AMIRAJ
COLLEGE OF ENGINEERING & TECHNOLOGY

LABORATORY MANUAL

Mobile Computing and Wireless Communication

SUBJECT CODE: 2170710

COMPUTER SCIENCE AND ENGINEERING DEPARTMENT

B.E. 7th SEMESTER

NAME:____

ENROLLMENT NO: ________________________________

BATCH NO: ____________________________________

YEAR: _______________________________________

Amiraj College of Engineering and Technology,
Nr.Tata Nano Plant, Khoraj, Sanand, Ahmedabad.

AMIRAJ

COLLEGE OF ENGINEERING & TECHNOLOGY

Amiraj College of Engineering and Technology,

Nr.Tata Nano Plant, Khoraj, Sanand, Ahmedabad.

CERTIFICATE

This is to certify that Mr. / Ms. ____
Of class____________________ Enrolment No ___________________________has
Satisfactorily completed the course in ____________________________________as
by the Gujarat Technological University for ____ Year (B.E.) semester___ of
Computer Science And Engineering in the Academic year________.

Date of Submission:-

Faculty Name and Signature
(Subject Teacher)

Head of Department
(Computer)

AMIRAJ
COLLEGE OF ENGINEERING & TECHNOLOGY

CMPUTER SCIENCE AND ENGINEERING DEPARTMENT

B.E. 7th SEMESTER

SUBJECT: Mobile Computing and Wireless Communication

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List Of Experiments

Sr. No.	Title	Date of Performance	Date of submission	Sign	Remark
1.	Develop an android app which displays "Hello, welcome to Android Lab" message.				
2	Develop an android app which displays a form to get following information from user.				
3	Using Android, Create a login Activity. It asks "username" and "password" from user. If username and password are valid, it displays Welcome message using new activity.				
4	Develop calculator Android Application.				
5	Study of perform infrared communication.				
6	Study of Bluetooth file transfer in android.				

7	Study of to identify the Bluetooth devices in the wireless range.				
8	Create an application that shows different country name on listview and on selecting it will show flag of that country.				
9	Create an application using firebase.				
10	Case Study n different real time mobile computing services				

PRACTICAL-1

AIM:- Develop an android app which displays “Hello, welcome to Android Lab” message.

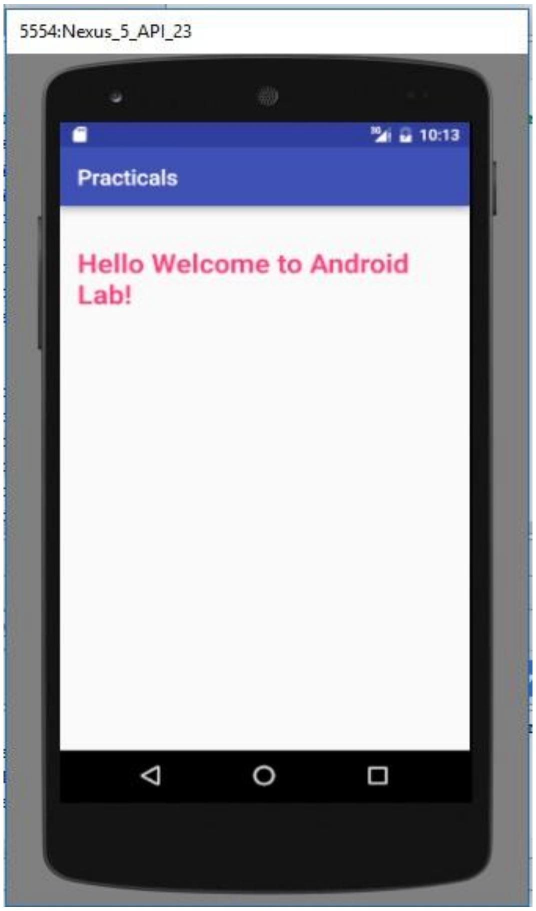
Software used: Java JDK 1.8, Android Studio.

PROGRAM:

Activity_prac1.xml

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

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   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="iwt.waytoweb.practicals.Prac5">

<TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello Welcome to Android Lab!"
        android:textSize="25dp"
        android:textStyle="bold"
        android:textColor="@color/colorAccent"
        android:layout_marginTop="20dp"/>
</RelativeLayout>
```

OUTPUT:



5554:Nexus_5_API_23

Hello Welcome to Android Lab!

PRACTICAL-2

AIM:- Develop an android app which displays a form to get following information from user.

1. Username
2. Password
3. E-mail Address
4. Phone Number
5. Country
6. State
7. Gender
8. Interests
9. Birth Date
10. Birth Time Form should be follow by a button with label “Submit”. When user click the button, a message should be displayed to user describing the information entered.

Utilize Suitable UI controls.

PROGRAM:

Activity_prac2.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<ScrollView android:layout_height="match_parent"
   android:layout_width="match_parent"
   xmlns:android="http://schemas.android.com/apk/res/android" >
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:layout_marginTop="16dp"
   android:layout_marginBottom="16dp"
   android:layout_marginLeft="16dp"
   android:layout_marginRight="16dp"
   tools:context="iwt.waytoweb.practicals.Prac6"
   android:orientation="vertical"  >

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

```
        android:textColor="@android:color/holo_blue_dark"
        android:textSize="30dp"
        android:layout_gravity="center"
android:layout_marginTop="20dp"
        android:textStyle="bold|italic"
        android:id="@+id/title"/>

<EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="User Name"
        android:inputType="text"
        android:layout_marginTop="10dp"
        android:textColorHint="@android:color/black"
        android:textColor="@android:color/holo_red_light"
        android:id="@+id/unm" />

<EditText
    android:textColorHint="@android:color/black"
        android:textColor="@android:color/holo_red_light"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Password"
        android:inputType="textPassword"
        android:id="@+id/pwd" />

<EditText
        android:textColorHint="@android:color/black"
        android:textColor="@android:color/holo_red_light"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Email ID"
        android:inputType="textEmailAddress"
        android:id="@+id/eid"     />

<EditText
        android:textColorHint="@android:color/black"
        android:textColor="@android:color/holo_red_light"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Phone Number"
        android:inputType="phone"
        android:maxLength="10"
        android:id="@+id/pno" />
```

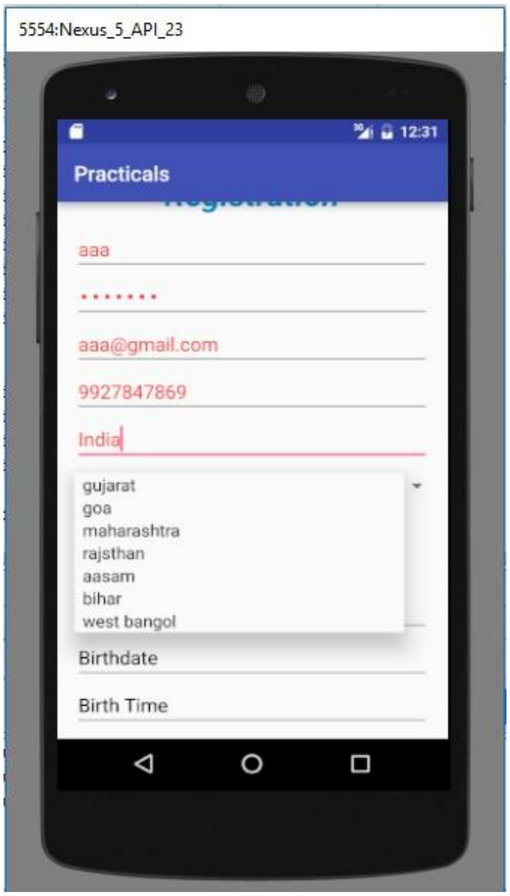
```
<AutoCompleteTextView
       android:layout_width="match_parent"
       android:layout_height="wrap_content"
       android:textColorHint="@android:color/black"
       android:textColor="@android:color/holo_red_light"
       android:hint="Country"
       android:inputType="phone"
android:maxLength="10"
       android:id="@+id/country"        />

