

Experiment No. 1

Aim: To implement a Bluetooth network with application as transfer of a file from one device to another.

Requirements: Windows/MAC/Linux O.S, Compatible version of Android Studio and Android device to test the application.

Theory:

Bluetooth network is an application of wireless PAN (Personal Area Network). It is used to share data between two or more devices (advance in technology allowed connection of more than 2 devices through Bluetooth). It requires both party to make connection before transfer of data, one party shares the data and other party accept it if they want that data or they can reject it. Connection between parties terminated through forceful mean if one party disconnect or close the connection other party will automatically loose the connection.

It takes very low power and achieved it by embedded low-cost transceivers into the devices. It supports the frequency band of 2.45GHz and can support up to 721KBps along with three voice channels. This frequency band has been set aside by international agreement for the use of industrial, scientific, and medical devices (ISM).rd-compatible with 1.0 devices.

It can connect up to “**eight devices**” simultaneously and each device offers a unique 48-bit address from the IEEE 802 standard with the connections being made a point to point or multipoint.

Code:

```
public class MainActivity extends AppCompatActivity {
    //Create Objects-----
    Button buttonopenDailog, buttonUp, send;
    TextView textFolder;
    EditText dataPath;
    static final int CUSTOM_DIALOG_ID = 0;
    ListView dialog_ListView;
    File root, fileroot, curFolder;
    private List<String> fileList = new ArrayList<String>();
    private static final int DISCOVER_DURATION = 300;
    private static final int REQUEST_BLU = 1;
    BluetoothAdapter btAdatper = BluetoothAdapter.getDefaultAdapter();
    //-----
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        dataPath=(EditText)findViewById(R.id.FilePath);
        buttonopenDailog= (Button) findViewById(R.id.opendailog);
        send=(Button)findViewById(R.id.sendBttooth);
        buttonopenDailog.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                dataPath.setText("");
                showDialog(CUSTOM_DIALOG_ID);
            }
        });

        root = new File(Environment.getExternalStorageDirectory().getAbsolutePath());
        curFolder = root;
        send.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                sendViaBluetooth();
            }
        });
    }

    @Override
    protected Dialog onCreateDialog(int id) {
        Dialog dialog = null;
        switch (id) {
            case CUSTOM_DIALOG_ID:
                dialog = new Dialog(MainActivity.this);
                dialog.setContentView(R.layout.dailoglayout);
                dialog.setTitle("File Selector");
                dialog.setCancelable(true);
                dialog.setCanceledOnTouchOutside(true);
                textFolder = (TextView) dialog.findViewById(R.id.folder);
                buttonUp = (Button) dialog.findViewById(R.id.up);
            default:
                return null;
        }
    }
}
```

```

        buttonUp.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                ListDir(curFolder.getParentFile());
            }
        });
        dialog_ListView = (ListView) dialog.findViewById(R.id.dialoglist);
        dialog_ListView.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> parent, View view, int position, long id) {
                File selected = new File(fileList.get(position));
                if (selected.isDirectory()) {
                    ListDir(selected);
                } else if (selected.isFile()) {
                    getselectedFile(selected);
                } else {
                    dismissDialog(CUSTOM_DIALOG_ID);
                }
            }
        });
        break;
    }
    return dialog;
}

```

```

@Override
protected void onPrepareDialog(int id, Dialog dialog) {
    super.onPrepareDialog(id, dialog);
    switch (id) {
        case CUSTOM_DIALOG_ID:
            ListDir(curFolder);
            break;
    }
}

```

```

public void getselectedFile(File f){
    dataPath.setText(f.getAbsolutePath());
    fileList.clear();
    dismissDialog(CUSTOM_DIALOG_ID);
}

```

```

public void ListDir(File f) {
    if (f.equals(root)) {
        buttonUp.setEnabled(false);
    } else {
        buttonUp.setEnabled(true);
    }
    curFolder = f;
    textFolder.setText(f.getAbsolutePath());
    dataPath.setText(f.getAbsolutePath());
}

