp"/>

<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="300dp"
    android:text="Get Location"
    android:id="@+id/b1"/>

</RelativeLayout>
```

MainActivity.java

```java
package com.example.it17611_expt_8;

import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;

import android.content.Context;
import android.location.Address;
import android.location.Geocoder;
import android.os.Bundle;

import android.content.pm.PackageManager;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.view.View;
import android.widget.Button;
```

```java
import android.widget.TextView;
import android.widget.Toast;

import java.util.List;
import java.util.Locale;

public class MainActivity extends AppCompatActivity implements LocationListener{
    TextView t1, t2;
    Button b1;
    LocationManager LM;

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

        t1 = (TextView)findViewById(R.id.t1);
        t2 = (TextView)findViewById(R.id.t2);
        b1 = (Button)findViewById(R.id.b1);

        if (ContextCompat.checkSelfPermission(getApplicationContext(),
android.Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED &&

ActivityCompat.checkSelfPermission(getApplicationContext(),android.Manifest.permission.ACCES
S_COARSE_LOCATION) != PackageManager.PERMISSION_GRANTED)
        {
            ActivityCompat.requestPermissions(this, new
String[]{android.Manifest.permission.ACCESS_FINE_LOCATION,
                    android.Manifest.permission.ACCESS_COARSE_LOCATION}, 101);
        }
        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                getLocation();
```

```java
                }
            });

        }
        void getLocation() {
            try {
                LM = (LocationManager)
                        getSystemService(Context.LOCATION_SERVICE);
                LM.requestLocationUpdates(LocationManager.NETWORK_PROVIDER, 5000,5, this);
            }
            catch(SecurityException e) {
                e.printStackTrace();
            }
        }
        @Override
        public void onLocationChanged(Location location) {
            t1.setText("Latitude: " + location.getLatitude() + "\nLongitude: " + location.getLongitude());
            try {
                Geocoder geocoder = new Geocoder(this, Locale.getDefault());
                List<Address> addresses = geocoder.getFromLocation(location.getLatitude(),
location.getLongitude(), 1);
                t2.setText(addresses.get(0).getAddressLine(0)+","+
addresses.get(0).getAddressLine(1)+","+addresses.get(0).getAddressLine(2));
                //t1.getText() + "\n" +
            }catch(Exception e)
            {
            }
        }
        @Override
        public void onProviderDisabled(String provider) {
            Toast.makeText(MainActivity.this, "Please Enable GPS and Internet",
Toast.LENGTH_SHORT).show();
        }
        @Override
        public void onStatusChanged(String provider, int status, Bundle extras) {
        }
        @Override
        public void onProviderEnabled(String provider) {
        }
}
```

OUTPUT:
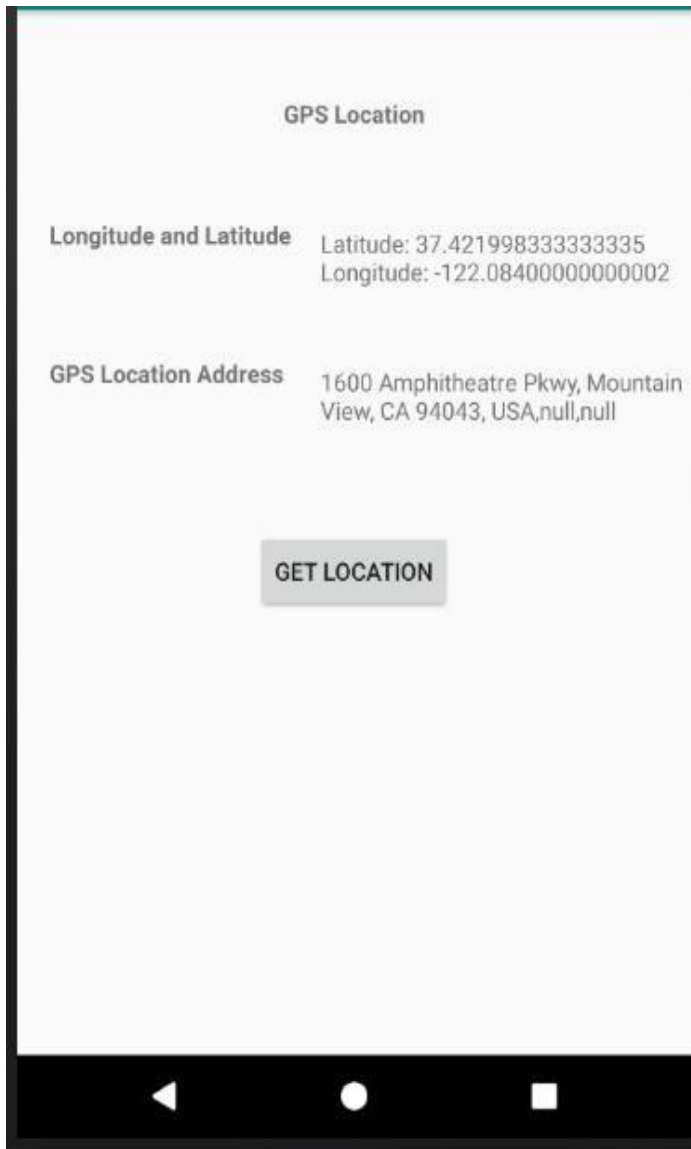
RESULT:

Thus, a native application that uses GPS location information using android studio and sdk was developed successfully.

Implement an application to write the name and marks to SD card in text file format.

AIM:

      To implement an android application that writes data (name and marks) to the SD card in text file format using android studio and sdk.

PROCEDURE:

Step 1: File → NewProject
      Provide the application name and Click "Next"

Step 2: Select the target android devices,
      Select the minimum SDK to run the application. Click "Next".

Step 3: Choose the activity for the application (By default choose "Blank Activity). Click "Next".

Step 4: Enter activity name and click "Finish".

Step 5: Edit the program.

Step 6: Run the application, 2-ways to run the application
      1. Running through emulator
      2. Running through mobile device

PROGRAM:

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.it17611_expt_9">

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

activity_main.xml

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:textSize="40px"
        android:text="Read and Write Data in SD Card"
        android:id="@+id/textView" />

    <EditText
        android:layout_width="match_parent"
        android:layout_height="200dp"
        android:layout_marginTop="30dp"
        android:id="@+id/E1" />
    <Button
        android:text="Save"
        android:layout_width="75dp"
        android:layout_height="wrap_content"
        android:layout_marginLeft="0dp"
        android:layout_marginTop="230dp"
        android:id="@+id/B1" />
```

```xml
    <Button
        android:text="Read"
        android:layout_width="75dp"
        android:layout_height="wrap_content"
        android:layout_marginLeft="80dp"
        android:layout_marginTop="230dp"
        android:id="@+id/B2" />
    <Button
        android:text="Clear"
        android:layout_width="75dp"
        android:layout_height="wrap_content"
        android:layout_marginLeft="160dp"
        android:layout_marginTop="230dp"
        android:id="@+id/B3" />
</RelativeLayout>
```