<Spinner
       android:layout_width="match_parent"
       android:layout_height="wrap_content"
       android:layout_marginTop="10dp"
       android:id="@+id/state">

</Spinner>

<RadioGroup
       android:layout_width="match_parent"
       android:layout_height="wrap_content">

<RadioButton
          android:layout_width="match_parent"
          android:layout_height="wrap_content"
          android:text="Male"
          android:textColor="@android:color/black"     />

<RadioButton
          android:layout_width="match_parent"
          android:layout_height="wrap_content"
          android:text="Female"
          android:textColor="@android:color/black" />
</RadioGroup>

<EditText
       android:textColorHint="@android:color/black"
       android:textColor="@android:color/holo_red_light"
       android:layout_width="match_parent"
       android:layout_height="wrap_content"
   android:hint="Intersets"
       android:maxLength="10"
       android:id="@+id/interset"/>

<EditText
       android:textColorHint="@android:color/black"
```

```
        android:textColor="@android:color/holo_red_light"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Birthdate"
        android:maxLength="10"
        android:id="@+id/birthdate"     />

<EditText
        android:textColorHint="@android:color/black"
        android:textColor="@android:color/holo_red_light"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Birth Time"
        android:maxLength="10"
        android:id="@+id/birthtime"     />

<Button
      android:layout_width="250dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="40dp"
        android:layout_marginLeft="60dp"
        android:text="Register"
        android:id="@+id/regi"    />
</LinearLayout>
</ScrollView>
```

Prac 2.java:

```
package iwt.waytoweb.practicals;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.AutoCompleteTextView;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Spinner;
import android.widget.Toast;

public class Prac2 extends AppCompatActivity {
    EditText username,password,email,phone,interest,birthdate,birthtime;
    AutoCompleteTextView country;
    Spinner states;
    Button submit;
    ArrayAdapter arrayAdapter,arrayAdapter1;
    String[] Country={"India","Indonesia","Africa","Afghanistan"};
    String[] state={"gujarat","goa","maharashtra","rajsthan","aasam","bihar","west bangol"};
    @Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_prac6);
submit= (Button) findViewById(R.id.regi);
states= (Spinner) findViewById(R.id.state);
country= (AutoCompleteTextView) findViewById(R.id.country);
arrayAdapter=new ArrayAdapter(Prac6.this,android.R.layout.simple_spinner_item,state);
states.setAdapter(arrayAdapter);
country.setThreshold(1);
country.setAdapter(arrayAdapter1);
submit.setOnClickListener(new View.OnClickListener() {
            @Override
public void onClick(View v) {
                Toast.makeText(Prac2.this, "Registered successfully... ",
Toast.LENGTH_SHORT).show();
            }
        });
    }
}
```

OUTPUT:



5554:Nexus_5_API_23

12:31

Practicals

aaa

•••••••

aaa@gmail.com

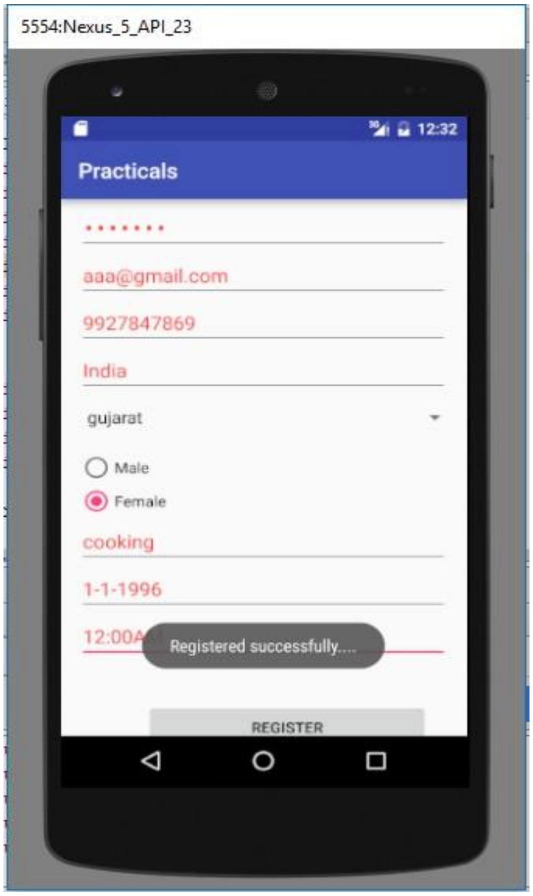
9927847869

India

gujarat
goa
maharashtra
rajsthan
aasam
bihar
west bangol

Birthdate

Birth Time



5554:Nexus_5_API_23

12:32

Practicals

•••••••

aaa@gmail.com

9927847869

India

gujarat

○ Male
● Female

cooking

1-1-1996

12:00A

Registered successfully....

REGISTER

PRACTICAL-3

AIM:-Using Android, Create a login Activity. It asks “username” and “password” from user. If username and password are valid, it displays Welcome message using new activity.

Software used: Java JDK 1.8, Android Studio

PROGRAM:

Activity_prac3.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:layout_centerHorizontal="true"
    tools:context="iwt.waytoweb.practicals.Prac7">

<TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Login"
        android:textColor="#FF212355"
        android:textStyle="italic"
        android:textSize="30dp"
 android:gravity="center"
        android:layout_marginTop="20dp"  />

<EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="enter email:"
        android:id="@+id/email"
        android:layout_marginTop="60dp" />

<EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="enter password:"
        android:id="@+id/pwd"
        android:layout_marginTop="120dp"
        android:inputType="textPassword" />

<Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="login"
        android:id="@+id/login_btn"
        android:layout_marginTop="180dp"  />
</RelativeLayout>
```

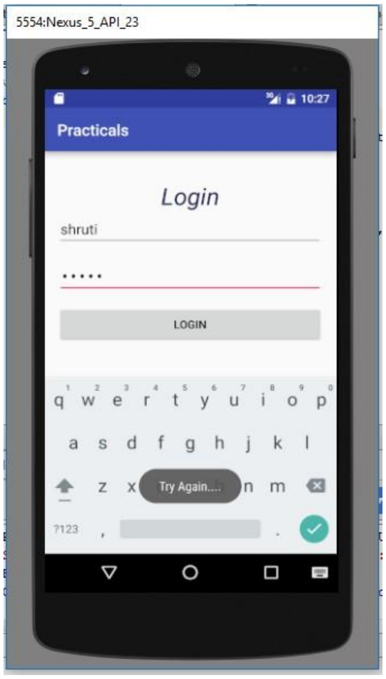
Activity_WelcomePage.xml

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

<TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Welcome to the new page!"
        android:textSize="25dp"
        android:textStyle="bold"
        android:textColor="@color/colorAccent"
        android:layout_marginTop="20dp"/>
</RelativeLayout>
```

Prac3.java