```

```

File[] files = f.listFiles();
fileList.clear();

for (File file : files) {
    fileList.add(file.getPath());
}
ArrayAdapter<String> directoryList = new ArrayAdapter<String>(this,
android.R.layout.simple_list_item_1, fileList);
dialog_ListView.setAdapter(directoryList);
}

//exit to application-----
public void exit(View V) {
    btAdatper.disable();
    Toast.makeText(this, "*** Now Bluetooth is off... Thanks. ***", Toast.LENGTH_LONG).show();
    finish(); }

//Method for send file via bluetooth-----
public void sendViaBluetooth() {
    if(!dataPath.equals(null)){
        if (btAdatper == null) {
            Toast.makeText(this, "Device not support bluetooth", Toast.LENGTH_LONG).show();
        } else {
            enableBluetooth();
        }
    }
    }else{
        Toast.makeText(this, "Please select a file.", Toast.LENGTH_LONG).show();
    }
}

public void enableBluetooth() {
    Intent discoveryIntent = new Intent(BluetoothAdapter.ACTION_REQUEST_DISCOVERABLE);
    discoveryIntent.putExtra(BluetoothAdapter.EXTRA_DISCOVERABLE_DURATION,
DISCOVER_DURATION);
    startActivityForResult(discoveryIntent, REQUEST_BLU);
}

//Override method for sending data via bluetooth availability-----
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    if (resultCode == DISCOVER_DURATION && requestCode == REQUEST_BLU) {
        Intent i = new Intent();
        i.setAction(Intent.ACTION_SEND);
        i.setType("*/*");
        File file = new File(dataPath.getText().toString());

        i.putExtra(Intent.EXTRA_STREAM, Uri.fromFile(file));

        PackageManager pm = getPackageManager();
        List<ResolveInfo> list = pm.queryIntentActivities(i, 0);
        if (list.size() > 0) {

```

```

String packageName = null;
String className = null;
boolean found = false;

for (ResolveInfo info : list) {
    packageName = info.activityInfo.packageName;
    if (packageName.equals("com.android.bluetooth")) {
        className = info.activityInfo.name;
        found = true;
        break;
    }
}
//CHECK BLUETOOTH available or not-----
if (!found) {
    Toast.makeText(this, "Bluetooth not been found", Toast.LENGTH_LONG).show();
} else {
    i.setClassName(packageName, className);
    startActivity(i);
}
} else {
    Toast.makeText(this, "Bluetooth is cancelled", Toast.LENGTH_LONG).show();
}
}

@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) {
        Toast.makeText(this, "*****\nDeveloper: Santosh Kumar Singh\nContact:
superssingh@gmail.com\n*****", Toast.LENGTH_LONG).show();
        return true;
    }
    return super.onOptionsItemSelected(item);
}
}

```

Output:

Virtual Device Configuration

Select Hardware

Choose a device definition

Category

TV

Phone

Wear OS

Tablet

Automotive

Name

Pixel XL

Pixel 5

Pixel 4a

Pixel 4 XL

Pixel 4

Pixel 3a XL

Pixel 3a

Pixel 3 XL

Pixel 3

Pixel 2 XL

Pixel 2

Play Store

Size

5.5"

6.0"

5.8"

6.3"

5.7"

6.0"

5.6"

6.3"

5.46"

5.99"

5.0"

Resolution

1440x2560

1080x2340

1080x2340

1440x3040

1080x2280

1080x2160

1080x2220

1440x2960

1080x2160

1440x2880

1080x1920

Density

560dpi

440dpi

440dpi

560dpi

440dpi

400dpi

440dpi

560dpi

440dpi

560dpi

420dpi

Pixel 2

1080px

5.0"

1920px

Size: large

Ratio: long

Density: 420dpi

New Hardware Profile

Import Hardware Profiles

Clone Device...

?


Previous

Next

Cancel

Finish

Virtual Device Configuration



System Image


Select a system image

Recommended

x86 Images

Other Images

Release Name	API Level	ABI	Target
R	30	x86	Android 11.0 (Google Play)
Q Download	29	x86	Android 10.0 (Google Play)
Pie Download	28	x86	Android 9.0 (Google Play)
Oreo Download	27	x86	Android 8.1 (Google Play)
Oreo Download	26	x86	Android 8.0 (Google Play)
Nougat Download	25	x86	Android 7.1.1 (Google Play)
Nougat Download	24	x86	Android 7.0 (Google Play)



R

API Level

30

Android

11.0

Google Inc.