MainActivity.java

```java
package com.example.it17611_expt_9;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import java.io.FileInputStream;
import java.io.FileOutputStream;


public class MainActivity extends AppCompatActivity {
    EditText E1;
    Button B1,B2,B3;
    String data;
    String filename="mydata.txt";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        E1 = (EditText) findViewById(R.id.E1);
        B1 = (Button) findViewById(R.id.B1);
        B2 = (Button) findViewById(R.id.B2);
        B3 = (Button) findViewById(R.id.B3);
        E1.setHint("Enter Some Text Here");

        B1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                writeData();
            }
        });
```

```java
      B2.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View view) {
            readData();
         }
      });
      B3.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View view) {
            E1.setText("");
         }
      });
   }
   public void writeData()
   {
      String data=E1.getText().toString();try
   {
      FileOutputStream fos=openFileOutput(filename,MODE_PRIVATE);
      fos.write(data.getBytes());
      fos.close();
      Toast.makeText(getApplicationContext(),"File Saved: "
           + filename,Toast.LENGTH_LONG).show();
   }
   catch (Exception e)
   {
      Toast.makeText(getApplicationContext(),e.getMessage(),
           Toast.LENGTH_LONG).show();
   }
   }
   public void readData()
   {
      int c;
      String temp="";
      try
      {
         FileInputStream fis=openFileInput(filename);
         while((c=fis.read())!=-1)
         {
            temp=temp+Character.toString((char)c);
         }
         E1.setText(temp);
         Toast.makeText(getApplicationContext(), "File Read: "
              + filename, Toast.LENGTH_LONG).show();
      }
      catch (Exception e)
      {
         Toast.makeText(getApplicationContext(),
              e.getMessage(), Toast.LENGTH_LONG).show();
      }
   }
}
```

OUTPUT:
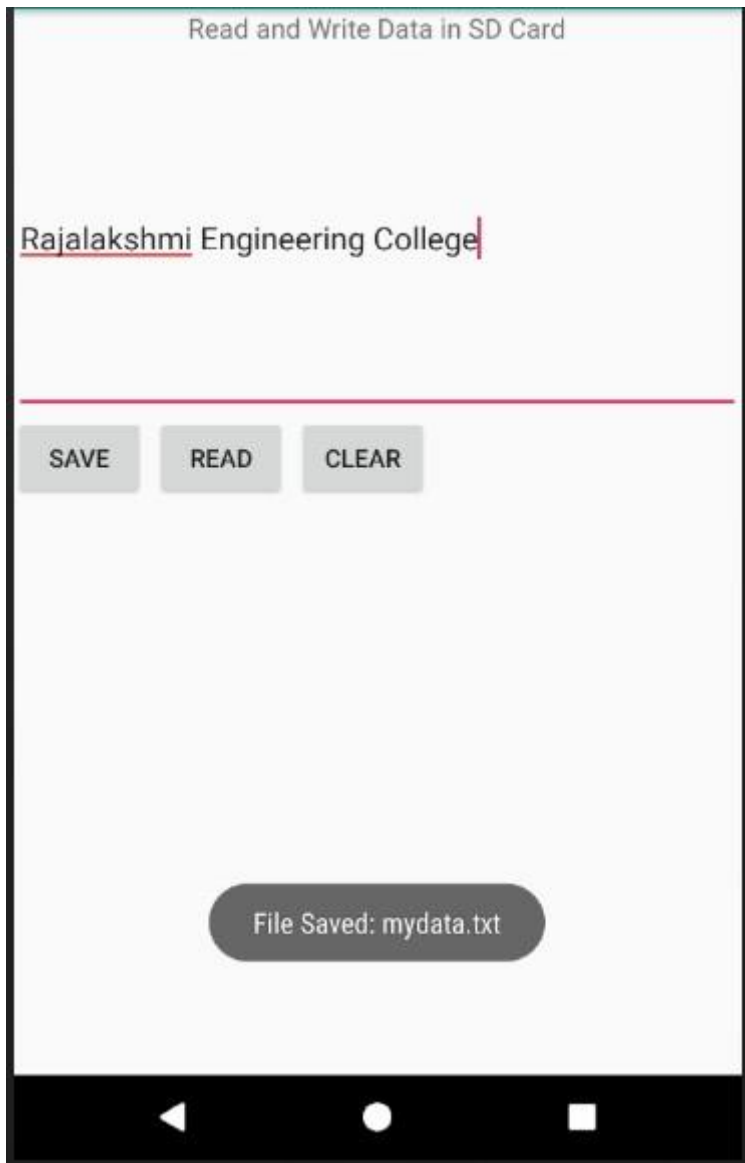
RESULT:

Thus, an android application to writes data to the SD card using android studio and sdk was implemented successfully.

Implement an application to display the alert box message when your application receives the SMS.

AIM:

       To implement an android application to display the alert box message when your application receives the SMS.

PROCEDURE:

Step 1: File → NewProject
       Provide the application name and Click "Next"

Step 2: Select the target android devices,
       Select the minimum SDK to run the application. Click "Next".

Step 3: Choose the activity for the application (By default choose "Blank Activity). Click "Next".

Step 4: Enter activity name and click "Finish".

Step 5: Edit the program.

Step 6: Run the application, 2-ways to run the application
      1. Running through emulator
      2. Running through mobile device

PROGRAM:

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.it17611_expt_10">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">

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

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

</manifest>
```

activity_main.xml

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Alert Box"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="50dp"
        android:textSize="30sp"/>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="20dp"
        android:layout_marginTop="150dp"
        android:text=" Type Message"
        android:textSize="20sp" />
```

```xml
    <EditText
        android:id="@+id/editText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginLeft="20dp"
        android:layout_marginTop="200dp"
        android:singleLine="true"
        android:textSize="20sp" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="20dp"
        android:layout_marginTop="300dp"
        android:text="Alert"
        android:textSize="20sp"/>

</RelativeLayout>
```

activity_sms_aler.xml

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="50dp"
        android:layout_marginTop="150dp"
        android:text=""
        android:id="@+id/showmsg"
        android:textSize="20sp" />

</RelativeLayout>
```

MainActivity.java

```java
package com.example.it17611_expt_10;

import androidx.appcompat.app.AppCompatActivity;

import android.app.AlertDialog;
import android.content.DialogInterface;
import android.os.Bundle;
import android.content.Intent;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity
{
    Button notify;
    EditText sms;

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

        notify= (Button) findViewById(R.id.button);
        sms= (EditText) findViewById(R.id.editText);
        builder = new AlertDialog.Builder(this);

        notify.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                final String message = sms.getText().toString();
                if(message != "") {
                    builder.setMessage(message).setTitle("New Message");
                    builder.setMessage(message)
                            .setCancelable(false)
                            .setPositiveButton("OK", new DialogInterface.OnClickListener() {
                                public void onClick(DialogInterface dialog, int id) {
                                    Intent smsIntent = new Intent(MainActivity.this, SmsAlert.class);
                                    smsIntent.putExtra("sms", message);
                                    startActivity(smsIntent);
                                    finish();
                                }
                            });
                    AlertDialog alert = builder.create();
                    alert.setTitle("New Message");
                    alert.show();

                }
```

```java
            else{
                Toast.makeText(getApplicationContext(),
                    "Type Message in Message Box",Toast.LENGTH_LONG).show();
            }
        }
    });
    }
}
```

SmsAlert.java

```java
package com.example.it17611_expt_10;

import androidx.appcompat.app.AppCompatActivity;

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

public class SmsAlert extends AppCompatActivity {

    TextView showmsg;