```
package iwt.waytoweb.practicals;

import android.content.Intent;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class Prac3 extends AppCompatActivity {
EditText email,password;
   Button login;
   @Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_prac7);
email= (EditText) findViewById(R.id.email);
password= (EditText) findViewById(R.id.pwd);
login= (Button) findViewById(R.id.login_btn);
login.setOnClickListener(new View.OnClickListener() {
         @Override
public void onClick(View v) {
if (email.getText().toString().equals("admin")) {
if( password.getText().toString().equals("1234567"))
               {
               Intent intent=new Intent(getApplicationContext(),WelcomePage.class);
               startActivity(intent);
               }
            }
else
{
               Toast.makeText(Prac3.this, "Try Again. ..", Toast.LENGTH_SHORT).show();
            } } }); } }
```

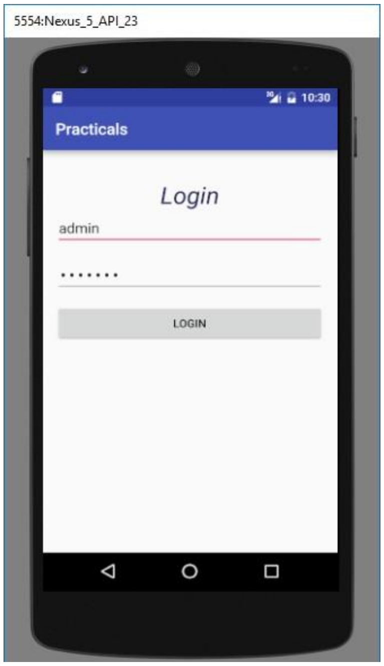
OUTPUT:



shruti

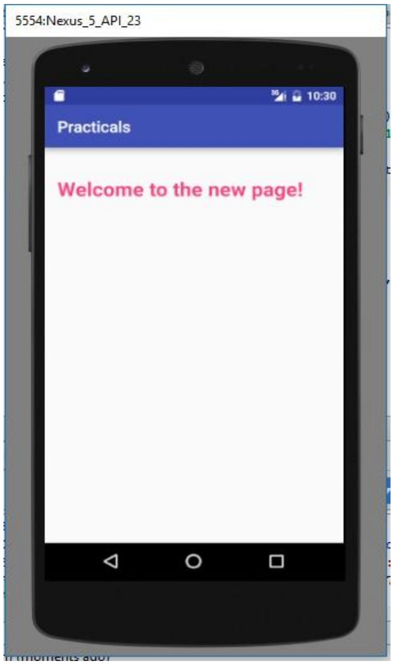
•••••

Try Again....



admin

•••••••



Welcome to the new page!

PRACTICAL-4

AIM:-Develop calculator Android Application.

Software used: Java JDK 1.8, Android Studio

PROGRAM:

Activity_prac4.xml

```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools" android:layout_width="match_parent"
    android:layout_height="match_parent"
android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingBottom="@dimen/activity_vertical_margin" tools:context=".MainActivity"
    android:id="@+id/relative1">

    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/edt1"/>

    <Button
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="1"
        android:id="@+id/button1"
        android:layout_marginTop="94dp"
        android:layout_below="@+id/edt1"
        android:layout_toStartOf="@+id/button4"
        android:layout_alignRight="@+id/button4"
        android:layout_alignEnd="@+id/button4" />

    <Button
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="2"
        android:id="@+id/button2"
        android:layout_alignTop="@+id/button1"
        android:layout_toLeftOf="@+id/button3"
        android:layout_toStartOf="@+id/button3" />
```

```
<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="3"
    android:id="@+id/button3"
    android:layout_alignTop="@+id/button2"
    android:layout_centerHorizontal="true" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="4"
    android:id="@+id/button4"
    android:layout_below="@+id/button1"
    android:layout_toLeftOf="@+id/button2" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="5"
    android:id="@+id/button5"
    android:layout_alignBottom="@+id/button4"
    android:layout_alignLeft="@+id/button2"
    android:layout_alignStart="@+id/button2" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="6"
    android:id="@+id/button6"
    android:layout_below="@+id/button3"
    android:layout_alignLeft="@+id/button3"
    android:layout_alignStart="@+id/button3" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="7"
    android:id="@+id/button7"
    android:layout_below="@+id/button4"
    android:layout_toLeftOf="@+id/button2" />
```

```
 <Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="8"
    android:id="@+id/button8"
    android:layout_below="@+id/button5"
    android:layout_alignLeft="@+id/button5"
    android:layout_alignStart="@+id/button5" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="9"
    android:id="@+id/button9"
    android:layout_below="@+id/button6"
    android:layout_alignLeft="@+id/button6"
    android:layout_alignStart="@+id/button6" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="+"
    android:id="@+id/buttonadd"
    android:layout_alignTop="@+id/button3"
    android:layout_toRightOf="@+id/button3"
    android:layout_marginLeft="46dp"
    android:layout_marginStart="46dp"
    android:layout_alignRight="@+id/edt1"
    android:layout_alignEnd="@+id/edt1" />

<Button
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="-"
    android:id="@+id/buttonsub"
    android:layout_below="@+id/buttonadd"
    android:layout_alignLeft="@+id/buttonadd"
    android:layout_alignStart="@+id/buttonadd"
    android:layout_alignRight="@+id/buttonadd"
    android:layout_alignEnd="@+id/buttonadd" />

<Button
```

```
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="*"
        android:id="@+id/buttonmul"
        android:layout_below="@+id/buttonsub"
        android:layout_alignLeft="@+id/buttonsub"
        android:layout_alignStart="@+id/buttonsub"
        android:layout_alignParentRight="true"
        android:layout_alignParentEnd="true" />

    <Button
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="."
        android:id="@+id/button10"
        android:layout_below="@+id/button7"
        android:layout_toLeftOf="@+id/button2" />

    <Button
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="0"
        android:id="@+id/button0"
        android:layout_below="@+id/button8"
        android:layout_alignLeft="@+id/button8"
        android:layout_alignStart="@+id/button8" />

    <Button
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="C"
        android:id="@+id/buttonC"
        android:layout_below="@+id/button9"
        android:layout_alignLeft="@+id/button9"
        android:layout_alignStart="@+id/button9" />