System Image

x86

We recommend these Google Play images because this device is compatible with Google Play.

Questions on API level?
[See the API level distribution chart](#)

?

Previous

Next

Cancel

Finish

Virtual Device Configuration

Android Virtual Device (AVD)

Verify Configuration

AVD NamePixel 3 API 30

Pixel 3

5.46 1080x2160 xxhdpi

Change...

R

Android 11.0 x86

Change...

Startup orientation

Portrait

Landscape

Emulated Performance

Graphics:Automatic

Device Frame

☒ Enable Device Frame

Show Advanced Settings

AVD Name

The name of this AVD.

?

Previous

Next

Cancel

Finish

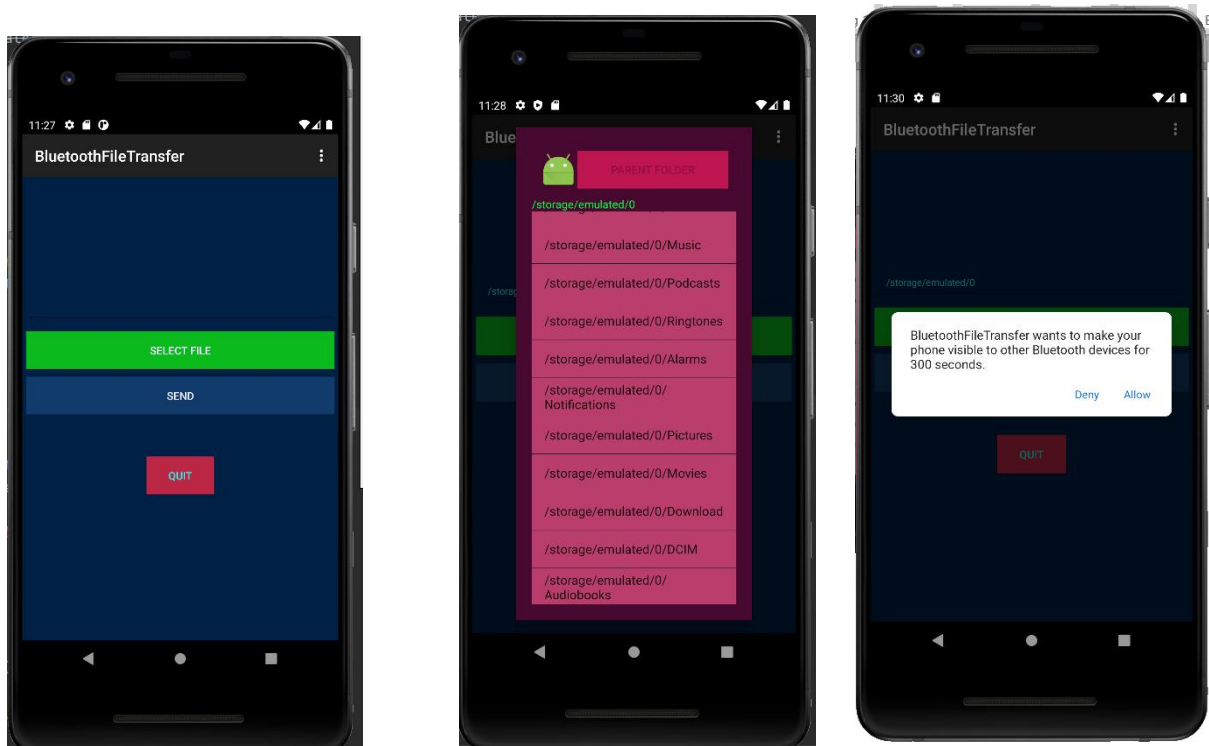
Android Virtual Device Manager

Your Virtual Devices

Android Studio

Type	Name	Play Store	Resolution	API	Target	CPU/ABI	Size on Disk	Actions
	Pixel 2 API 30		1080 x 1920: 420dpi	30	Android 11.0 (Google Play)	x86	9.3 GB	
	Pixel 3 API 30		1080 x 2160: 440dpi	30	Android 11.0 (Google Play)	x86	513 MB	

+ Create Virtual Device...



Conclusion: We have successfully implemented Bluetooth network with application in Android Studio using Java and tested the application using virtual devices presents in Android Studio.