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

        Bundle extras = getIntent().getExtras();
        showmsg.setText(extras.getString("sms"));
    }
}
```
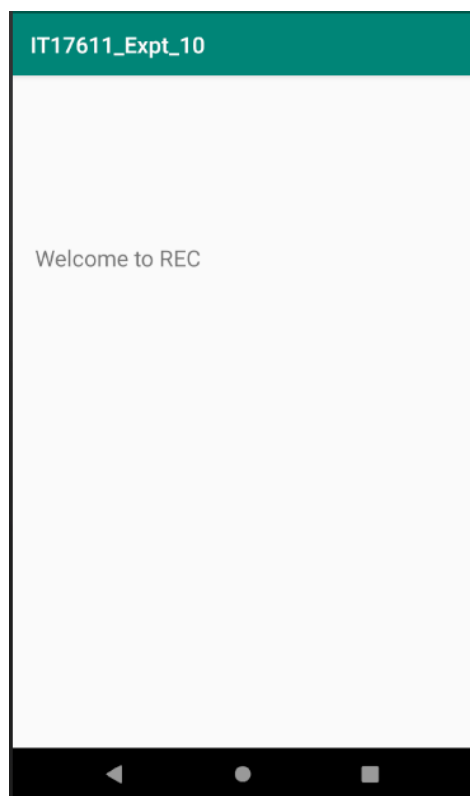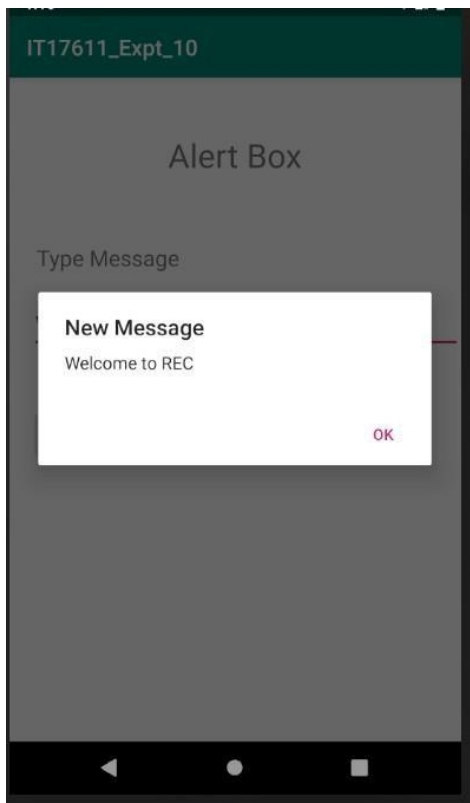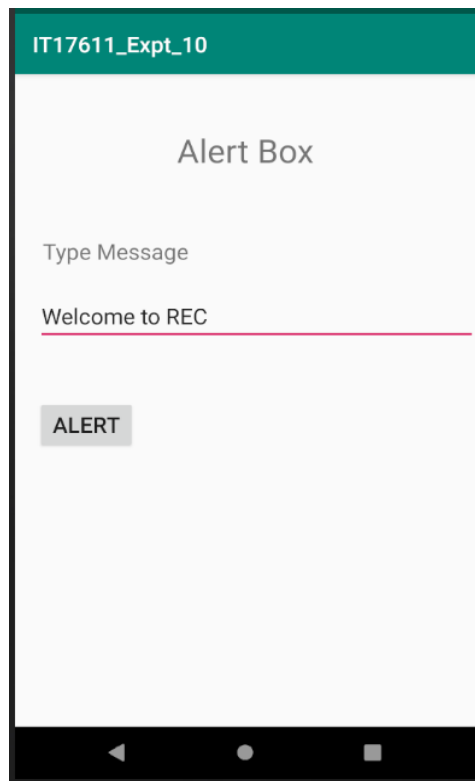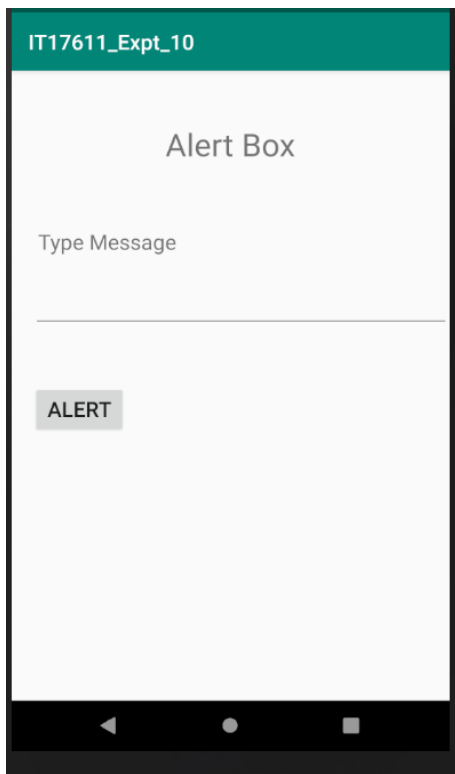
OUTPUT:

RESULT:

Thus, an android application to display the alert box message when your application receives the SMS was implemented successfully.

Write a mobile application to set the alarm using android Alarm Manager class and also snooze the alarm after every 10 minutes.

AIM:

To develop an android application to set the alarm using android Alarm Manager class and also snooze the alarm after every 10 minutes.

PROCEDURE:

Step 1: File → NewProject
Provide the application name and Click "Next"

Step 2: Select the target android devices,
Select the minimum SDK to run the application. Click "Next".

Step 3: Choose the activity for the application (By default choose "Blank Activity). Click "Next".

Step 4: Enter activity name and click "Finish".

Step 5: Edit the program.

Step 6: Run the application, 2-ways to run the application
1. Running through emulator
2. Running through mobile device

PROGRAM:

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.it17611_expt_11">

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

activity_main.xml

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


    <TimePicker
        android:id="@+id/timePicker"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center" />

    <Button
        android:id="@+id/btnSet"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:layout_marginTop="400dp"
        android:layout_marginLeft="60dp"
        android:text="Set Alaram"/>

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

```xml
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"

        android:layout_gravity="center"
        android:layout_marginTop="400dp"
        android:layout_marginLeft="230dp"
        android:text="Stop Alaram"/>

</RelativeLayout>
```

MainActivity.java

```java
package com.example.it17611_expt_11;

import android.app.Activity;
import android.app.AlarmManager;
import android.app.PendingIntent;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TimePicker;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

import java.util.Calendar;

public class MainActivity extends AppCompatActivity
{
    TimePicker alarmTimePicker;
    PendingIntent pendingIntent;
    AlarmManager alarmManager;
    Button btnSet, btnStop;

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        alarmTimePicker = (TimePicker) findViewById(R.id.timePicker);
        btnSet = (Button)findViewById(R.id.btnSet);
        btnStop = (Button)findViewById(R.id.btnStop);
        alarmManager = (AlarmManager) getSystemService(ALARM_SERVICE);

        btnSet.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                long time;
                Toast.makeText(MainActivity.this, "ALARM ON", Toast.LENGTH_SHORT).show();
                Calendar calendar = Calendar.getInstance();
                calendar.set(Calendar.HOUR_OF_DAY, alarmTimePicker.getCurrentHour());
                calendar.set(Calendar.MINUTE, alarmTimePicker.getCurrentMinute());
```

```java
            time=(calendar.getTimeInMillis()-(calendar.getTimeInMillis()%60000));
            //time = calendar.getTimeInMillis() + 600000;
            AlarmManager am = (AlarmManager) getSystemService(Activity.ALARM_SERVICE);
            Intent intent = new Intent(MainActivity.this, AlarmReceiver.class);
            pendingIntent = PendingIntent.getBroadcast(MainActivity.this, 1, intent, 0);