    <Button
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="/"
        android:id="@+id/buttondiv"
        android:layout_below="@+id/buttonmul"
        android:layout_alignLeft="@+id/buttonmul"
        android:layout_alignStart="@+id/buttonmul"
        android:layout_alignRight="@+id/buttonmul"
        android:layout_alignEnd="@+id/buttonmul" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="="
        android:id="@+id/buttoneql"
        android:layout_below="@+id/button0"
        android:layout_marginTop="37dp"
        android:layout_alignRight="@+id/buttondiv"
        android:layout_alignEnd="@+id/buttondiv"
        android:layout_alignLeft="@+id/button10"
        android:layout_alignStart="@+id/button10" />
 </RelativeLayout>
```

Prac4.java

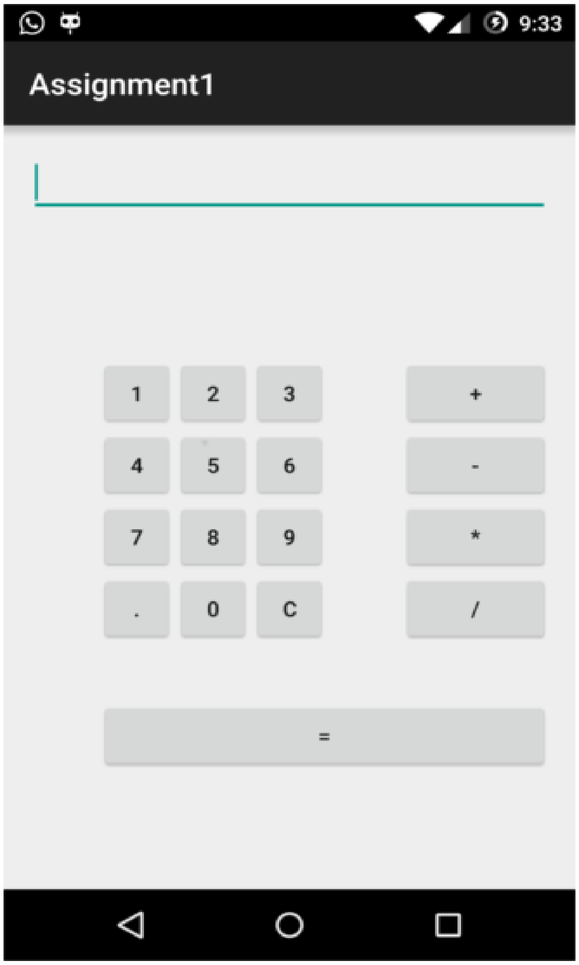
```
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {
     Button button0 , button1 , button2 , button3 , button4 , button5 , button6 ,
            button7 , button8 , button9 , buttonAdd , buttonSub , buttonDivision ,
            buttonMul , button10 , buttonC , buttonEqual ;
     EditText edt1 ;
     float mValueOne , mValueTwo ;
     boolean mAddition , mSubtract ,mMultiplication ,mDivision ;
     @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);
button10 = (Button) findViewById(R.id.button10);
buttonAdd = (Button) findViewById(R.id.buttonadd);
buttonSub = (Button) findViewById(R.id.buttonsub);
buttonMul = (Button) findViewById(R.id.buttonmul);
buttonDivision = (Button) findViewById(R.id.buttondiv);
buttonC = (Button) findViewById(R.id.buttonC);
buttonEqual = (Button) findViewById(R.id.buttoneql);
edt1 = (EditText) findViewById(R.id.edt1);

 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");
            }
        });
         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 == null){
                    edt1.setText("");
                }else {
                    mValueOne = Float.parseFloat(edt1.getText() + "");
                    mAddition = true;
                    edt1.setText(null);
                }
            }
        });
         buttonSub.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                mValueOne = Float.parseFloat(edt1.getText() + "");
                mSubtract = true ;
                edt1.setText(null);
            }
        });
        buttonMul.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                mValueOne = Float.parseFloat(edt1.getText() + "");
                mMultiplication = true ;
                edt1.setText(null);
            }
        });
         buttonDivision.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                mValueOne = Float.parseFloat(edt1.getText()+"");
                mDivision = true ;
                edt1.setText(null);
            }
        });
         buttonEqual.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                mValueTwo = Float.parseFloat(edt1.getText() + "");
                 if (mAddition == true){
                     edt1.setText(mValueOne + mValueTwo +"");
                    mAddition=false;
                }
                 if (mSubtract == true){
                    edt1.setText(mValueOne - mValueTwo+"");
                    mSubtract=false;
                }
                 if (mMultiplication == true){
                    edt1.setText(mValueOne * mValueTwo+"");
                    mMultiplication=false;
                }
                 if (mDivision == true){
                    edt1.setText(mValueOne / mValueTwo+"");
                    mDivision=false;
                }
            }
        });
         buttonC.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                edt1.setText("");
            }
```

```
        });
        button10.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                edt1.setText(edt1.getText()+".");
            }
        });
    }

}
```

OUTPUT:



PRACTICAL-5

AIM:-Study of perform infrared communication.

THEORY:-

IR data transmission is also employed in short-range communication among computer peripherals and personal digital assistants. These devices usually conform to standards published by IrDA, the Infrared Data Association. Remote controls and IrDA devices use infrared light-emitting diodes (LEDs) to emit infrared radiation that is focused by a plastic lens into a narrow beam. The beam is modulated, i.e. switched on and off, to prevent interference from other sources of infrared (like sunlight or artificial lighting). The receiver uses a silicon photodiode to convert the infrared radiation to an electric current. It responds only to the rapidly pulsing signal created by the transmitter, and filters out slowly changing infrared radiation from ambient light. Infrared communications are useful for indoor use in areas of high population density. IR does not penetrate walls and so does not interfere with other devices in adjoining rooms. Infrared is the most common way for remote controls to command appliances. Infrared remote control protocols like RC-5, SIRC, are used to communicate with infrared.

Free space optical communication using infrared lasers can be a relatively inexpensive way to install a communications link in an urban area operating at up to 4 gigabit/s, compared to the cost of burying fiber optic cable, except for the radiation damage. "Since the eye cannot detect IR, blinking or closing the eyes to help prevent or reduce damage may not happen."

Infrared lasers are used to provide the light for optical fiber communications systems. Infrared light with a wavelength around 1,330 nm (least dispersion) or 1,550 nm (best transmission) are the best choices for standard silica fibers.

IR data transmission of encoded audio versions of printed signs is being researched as an aid for visually impaired people through the RIAS (Remote Infrared Audible Signage) project. Transmitting IR data from one device to another is sometimes referred to as beaming.

PRACTICAL-6

AIM:-Study of Bluetooth file transfer in android.

Theory:

To develop an Android application making use of data transfers via Bluetooth (BT), one would logically start at the Android Developer's Bluetooth page, where all the required steps are described in details: device discovery, pairing, client/server sockets, RFCOMM channels, etc.

But before jumping into sockets and threads programming just to perform a basic BT operation, let's consider a simpler alternative, based on one of Android's most important features: the ability for a given application to send the user to another one, which, in this case, would be the device's default BT application. Doing so will have the Android OS itself do all the low-level work for us. First things first, a bit of defensive programming:

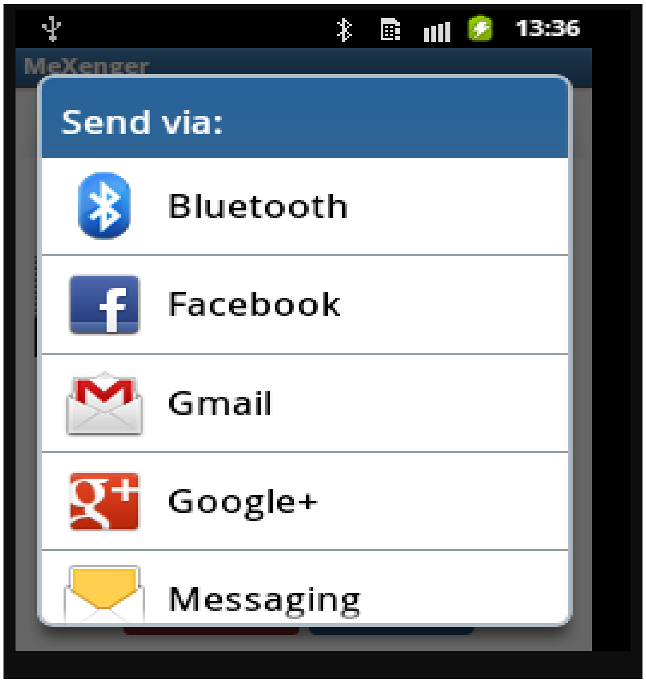
```
import android.bluetooth.BluetoothAdapter;
//...
// inside method
// Check if bluetooth is supported
BluetoothAdapter btAdapter = BluetoothAdapter.getDefaultAdapter();
if (btAdapter == null) {
   // Device does not support Bluetooth
   // Inform user that we're done.
 }
```

The above is the first check we need to perform. Done that, let's see how he can start BT from within our own application.

Android will then display all the activities that are able to complete the action we want, in a chooser list. Here's an example:

```
// bring up Android chooser
Intent intent = new Intent();
intent.setAction(Intent.ACTION_SEND);
intent.setType("text/plain");
intent.putExtra(Intent.EXTRA_STREAM, Uri.fromFile(file_to_transfer) );
//...
startActivity(intent);
```

In the code snippet above, we are letting the Android system know that we intend to send a text file. The system then displays all installed applications capable of handling that action:



We can see that the BT application is among those handlers. We could of course let the user pick that application from the list and be done with it. But if we feel we should be a tad more user-friendly, we need to go further and start the application ourselves, instead of simply displaying it in a midst of other unnecessary options...But how?

One way to do that would be to use Android's Package Manager this way:

```
//list of apps that can handle our intent
PackageManager pm = getPackageManager();
List appsList = pm.queryIntentActivities( intent, 0);
if(appsList.size() > 0 {
  // proceed
}
```

The above Package Manager method returns the list we saw earlier of all activities susceptible to handle our file transfer intent, in the form of a list of Resolve Info objects that encapsulate information we need:

```
//select bluetooth
String packageName = null;
String className =
null; boolean found =
false;
for(ResolveInfo info: appsList){
```

```
packageName
=
info.activityInf
o.packageNam
e;
```

We now have the necessary information to start BT ourselves:

```
//set our intent to launch Bluetooth
intent.setClassName(packageName, className);
startActivity(intent);
```

What we did was to use the package and its corresponding class retrieved earlier. Since we are a curious bunch, we may wonder what the class name for the "com.android.bluetooth" package is. This is what we would get if we were to print it out: *com.broadcom.bt.app.opp.OppLauncherActivity*. **OPP** stands for Object Push Profile, and is the Android component allowing to wirelessly share files.

All fine and dandy, but in order for all the above code to be of any use, BT doesn't simply need to be *supported* by the device, but also *enabled* by the user. So one of the first things we want to do, is to ask the user to enable BT for the time we deem necessary (here, 300 seconds):

```
import android.bluetooth.BluetoothAdapter;
//...
// duration that the device is discoverable
private static final int DISCOVER_DURATION = 300;
// our request code (must be greater than zero)
private static final int REQUEST_BLU = 1;
//...
public void enableBlu(){
// enable device discovery - this will automatically enable Bluetooth
IntentdiscoveryIntent= new Intent(BluetoothAdapter.ACTION_REQUEST_DISCOVERABLE);
discoveryIntent.putExtra(BluetoothAdapter.EXTRA_DISCOVERABLE_DURATION,
 DISCOVER_DURATION );
 startActivityForResult(discoveryIntent, REQUEST_BLU);
 }
```

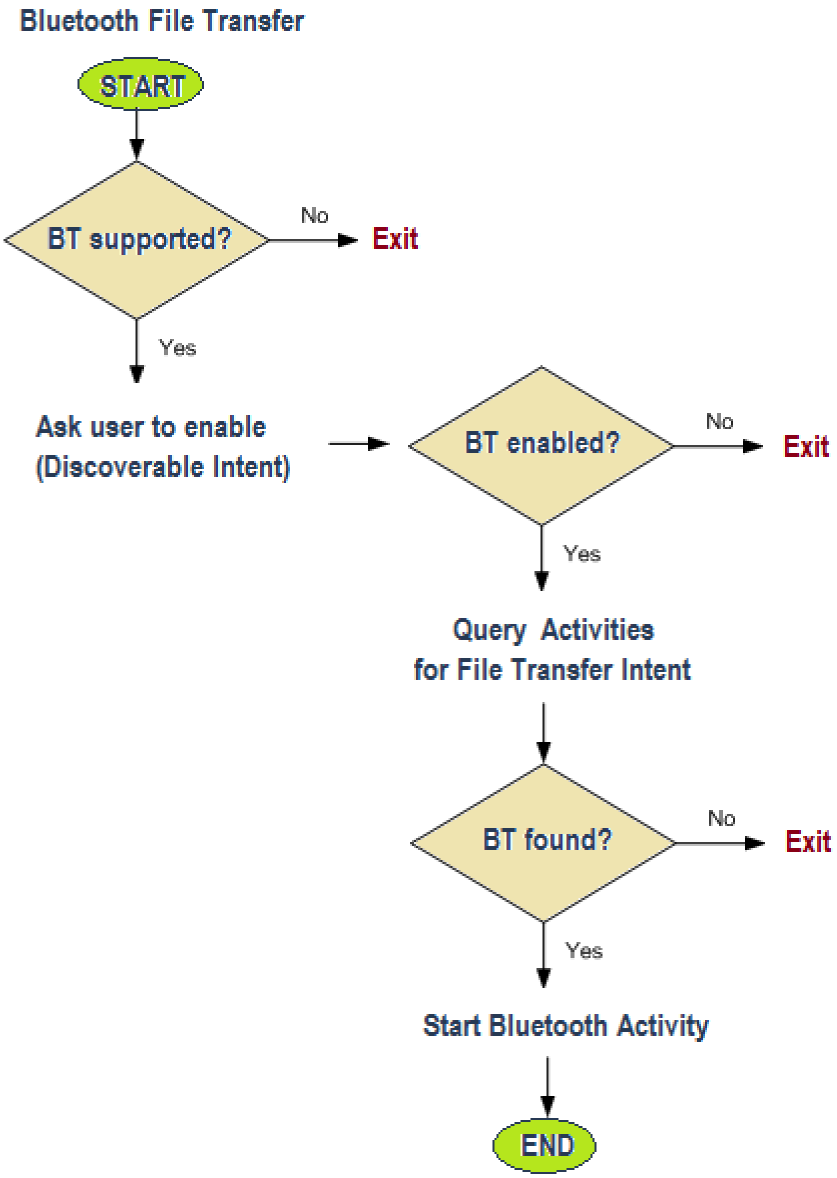
Once we specify that we want to get a result back from our activity with *startActivityForResult*, the following enabling dialog is presented to the user:

Now whenever the activity finishes, it will return the **request code**we have sent (REQUEST_BLU), along with the data and a **result code** to our main activity through the *onActivityResult* callback method. We know which request code we have to check against, but how about the *result code*? Simple: if the user responds "No" to the above permission request (or if an error occurs), the result code will be RESULT_CANCELED. On the other hand, if the user accepts, the BT documentation specifies that the result code will be equal to the duration that the device is discoverable (i.e. DISCOVER_DURATION, i.e. 300).

So the way to process the BT dialog above would be:

```
// When startActivityForResult completes...
protected void onActivityResult (int requestCode,
                                 int resultCode,
                                 Intent data) {
  if (resultCode == DISCOVER_DURATION
      && requestCode == REQUEST_BLU) {
     // processing code goes here
  }
  else{ // cancelled or error
    Toast.makeText(this, R.string.blu_cancelled,
               Toast.LENGTH_SHORT).show();
  }
}
```

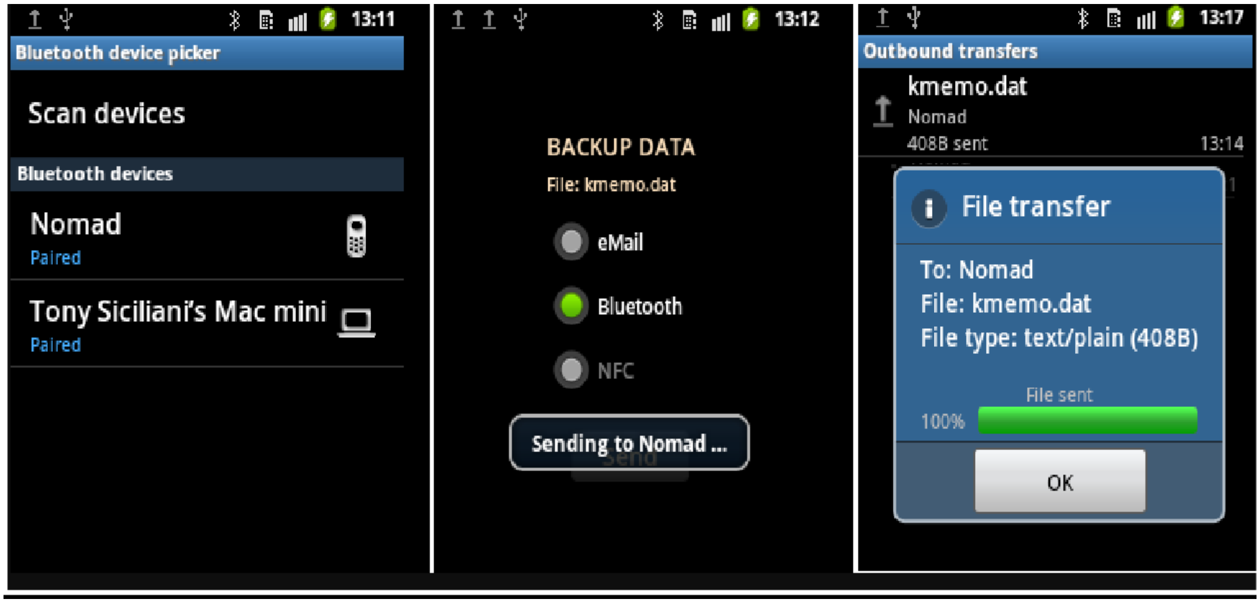
Putting all our processing flow in order, here's what we are basically doing:



Are we done yet? Almost. Last but not least, we need to ask for the BT permissions in the Android manifest:

```
<uses-permission
android:name="android.permission.BLUETOOTH" />
<uses-permission
android:name="android.permission.BLUETOOTH_ADMIN" />
```

We're ready to deploy now. To test all this, we need to use at least two Android devices, one being the file sender (where our application is installed) and the other any receiving device supporting BT. Here are the screen shots. For the sender:



File: kmemo.dat

○ eMail
● Bluetooth
○ NFC

Sending to Nomad ...

kmemo.dat
Nomad
408B sent 13:14

To: Nomad
File: kmemo.dat
File type: text/plain (408B)

File sent
100%

PRACTICAL-7

AIM:-Study of to identify the Bluetooth devices in the wireless range.

Software used: Python 3.4 and PyBluez package(version 0.22)

Theory:-

Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz) from fixed and mobile devices, and building personal area networks (PANs). Invented by telecom vendor Ericsson in 1994, it was originally conceived as a wireless alternative to RS-232 data cables.

Bluetooth is managed by the Bluetooth Special Interest Group (SIG), which has more than 30,000 member companies in the areas of telecommunication, computing, networking, and consumer electronics. The IEEE standardized Bluetooth as IEEE 802.15.1, but no longer maintains the standard. The Bluetooth SIG oversees development of the specification, manages the qualification program, and protects the trademarks. A manufacturer must meet Bluetooth SIG standards to market it as a Bluetooth device. A network of patents apply to the technology, which are licensed to individual qualifying devices.

Implementation of Bluetooth: Bluetooth is a packet-based protocol with a master-slave structure. One master may communicate with up to seven slaves in a piconet. All devices share the master's clock. Packet exchange is based on the basic clock, defined by the master, which ticks at 312.5 µs intervals. Two clock ticks make up a slot of 625 µs, and two slots make up a slot pair of 1250 µs. In the simple case of single-slot packets the master transmits in even slots and receives in odd slots. The slave, conversely, receives in even slots and transmits in odd slots. Packets may be 1, 3 or 5 slots long, but in all cases the master's transmission begins in even slots and the slave's in odd slots.

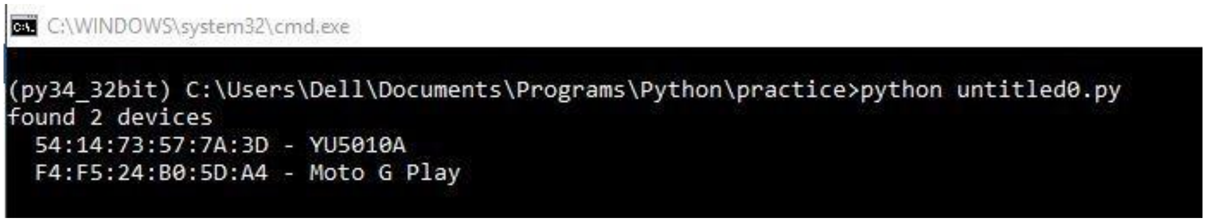
Connection establishment and communication: A master BR/EDR Bluetooth device can communicate with a maximum of seven devices in a piconet (an ad-hoc computer network using Bluetooth technology), though not all devices reach this maximum. The devices can switch roles, by agreement, and the slave can become the master (for example, a headset initiating a connection to a phone necessarily begins as master—as initiator of the connection—but may subsequently operate as slave).

At any given time, data can be transferred between the master and one other device (except for the little-used broadcast mode[citation needed]). The master chooses which slave device to address; typically, it switches rapidly from one device to another in a round-robin fashion. Since it is the master that chooses which slave to address, whereas a slave is (in theory) supposed to listen in each receive slot, being a master is a lighter burden than being a slave. Being a master of seven slaves is possible; being a slave of more than one master is possible. The specification is vague as to required behavior in scatternets.

PROGRAM:

```
import bluetooth

nearby_devices = bluetooth.discover_devices(lookup_names=True)

print("found %d devices" % len(nearby_devices))

for addr, name in nearby_devices:

    print(" %s - %s" % (addr, name))
```

OUTPUT:



```
(py34_32bit) C:\Users\Dell\Documents\Programs\Python\practice>python untitled0.py
found 2 devices
  54:14:73:57:7A:3D - YU5010A
  F4:F5:24:B0:5D:A4 - Moto G Play
```

PRACTICAL-8

AIM:- Create an application that shows different country name on listview and on selecting it will show flag of that country.

activity_main.xml:-

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

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

   android:layout_height="match_parent"
android:paddingLeft="@dimen/activity_horizontal_margin"

   android:paddingRight="@dimen/activity_horizontal_margin"

   android:paddingTop="@dimen/activity_vertical_margin"

   android:paddingBottom="@dimen/activity_vertical_margin" tools:context=".MainActivity">

<!-- Here we are defining ListView in our XML file-->

   <ListView

      android:layout_width="match_parent"

      android:layout_height="wrap_content"

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

</RelativeLayout>
```

MainActivity.java

```
package com.coderefer.simplelistview;

import android.content.Intent;

import android.os.Bundle;

import android.support.v7.app.AppCompatActivity;

import android.view.Menu;

import android.view.MenuItem;

import android.view.View;
import android.widget.AdapterView;

import android.widget.ArrayAdapter;

import android.widget.ListView;

import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

 //Defining android ListView

    ListView mListView;

//Elements that will be displayed in android ListView

    String[] Countries = new String[]{"India", "Australia", "Newzealand",

            "Indonesia", "China", "Russia", "Japan", "South Korea"};

//Ids of flag Images that are placed in res> drawable folder. They return the int value

    int[] FlagId = new int[]{R.drawable.flag_india, R.drawable.flag_australia,

            R.drawable.flag_newzealand,R.drawable.flag_indonesia,

    R.drawable.flag_china, R.drawable.flag_russia,R.drawable.flag_japan,

    R.drawable.flag_southkorea};

 @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        mListView = (ListView) findViewById(R.id.list);

//Declaring Array adapter

 ArrayAdapter<String> countryAdapter = new
ArrayAdapter<String>(this,android.R.layout.simple_list_item_1, Countries);

//Setting the android ListView's adapter to the newly created adapter

        mListView.setAdapter(countryAdapter);
        mListView.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> parent, View view, int position, long id) {
               //The position where the list item is clicked is obtained from the
                //the parameter position of the android listview
                int itemPosition = position;
 //Get the String value of the item where the user clicked
                String itemValue = (String) mListView.getItemAtPosition(position
//In order to start displaying new activity we need an intent
                Intent intent = new Intent(getApplicationContext(),CountryActivity.class);
//Putting the Id of image as an extra in intent
                intent.putExtra("flag",FlagId[position]);
                //Here we will pass the previously created intent as parameter
                startActivity(intent);
         }
        });
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.menu_main, menu);
        return true;
    }
    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        // Handle action bar item clicks here. The action bar will
        // automatically handle clicks on the Home/Up button, so long
        // as you specify a parent activity in AndroidManifest.xml.
        int id = item.getItemId();
        //noinspection SimplifiableIfStatement
        if (id == R.id.action_settings) {
            return true;
        }
        return super.onOptionsItemSelected(item);
    }
}
```

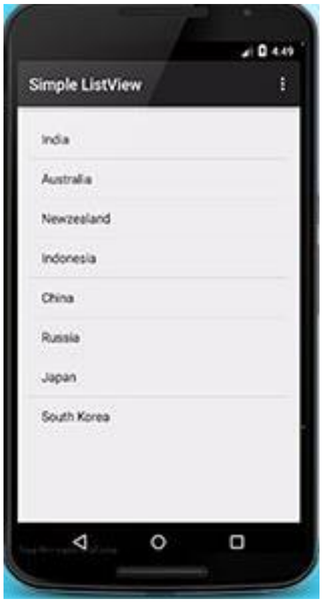
activity_country.xml

```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools" android:layout_width="match_parent"
    android:layout_height="match_parent"
android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    tools:context="com.coderefer.simplelistview.CountryActivity">
<ImageView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/ivCountryFlag"
        android:layout_centerVertical="true"
        android:layout_centerHorizontal="true" />
</RelativeLayout>
```

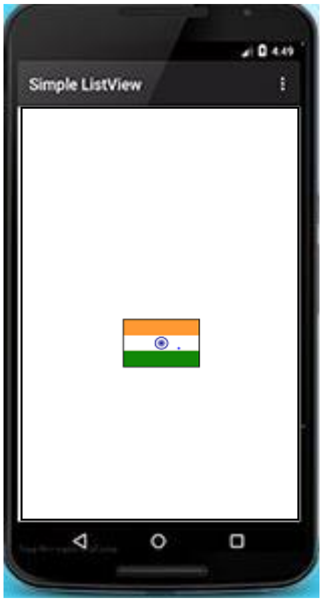
CountryActivity.java

```
package com.coderefer.simplelistview;
import android.content.Intent;
import android.support.v7.app.ActionBarActivity;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.widget.ImageView;
public class CountryActivity extends ActionBarActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_country);
        ImageView imageView = (ImageView) findViewById(R.id.ivCountryFlag);
        Intent i = getIntent();
        int FlagId = i.getIntExtra("flag",0);
        imageView.setImageResource(FlagId);
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.menu_country, menu);
        return true;
    }
    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        // Handle action bar item clicks here. The action bar will
        // automatically handle clicks on the Home/Up button, so long
        // as you specify a parent activity in AndroidManifest.xml.
        int id = item.getItemId();
        //noinspection SimplifiableIfStatement
        if (id == R.id.action_settings) {
            return true;
        }
        return super.onOptionsItemSelected(item);
    }
}
```

OUTPUT:-



India
Australia
Newzealand
Indonesia
China
Russia
Japan
South Korea



PRACTICAL-9

AIM:- Create an application using firebase**.**

Software used: Java JDK 1.8, Android Studio, Firebase account.

activity_main.xml:

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

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

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

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

    android: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.tutsplus.mychatapp.MainActivity">

     <android.support.design.widget.FloatingActionButton

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:clickable="true"

        android:src="@drawable/ic_send_black_24dp"

        android:id="@+id/fab"

        android:tint="@android:color/white"

        android:layout_alignParentBottom="true"

        android:layout_alignParentEnd="true"
        app:fabSize="mini" />
     <android.support.design.widget.TextInputLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_toLeftOf="@id/fab"
        android:layout_alignParentBottom="true"
        android:layout_alignParentStart="true">
         <EditText
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="Input"
            android:id="@+id/input"/>
    </android.support.design.widget.TextInputLayout>
    <ListView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_alignParentTop="true"
        android:layout_alignParentStart="true"
        android:layout_above="@id/fab"
        android:dividerHeight="16dp"
        android:divider="@android:color/transparent"
        android:id="@+id/list_of_messages"
        android:layout_marginBottom="16dp"/>
</RelativeLayout>
```

message.xml:

```
<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_alignParentTop="true"
        android:layout_alignParentStart="true"
        android:id="@+id/message_user"
        android:textStyle="normal|bold" />
     <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignBottom="@+id/message_user"
        android:layout_alignParentEnd="true"
        android:id="@+id/message_time" />
     <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/message_user"
        android:layout_alignParentStart="true"
        android:layout_marginTop="5dp"
        android:id="@+id/message_text"
        android:textAppearance="@style/TextAppearance.AppCompat.Body1"
        android:textSize="18sp" />
</RelativeLayout>
```

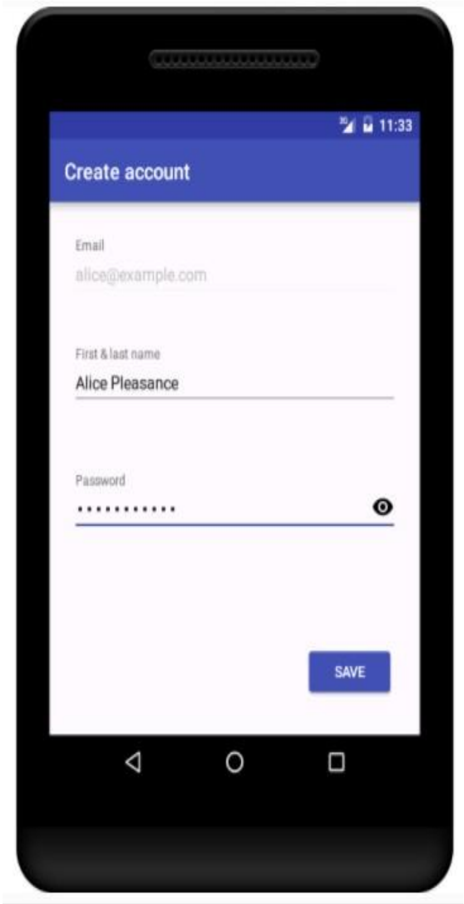
ChatMessage.java :

```
public class ChatMessage {
    private String messageText;
    private String messageUser;
    private long messageTime;

    public ChatMessage(String messageText, String messageUser) {
        this.messageText = messageText;
        this.messageUser = messageUser;
         // Initialize to current time
        messageTime = new Date().getTime();
    }
     public ChatMessage(){
   }
    public String getMessageText() {
        return messageText;
    }
    public void setMessageText(String messageText) {
        this.messageText = messageText;
    }
     public String getMessageUser() {
        return messageUser;
    }
  public void setMessageUser(String messageUser) {
        this.messageUser = messageUser;
    }
  public long getMessageTime() {
        return messageTime;
    }
  public void setMessageTime(long messageTime) {
        this.messageTime = messageTime;
    }
}
```

Handle User Sign-In

```
if(FirebaseAuth.getInstance().getCurrentUser() == null) {
    // Start sign in/sign up activity
    startActivityForResult(
            AuthUI.getInstance()
            .createSignInIntentBuilder()
            .build(),
            SIGN_IN_REQUEST_CODE
    );
} else {
    // User is already signed in. Therefore, display
    // a welcome Toast
    Toast.makeText(this,
            "Welcome " + FirebaseAuth.getInstance()
                    .getCurrentUser()
                    .getDisplayName(),
            Toast.LENGTH_LONG)
            .show();
     // Load chat room contents
    displayChatMessages();
}
@Override
protected void onActivityResult(int requestCode, int resultCode,
                                            Intent data) {
    super.onActivityResult(requestCode, resultCode, data);
    if(requestCode == SIGN_IN_REQUEST_CODE) {
        if(resultCode == RESULT_OK) {
            Toast.makeText(this,
                    "Successfully signed in. Welcome!",
                    Toast.LENGTH_LONG)
                   .show();
            displayChatMessages();
        } else {
            Toast.makeText(this,
                    "We couldn't sign you in. Please try again later.",
                    Toast.LENGTH_LONG)
                    .show();
            // Close the app
            finish();
        }
    }

}
@Override
public boolean onOptionsItemSelected(MenuItem item) {
    if(item.getItemId() == R.id.menu_sign_out) {
        AuthUI.getInstance().signOut(this)
            .addOnCompleteListener(new OnCompleteListener<Void>() {
                @Override
                public void onComplete(@NonNull Task<Void> task) {
                    Toast.makeText(MainActivity.this,
                            "You have been signed out.",
                            Toast.LENGTH_LONG)
                            .show();
                    // Close activity
                    finish();
                }
            });
    }
    return true;
}
FloatingActionButton fab =
        (FloatingActionButton)findViewById(R.id.fab);

fab.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        EditText input = (EditText)findViewById(R.id.input);

        // Read the input field and push a new instance
        // of ChatMessage to the Firebase database
        FirebaseDatabase.getInstance()
                .getReference()
                .push()
                .setValue(new ChatMessage(input.getText().toString(),
                        FirebaseAuth.getInstance()
                                .getCurrentUser()
                                .getDisplayName())
                );
        // Clear the input
        input.setText("");
    }
});
ListView listOfMessages = (ListView)findViewById(R.id.list_of_messages);
 adapter = new FirebaseListAdapter<ChatMessage>(this, ChatMessage.class,
        R.layout.message, FirebaseDatabase.getInstance().getReference()) {
    @Override
    protected void populateView(View v, ChatMessage model, int position) {
        // Get references to the views of message.xml
        TextView  messageText  =  (TextView)v.findViewById(R.id.message_text);
        TextView  messageUser  =  (TextView)v.findViewById(R.id.message_user);
        TextView messageTime = (TextView)v.findViewById(R.id.message_time);
        // Set their text
        messageText.setText(model.getMessageText());
        messageUser.setText(model.getMessageUser());
        // Format the date before showing it
        messageTime.setText(DateFormat.format("dd-MM-yyyy (HH:mm:ss)",
                model.getMessageTime()));
    }
};

listOfMessages.setAdapter(adapter);
```

OUTPUT:



Create account

Email

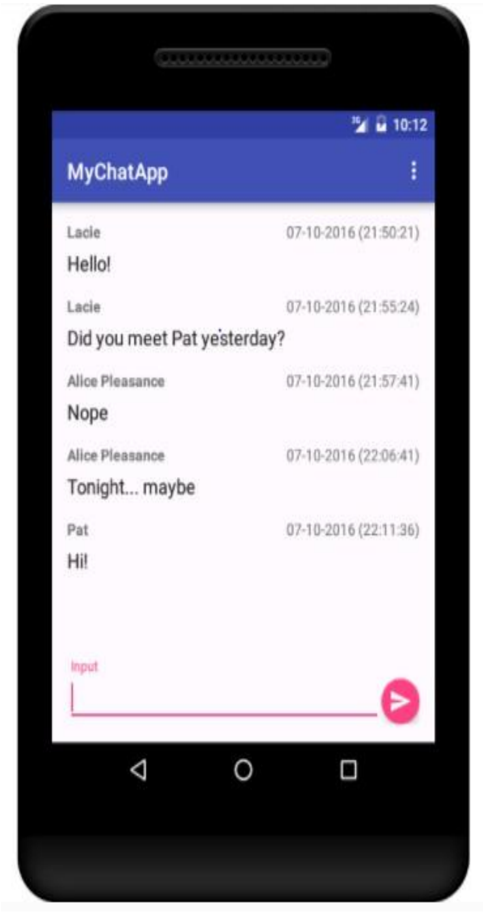
alice@example.com

First & last name

Alice Pleasance

Password

••••••••••••



MyChatApp

Lacie 07-10-2016 (21:50:21)

Hello!

Lacie 07-10-2016 (21:55:24)

Did you meet Pat yesterday?

Alice Pleasance 07-10-2016 (21:57:41)

Nope

Alice Pleasance 07-10-2016 (22:06:41)

Tonight... maybe

Pat 07-10-2016 (22:11:36)

Hi!

Input