            //alarmManager.setRepeating(AlarmManager.RTC_WAKEUP, time, 10000,
pendingIntent);
            alarmManager.set(AlarmManager.RTC_WAKEUP, time, pendingIntent);
        }
    });

    btnStop.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            alarmManager.cancel(pendingIntent);
            Toast.makeText(MainActivity.this, "ALARM OFF", Toast.LENGTH_SHORT).show();
        }
    });
  }
}
```

AlarmReceiver.java

```java
package com.example.it17611_expt_11;

import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.media.Ringtone;
import android.media.RingtoneManager;
import android.net.Uri;
import android.widget.Toast;

public class AlarmReceiver extends BroadcastReceiver {

    @Override
    public void onReceive(Context context, Intent intent) {
        Toast.makeText(context, "Alarm! Wake up! Wake up!", Toast.LENGTH_LONG).show();
        Uri alarmUri = RingtoneManager.getDefaultUri(RingtoneManager.TYPE_ALARM);
        if (alarmUri == null)
        {
            alarmUri = RingtoneManager.getDefaultUri(RingtoneManager.TYPE_NOTIFICATION);
        }
        Ringtone ringtone = RingtoneManager.getRingtone(context, alarmUri);
        ringtone.play();

    }
}
```

OUTPUT:

RESULT:

      Thus, an android application to set the alarm using android Alarm Manager class and also snooze the alarm after every 10 minutes was developed successfully.

Develop an android application to display the information of the telephony services.

Date:

AIM:

   To develop an android application to set the alarm using android Alarm Manager class and also snooze the alarm after every 10 minutes.

PROCEDURE:

Step 1: File → NewProject
   Provide the application name and Click "Next"

Step 2: Select the target android devices,
   Select the minimum SDK to run the application. Click "Next".

Step 3: Choose the activity for the application (By default choose "Blank Activity). Click "Next".

Step 4: Enter activity name and click "Finish".

Step 5: Edit the program.

Step 6: Run the application, 2-ways to run the application
   1. Running through emulator
   2. Running through mobile device

PROGRAM:

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.it17611_expt_15">

    <uses-permission android:name="android.permission.INTERNET"/>
    <uses-permission android:name="android.permission.READ_PHONE_STATE"/>

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

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

        <service
            android:name=".MyService"
            android:enabled="true"
            android:exported="true"/>
    </application>
</manifest>
```

activity_main.xml

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentLeft="true"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginLeft="125dp"
        android:layout_marginTop="20dp"
        android:text="Telephony Service"
        android:textSize="20dp"
```

```xml
            android:textStyle="bold" />
        <TextView
            android:id="@+id/textView1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_alignParentLeft="true"
            android:layout_alignParentTop="true"
            android:layout_centerHorizontal="true"
            android:layout_marginLeft="50dp"
            android:layout_marginTop="150dp"
            android:text="Phone Details:" />

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/btnPhoneDetails"
            android:text="Get Phone Details"
            android:layout_marginTop="70dp"
            android:layout_centerHorizontal="true"
            android:onClick="Start"/>

</RelativeLayout>
```

MainActivity.java

```java
package com.example.it17611_expt_15;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;

import android.Manifest;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.content.Context;
import android.telephony.TelephonyManager;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import android.widget.Toast;


public class MainActivity extends AppCompatActivity {
    TextView textView1;
    Button  btnPhoneDetails;
    String info, strPhoneType = "";
    static final int PERMISSION_READ_STATE = 123;


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

```java
    }

    public void Start(View view) {
        int permission = ContextCompat.checkSelfPermission(this,
Manifest.permission.READ_PHONE_STATE);

        if (permission == PackageManager.PERMISSION_GRANTED) {
            MyTelephonyManager();
        } else {
            ActivityCompat.requestPermissions(this, new
String[]{Manifest.permission.READ_PHONE_STATE}, PERMISSION_READ_STATE);
        }
    }

    @Override
    public void onRequestPermissionsResult(int requestCode, @NonNull String[] permissions,
@NonNull int[] grantResults) {
        super.onRequestPermissionsResult(requestCode, permissions, grantResults);

        switch (requestCode) {
            case PERMISSION_READ_STATE: {
                if (grantResults.length >= 0 && grantResults[0] ==
PackageManager.PERMISSION_GRANTED) {
                    MyTelephonyManager();
                } else {
                    Toast.makeText(this, "You don't have required permission",
Toast.LENGTH_SHORT).show();
                }
            }
        }
    }

    private void MyTelephonyManager() {
        TelephonyManager tm = (TelephonyManager)
getSystemService(Context.TELEPHONY_SERVICE);

        int phoneType = tm.getPhoneType();
        switch (phoneType) {
            case TelephonyManager.PHONE_TYPE_CDMA:
                strPhoneType = "CDMA";
                break;
            case TelephonyManager.PHONE_TYPE_GSM:
                strPhoneType = "GSM";
                break;
            case TelephonyManager.PHONE_TYPE_NONE:
                strPhoneType = "NONE";
                break;
        }

        boolean isRoaming = tm.isNetworkRoaming();


        String PhoneType = strPhoneType;
        String IMEINumber = tm.getImei();
```

```java
        String subscriberID=tm.getSubscriberId();
        String SIMSerialNumber=tm.getSimSerialNumber();
        String networkCountryISO=tm.getNetworkCountryIso();
        String SIMCountryISO=tm.getSimCountryIso();
        String softwareVersion=tm.getDeviceSoftwareVersion();
        String voiceMailNumber=tm.getVoiceMailNumber();

        info="Phone Details:\n";
        info+="\n Phone Network Type:"+PhoneType;
        info+="\n IMEI Number:"+IMEINumber;
        info+="\n SubscriberID:"+subscriberID;
        info+="\n Sim Serial Number:"+SIMSerialNumber;
        info+="\n Network Country ISO:"+networkCountryISO;
        info+="\n SIM Country ISO:"+SIMCountryISO;
        info+="\n Software Version:"+softwareVersion;
        info+="\n Voice Mail Number:"+voiceMailNumber;
        info+="\n In Roaming? :"+isRoaming;

        textView1 = (TextView) findViewById(R.id.textView1);
        btnPhoneDetails = (Button) findViewById(R.id.btnPhoneDetails);
        textView1.setText(info);
    }
}
```

OUTPUT:
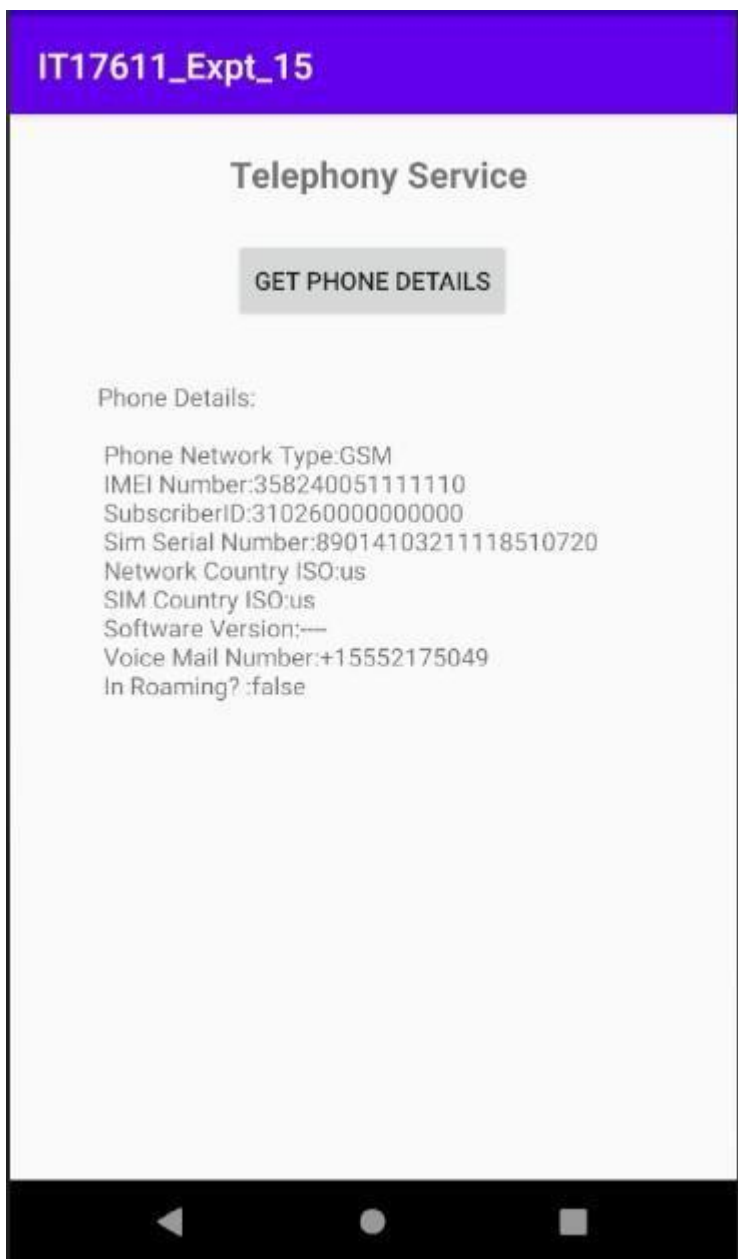
RESULT:

Thus, an android application to display the information of the telephony services was developed successfully.

Develop an application to display the cricket scores of the ICC world cup match Your application should update the scores automatically. Use RSS feed to implement this application.

AIM:

  To develop an android application to display the cricket scores of the ICC world cup match that updates the scores automatically using RSS feed.

PROCEDURE:

Step 1: File → NewProject
   Provide the application name and Click "Next"

Step 2: Select the target android devices,
   Select the minimum SDK to run the application. Click "Next".

Step 3: Choose the activity for the application (By default choose "Blank Activity). Click "Next".

Step 4: Enter activity name and click "Finish".

Step 5: Edit the program.

Step 6: Run the application, 2-ways to run the application
   1. Running through emulator
   2. Running through mobile device

PROGRAM:

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.it17611_expt_20">

    <uses-permission android:name="android.permission.INTERNET"/>

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

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

    </application>

</manifest>
```

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="RSS FEED"
        android:textSize="30dp"
        android:textStyle="bold"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="50dp"/>
    <Button
        android:id="@+id/btnRSSFeed"
        android:text="Fetch Cricket RSS Feed"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerInParent="true" />
```

```
</RelativeLayout>
```

activity_rssfeed.xml

```xml
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".Rssfeed">

    <ListView
        android:id="@+id/listView"
        android:layout_width="fill_parent"
        android:layout_height="fill_parent" >
    </ListView>

</LinearLayout>
```

MainActivity.java

```java
package com.example.it17611_expt_20;

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 btnRSSFeed;

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

        btnRSSFeed.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(MainActivity.this,Rssfeed.class);
                startActivity(intent);
            }
        });
    }
}
```

Rssfeed.java
```java
package com.example.it17611_expt_20;

import android.os.Bundle;
import android.app.ListActivity;
import android.content.Intent;
import android.net.Uri;
import android.os.AsyncTask;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import org.xmlpull.v1.XmlPullParser;
import org.xmlpull.v1.XmlPullParserException;
import org.xmlpull.v1.XmlPullParserFactory;
import java.io.IOException;
import java.io.InputStream;
import java.net.MalformedURLException;
import java.net.URL;
import java.util.ArrayList;
import java.util.List;

public class Rssfeed extends ListActivity {

    List headlines;
    List links;

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        new MyAsyncTask().execute();
    }

    class MyAsyncTask extends AsyncTask<Object,Void,ArrayAdapter>
    {
        @Override
        protected ArrayAdapter doInBackground(Object[] params)
        {
            headlines = new ArrayList();
            links = new ArrayList();
            try
            {
                URL url = new URL("https://sports.ndtv.com/rss/cricket");
                XmlPullParserFactory factory = XmlPullParserFactory.newInstance();
                factory.setNamespaceAware(false);
                XmlPullParser xpp = factory.newPullParser();

                xpp.setInput(getInputStream(url), "UTF_8");
                boolean insideItem = false;

                int eventType = xpp.getEventType();
                while (eventType != XmlPullParser.END_DOCUMENT)
```

```java
                {
                    if (eventType == XmlPullParser.START_TAG)
                    {
                        if (xpp.getName().equalsIgnoreCase("item"))
                        {
                            insideItem = true;
                        }
                        else if (xpp.getName().equalsIgnoreCase("title"))
                        {
                            if (insideItem)
                                headlines.add(xpp.nextText()); //extract the headline
                        }
                        else if (xpp.getName().equalsIgnoreCase("link"))
                        {
                            if (insideItem)
                                links.add(xpp.nextText()); //extract the link of article
                        }
                    }
                    else if(eventType==XmlPullParser.END_TAG &&
    xpp.getName().equalsIgnoreCase("item"))
                    {
                        insideItem=false;
                    }
                    eventType = xpp.next();
                }

            }
            catch (MalformedURLException e)
            {
                e.printStackTrace();
            }
            catch (XmlPullParserException e)
            {
                e.printStackTrace();
            }
            catch (IOException e)
            {
                e.printStackTrace();
            }
            return null;
        }
        protected void onPostExecute(ArrayAdapter adapter)
        {
            adapter = new ArrayAdapter(Rssfeed.this,
                                        android.R.layout.simple_list_item_1, headlines);
            setListAdapter(adapter);
        }
    }

    @Override
    protected void onListItemClick(ListView l, View v, int position, long id)
    {
```
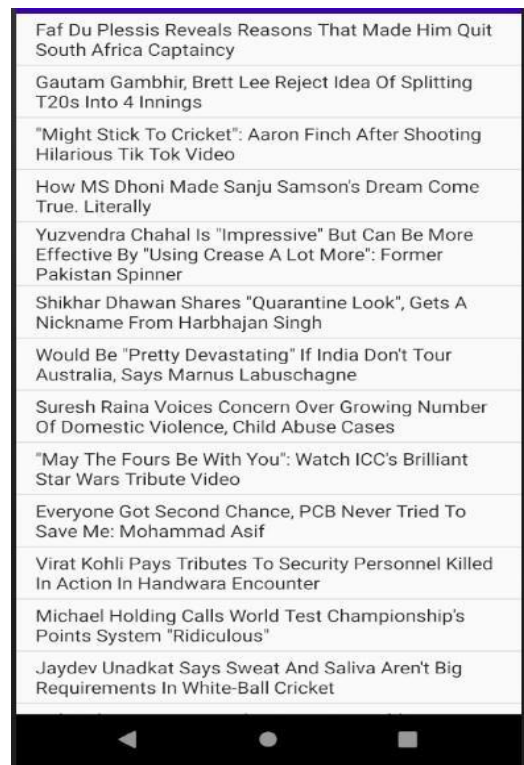
```java
            Uri uri = Uri.parse((links.get(position)).toString());
            Intent intent = new Intent(Intent.ACTION_VIEW, uri);
            startActivity(intent);
        }
    public InputStream getInputStream(URL url)
    {
        try
        {
            return url.openConnection().getInputStream();
        }
        catch (IOException e)
        {
            return null;
        }
    }
}
```

OUTPUT:

RESULT:

Thus, an android application to display the cricket scores of the ICC world cup match that updates the scores automatically using RSS feed.

Develop an application to send and receive messages using SMS Manger class

AIM:
To develop an android application to send and receive messages using SMS Manger class.

PROCEDURE:

Step 1: File → NewProject
Provide the application name and Click "Next"

Step 2: Select the target android devices,
Select the minimum SDK to run the application. Click "Next".

Step 3: Choose the activity for the application (By default choose "Blank Activity). Click "Next".

Step 4: Enter activity name and click "Finish".

Step 5: Edit the program.

Step 6: Run the application, 2-ways to run the application
1. Running through emulator
2. Running through mobile device

PROGRAM:

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.it17611_expt_12">

    <uses-permission android:name="android.permission.SEND_SMS" />
    <uses-permission android:name="android.permission.RECEIVE_SMS" />

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

activity_main.xml

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

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="SMS Application"
        android:layout_marginTop="30dp"
        android:layout_centerHorizontal="true"
        android:textSize="30dp" />

    <EditText
        android:layout_width="200dp"
        android:layout_height="wrap_content"
        android:id="@+id/editText"
        android:hint="Enter Phone Number"
        android:layout_marginTop="150dp"
```

```
        android:layout_marginLeft="50dp"/>
    <EditText
        android:layout_width="200dp"
        android:layout_height="wrap_content"
        android:id="@+id/editText2"
        android:hint="Enter SMS"
        android:layout_marginLeft="50dp"
        android:layout_marginTop="250dp"/>

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Send SMS"
        android:id="@+id/btnSendSMS"
        android:layout_marginTop="350dp"
        android:layout_centerHorizontal="true" />

</RelativeLayout>
```

activity_sms_receiver.xml

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="180dp"
        android:layout_marginLeft="50dp"
        android:text=""
        android:id="@+id/receiveSMS"/>
</RelativeLayout>
```

MainActivity.java

```
package com.example.it17611_expt_12;

import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.NotificationCompat;

import android.app.NotificationChannel;
import android.app.NotificationManager;
import android.app.PendingIntent;
import android.content.Intent;
import android.os.Bundle;
import android.telephony.SmsManager;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
```

```java
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {

    EditText txtphoneNo, txtMessage;
    Button sendSMS;
    String phoneNo, message;

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

        sendSMS = (Button) findViewById(R.id.btnSendSMS);
        txtphoneNo = (EditText) findViewById(R.id.editText);
        txtMessage = (EditText) findViewById(R.id.editText2);

        sendSMS.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {

                phoneNo = txtphoneNo.getText().toString();
                message = txtMessage.getText().toString();
                try {
                    SmsManager smsManager = SmsManager.getDefault();
                    smsManager.sendTextMessage(phoneNo, null, message, null, null);
                    Toast.makeText(getApplicationContext(), "SMS sent.",
                        Toast.LENGTH_LONG).show();
                    Intent smsIntent = new Intent(MainActivity.this, SmsReceiver.class);
                    smsIntent.putExtra("address", phoneNo);
                    smsIntent.putExtra("sms_body", message);
                    //startActivity(smsIntent);

                    NotificationManager smsnm = (NotificationManager)
getSystemService(NOTIFICATION_SERVICE);
                    final String CHANNEL_ID = "my_channel_01";

                    CharSequence name = "my_notification";
                    NotificationChannel smsnc = new NotificationChannel(CHANNEL_ID, name,
NotificationManager.IMPORTANCE_DEFAULT);
                    smsnc.setDescription("New Notification");
                    smsnm.createNotificationChannel(smsnc);

                    PendingIntent pi = PendingIntent.getActivity(MainActivity.this, 0, smsIntent,
PendingIntent.FLAG_UPDATE_CURRENT);
                    smsIntent.setFlags(Intent.FLAG_ACTIVITY_NEW_TASK |
Intent.FLAG_ACTIVITY_CLEAR_TASK);

                    NotificationCompat.Builder builder=new
NotificationCompat.Builder(MainActivity.this,CHANNEL_ID)
                            .setContentTitle("New Message from "+phoneNo)
                            .setContentText(message)
                            .setSmallIcon(R.mipmap.ic_launcher)
                            .setContentIntent(pi)
```

```
                    .setAutoCancel(true);
            smsnm.notify(1,builder.build());
        } catch (Exception e) {
            Toast.makeText(getApplicationContext(),
                    "Sending SMS failed.",
                    Toast.LENGTH_LONG).show();
            e.printStackTrace();
        }
      }
    });
  }
}
```

SmsReceiver.java

```
package com.example.it17611_expt_12;

import androidx.appcompat.app.AppCompatActivity;

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


public class SmsReceiver extends AppCompatActivity
{
   TextView receiveSMS;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_sms_receiver);

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

      Bundle extras = getIntent().getExtras();
      this.setTitle(extras.getString("address"));
      receiveSMS.setText(extras.getString("sms_body"));
   }
}
```

OUTPUT:
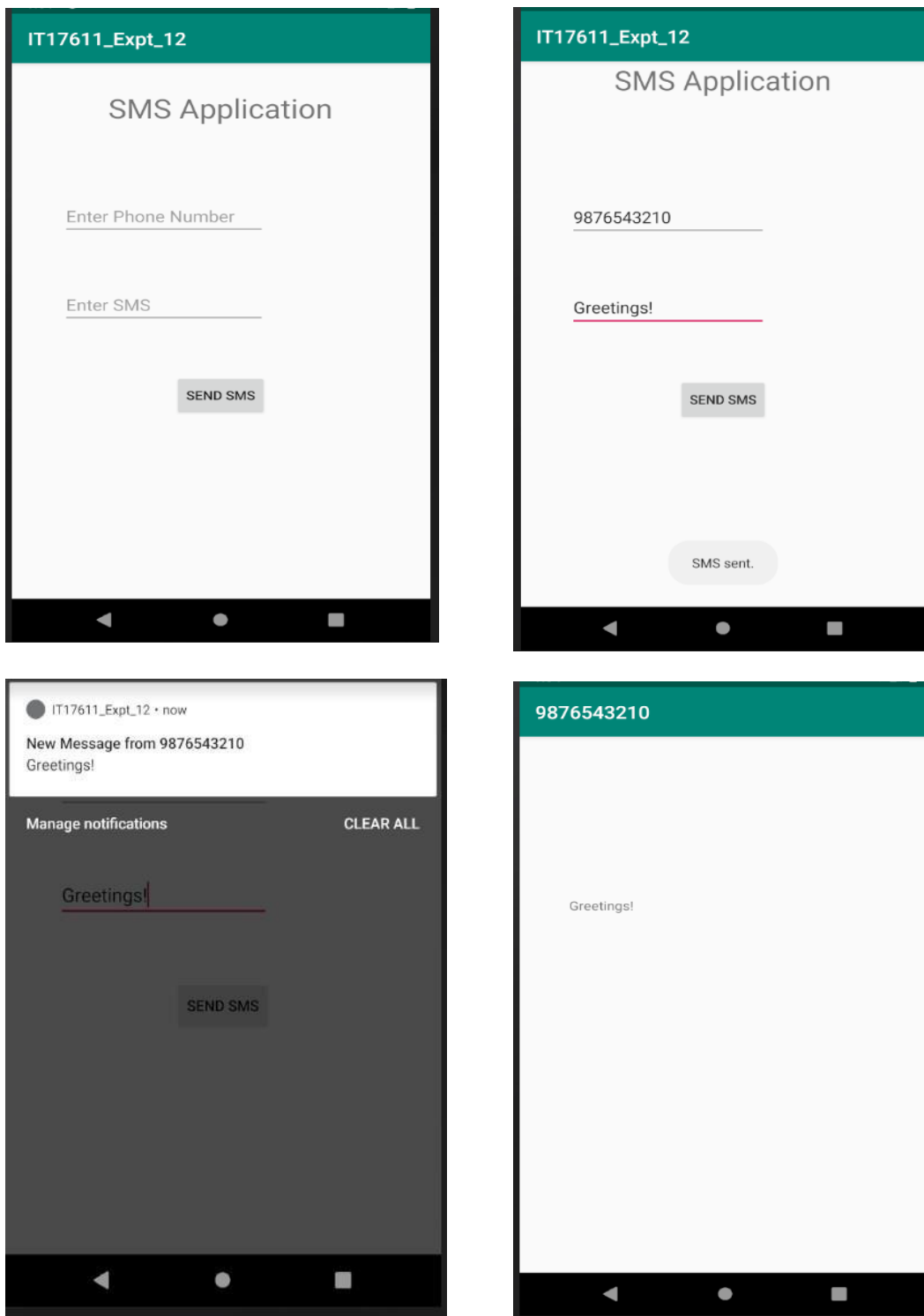
RESULT:

      Thus, an android application to send and receive messages using SMS Manger class was developed successfully.

Reg. No. :

Develop an android application to perform the following i). Text to Speech   ii). Speech to Text.

AIM:
      To develop an android application to perform Text to Speech and Speech to Text.

PROCEDURE:

Step 1: File → NewProject
      Provide the application name and Click "Next"

Step 2: Select the target android devices,
      Select the minimum SDK to run the application. Click "Next".

Step 3: Choose the activity for the application (By default choose "Blank Activity). Click "Next".

Step 4: Enter activity name and click "Finish".

Step 5: Edit the program.

Step 6: Run the application, 2-ways to run the application
      1. Running through emulator
      2. Running through mobile device

PROGRAM:

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.it17611_expt_19">

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

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

</manifest>
```

activity_main.xml

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:layout_centerHorizontal="true"
        android:text="Text to Speech"
        android:textSize="30dp"
        android:textColor="@color/colorAccent"/>
    <EditText
        android:id="@+id/editTextToSpeech"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="20dp"
        android:layout_marginTop="100dp"
        android:ems="10"
        android:hint="Enter Text:">
        <requestFocus />
```

```xml
        </EditText>
        <Button
            android:id="@+id/btnTextToSpeech"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginLeft="250dp"
            android:layout_marginTop="100dp"
            android:text="Text to Speech" />

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginTop="250dp"
            android:layout_centerHorizontal="true"
            android:text="Speech to Text"
            android:textSize="30dp"
            android:textColor="@color/colorAccent"/>

        <Button
            android:id="@+id/btnSpeechToText"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginLeft="20dp"
            android:layout_marginTop="350dp"
            android:text="Speech to Text" />

        <TextView
            android:id="@+id/viewSpeechToText"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginLeft="200dp"
            android:layout_marginTop="360dp"
            android:text=""
            android:ems="10"/>

</RelativeLayout>
```

MainActivity.java

```java
package com.example.it17611_expt_19;

import androidx.appcompat.app.AppCompatActivity;

import android.content.ActivityNotFoundException;
import android.content.Intent;
import android.os.Bundle;
import android.speech.RecognizerIntent;
import android.speech.tts.TextToSpeech;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
```

```java
import java.util.ArrayList;
import java.util.Locale;

public class MainActivity extends AppCompatActivity{

    TextToSpeech tts;
    Button btnTextToSpeech, btnSpeechToText;
    EditText editTextToSpeech;
    TextView viewSpeechToText;
    private final int REQ_CODE = 100;

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

        editTextToSpeech = (EditText) findViewById(R.id.editTextToSpeech);
        btnTextToSpeech = (Button) findViewById(R.id.btnTextToSpeech);
        btnSpeechToText = (Button) findViewById(R.id.btnSpeechToText);
        viewSpeechToText = (TextView) findViewById(R.id.viewSpeechToText);

        tts = new TextToSpeech(getApplicationContext(), new TextToSpeech.OnInitListener() {
            @Override
            public void onInit(int status) {
                if (status != TextToSpeech.ERROR) {
                    tts.setLanguage(Locale.UK);
                }
            }
        });

        btnTextToSpeech.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View arg0) {
                String toSpeak = editTextToSpeech.getText().toString();
                Toast.makeText(getApplicationContext(), toSpeak, Toast.LENGTH_SHORT).show();
                tts.speak(toSpeak, TextToSpeech.QUEUE_FLUSH, null);
            }
        });

        btnSpeechToText.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(RecognizerIntent.ACTION_RECOGNIZE_SPEECH);
                intent.putExtra(RecognizerIntent.EXTRA_LANGUAGE_MODEL,
                        RecognizerIntent.LANGUAGE_MODEL_FREE_FORM);
                intent.putExtra(RecognizerIntent.EXTRA_LANGUAGE, Locale.getDefault());
                intent.putExtra(RecognizerIntent.EXTRA_PROMPT, "Need to speak");
                try {
                    startActivityForResult(intent, REQ_CODE);
                } catch (ActivityNotFoundException a) {
                    Toast.makeText(getApplicationContext(),
                            "Sorry! your device not supported",
                            Toast.LENGTH_SHORT).show();
                }
```

```java
            }
        });
    }

    public void onPause(){
        if(tts !=null){
            tts.stop();
            tts.shutdown();
        }
        super.onPause();
    }

    @Override
    protected void onActivityResult(int requestCode, int resultCode, Intent data) {
        super.onActivityResult(requestCode, resultCode, data);
        switch (requestCode) {
            case REQ_CODE: {
                if (resultCode == RESULT_OK && null != data) {
                    ArrayList result = data
                            .getStringArrayListExtra(RecognizerIntent.EXTRA_RESULTS);
                    viewSpeechToText.setText("" + result.get(0));
                }
                break;
            }
        }
    }
}
```
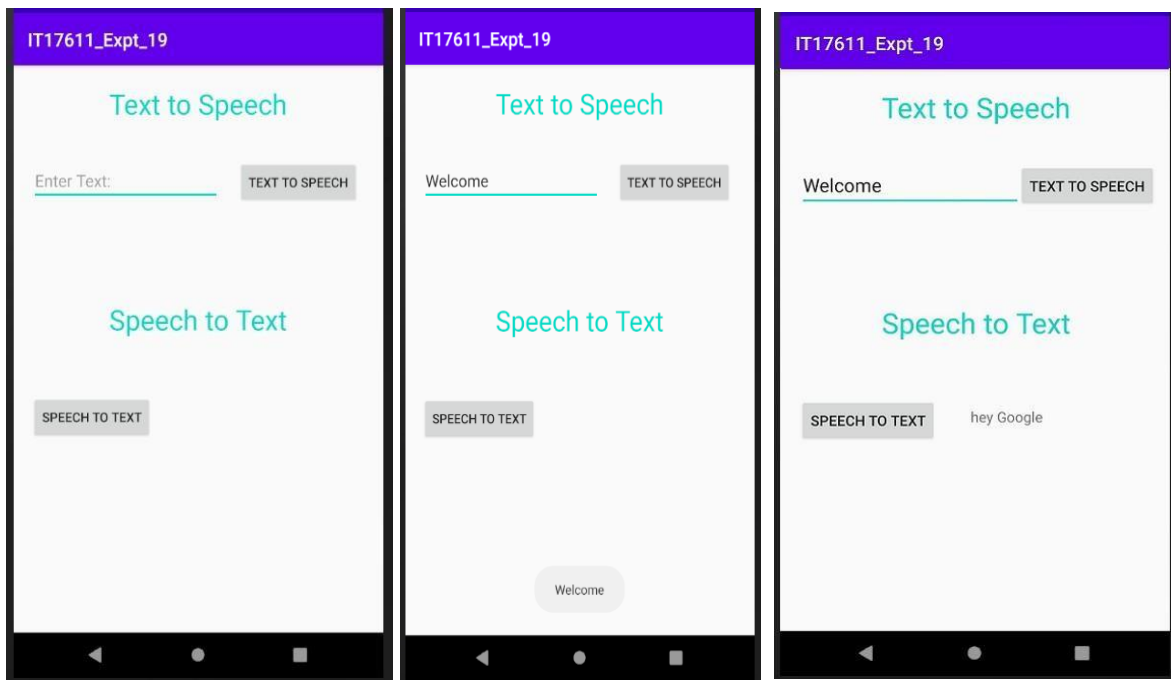
OUTPUT:

RESULT:

Thus, an android application to perform the Text to Speech and Speech to Text was developed successfully.

_____

Develop an android application to capture image using camera and displaying the image using image view.

AIM:

To develop an android application to capture image using camera and displaying the image using image view.

PROCEDURE:

Step 1: File → NewProject

Provide the application name and Click "Next"

Step 2: Select the target android devices,

Select the minimum SDK to run the application. Click "Next".

Step 3: Choose the activity for the application (By default choose "Blank Activity). Click "Next".

Step 4: Enter activity name and click "Finish".

Step 5: Edit the program.

Step 6: Run the application, 2-ways to run the application
1. Running through emulator
2. Running through mobile device

PROGRAM:

androidManifest.xml

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

<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.android_examples.captureimagecamera_android_examplescom">
    <uses-permission android:name="android.permission.CAMERA" />

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

activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/activity_main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.android_examples.captureimagecamera_android_examplescom.MainActivity"
    android:orientation="vertical"
    android:background="#FFF9C4">


    <ImageView
        android:layout_width="fill_parent"
        android:layout_height="300dp"
        android:layout_centerHorizontal="true"
        android:id="@+id/imageView" />




<Button
```

```
        android:text="Click here to capture image using camera"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/button" />
```

</LinearLayout>

MainActivity.java

```java
import android.Manifest;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.graphics.Bitmap;
import android.support.v4.app.ActivityCompat;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    Button button ;
    ImageView imageView ;
    Intent intent ;
    public  static final int RequestPermissionCode  = 1 ;

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

        button = (Button)findViewById(R.id.button);
        imageView = (ImageView)findViewById(R.id.imageView);

        EnableRuntimePermission();

        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {

                intent = new Intent(android.provider.MediaStore.ACTION_IMAGE_CAPTURE);

                startActivityForResult(intent, 7);

            }
        });
    }

    protected void onActivityResult(int requestCode, int resultCode, Intent data) {
```

```java
        if (requestCode == 7 && resultCode == RESULT_OK) {

            Bitmap bitmap = (Bitmap) data.getExtras().get("data");

            imageView.setImageBitmap(bitmap);
        }
    }

    public void EnableRuntimePermission(){

        if (ActivityCompat.shouldShowRequestPermissionRationale(MainActivity.this,
                Manifest.permission.CAMERA))
        {

            Toast.makeText(MainActivity.this,"CAMERA permission allows us to Access CAMERA app",
Toast.LENGTH_LONG).show();

        } else {

            ActivityCompat.requestPermissions(MainActivity.this,new String[]{
                Manifest.permission.CAMERA}, RequestPermissionCode);

        }
    }

    @Override
    public void onRequestPermissionsResult(int RC, String per[], int[] PResult) {

        switch (RC) {

            case RequestPermissionCode:

                if (PResult.length > 0 && PResult[0] == PackageManager.PERMISSION_GRANTED) {

                    Toast.makeText(MainActivity.this,"Permission Granted, Now your application can access
CAMERA.", Toast.LENGTH_LONG).show();

                } else {

                    Toast.makeText(MainActivity.this,"Permission Canceled, Now your application cannot
access CAMERA.", Toast.LENGTH_LONG).show();

                }
                break;
        }
    }
}
```
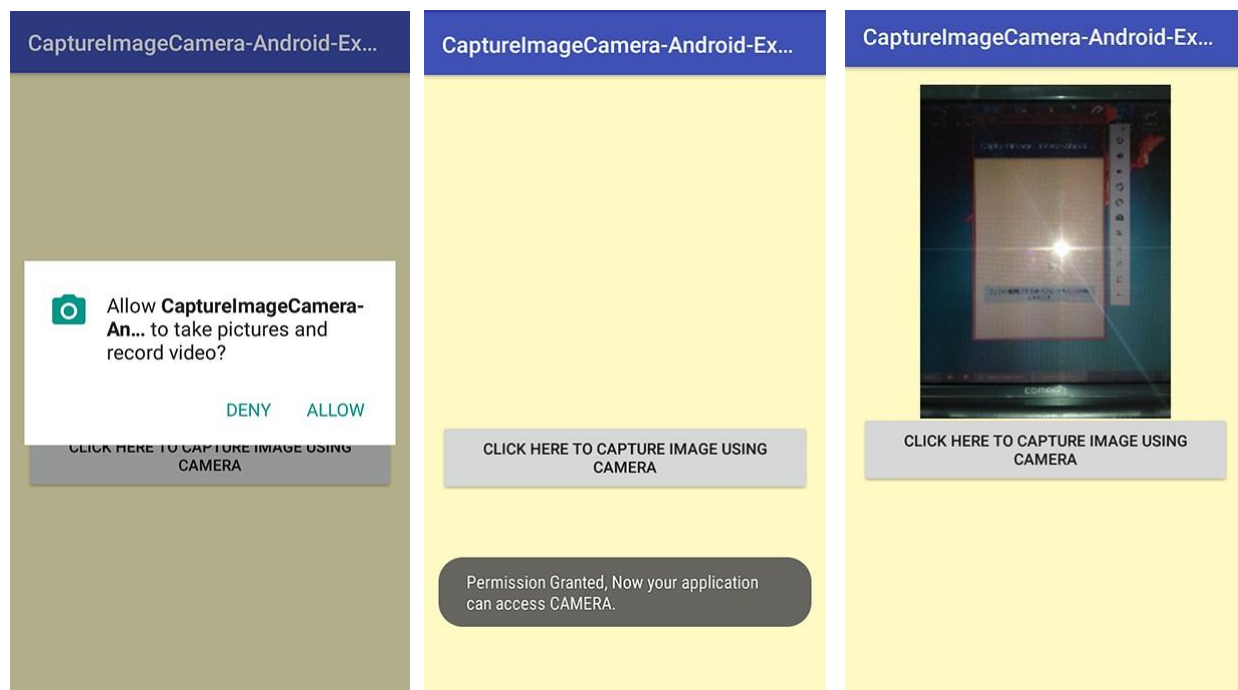
OUTPUT:

RESULT:

      Thus, an android application to capture image using camera and displaying the image using image view.