MINI PROJECT REPORT
On

EASYSHARE: A FILE SHARING APPLICATION

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2020

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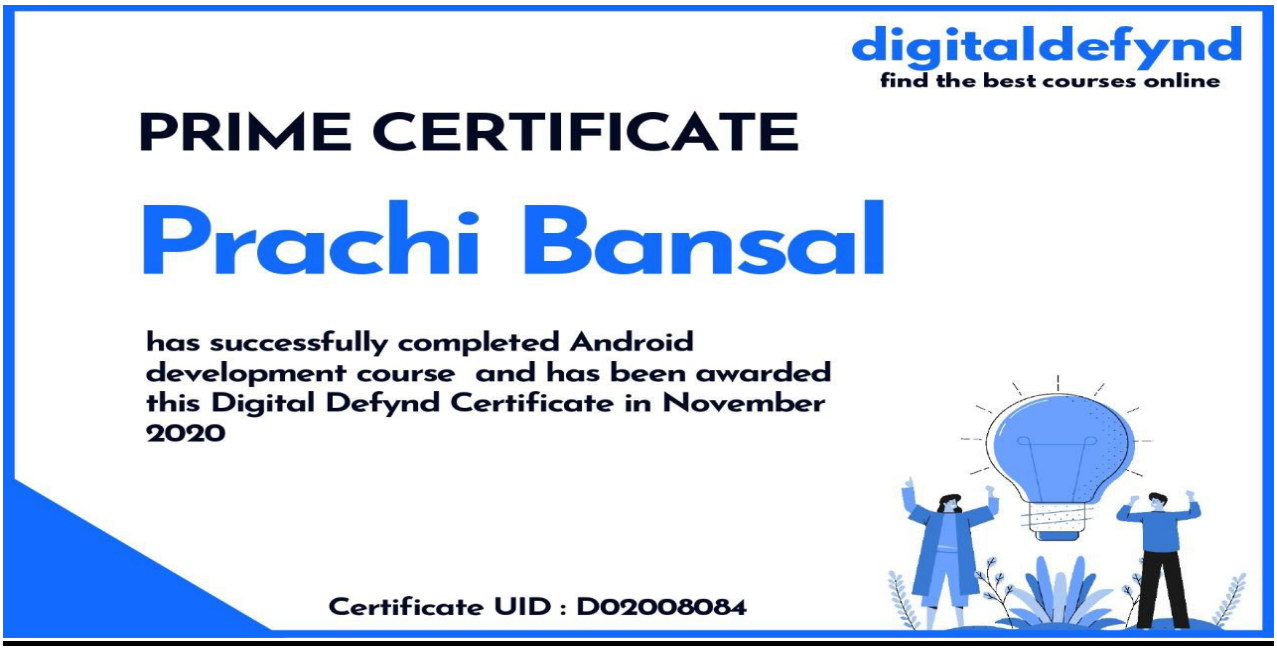

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ACKNOWLEDGEMENT

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DECLARATION

We hereby declare that the work which is being presented in the Mini Project Report

"File Sharing Application" in partial fulfillment of the requirements for Mini Project on

EasyShare is an authentic record of our own work carried under the supervision of

Neeraj Khanna, Department of Computer Engineering and Applications, GLA University.

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ABSTRACT

In this we will build an android application that will transfer data from one device to another device using Wi-fi Direct. Our Team named this app "Easy Share". Easy Share is an open source Wi-fi Direct file sharing application that will enable sharing of data between Android devices running Android 4.0 or higher using a Wi-Fi direct connection without the use of a separate Wi-Fi access point. This will enable data transfer between devices without relying on any existing network infrastructure. This application is intended to provide a much higher speed alternative to Bluetooth file transfer.

There will be a client and a server i.e. the two devices that are connected through Wi-Fi direct. Once the connection is established, you can transfer data. Easy Share involves creating and registering a broadcast receiver for the application itself, discovering peers, connecting to a peer, and transferring data to a peer.

In this project comparative study and analysis of file sharing applications has been performed and presented. These file sharing applications enable the users for faster sharing rate among them through WLAN. They provide ease of access among multiple compatible devices. Several tests have been conducted including transferring several types of files and results have been gathered and these results are used in the analysis. A comparative analysis has also been done and the challenges or issues that are present in the concerned file sharing applications have been mentioned. The work primarily focuses on the commonly used file sharing applications in Smartphone's worldwide namely Xender and SHARE it.

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CHAPTER 1

INTRODUCTION

1.1 Overview

Today's computers are capable of sharing all types of files, including documents, songs, videos, and full applications. File sharing is a key function for many businesses and other use cases.

Easy Share is an open source Wi-fi Direct file sharing application that will enable sharing of data between Android devices. File sharing is transferring or sharing the digital data such as image, audio, video, document etc. stored on an electronic device (mobile, laptop etc.) with similar compatible electronic devices. In this project we are using a Wi-Fi direct connection without the use of a separate Wi-Fi access point for sharing the files.

Wi-Fi Direct, initially called Wi-Fi P2P, is a Wi-Fi standard enabling devices to easily connect with each other without requiring a wireless access point. It is usable for everything from internet browsing to file transfer, and to communicate with more than one device simultaneously at typical Wi-Fi speeds. One advantage of Wi-Fi Direct is the ability to connect devices even if they are from different manufacturers. Only one of the Wi-Fi devices needs to be compliant with Wi-Fi Direct to establish a peer-to-peer connection that transfers data directly between them with greatly reduced setup.

Wi-fi Direct negotiate the link with a Wi-fi Protected Setup System that assigns each device a limited wireless access point. The "pairing" of Wi-fi direct devices can be set up to require the proximity of a near field communication, a Bluetooth, signal, or a button press one or all Devices. Wi-fi Direct may not only the need for Routers, but may also replace the need of Bluetooth for Application that do not rely on low battery.

1.2Working

The basic steps for a Wi-fi direct application are:

Initial Setup

Discovering Peers

Connecting to Peers

Transferring Data

We followed these steps in our application and registered a Broadcast receiver to listen to the intents. The way Wi-fi direct works is that we can call certain methods from the main activity to perform certain Wi-fi direct functions like search peers and connect. The methods will interact with the hardware. When hardware is ready, it will broadcast some intents to the OS and software. The broadcast receiver then can catch these intents and do the follow up works accordingly.

1.3 Motivation

The motivation for the study comes from the unique challenges offered in the varied application domain. We will now discuss the various Application Area of this project and then the problems statements.

1.3.1 Application Area

Cyber Security field- File sharing apps are a common tool used in cyber-attacks, both by professional hackers and ordinary individuals.

Education field- Study stuff & business documents instantly shared.

Government- Government use file sharing to share the important information on websites with limited rights.

IT Industries-With file sharing app, employee effort and time–become efficiently utilized.

1.3.2 Development Challenges

Scalability: The aim of scaling is to allow the Android Application to expand in scale without disrupting the activities of the users. The enormous data sharing should not lead to corrupt or any other issues.

Heterogeneity: The Android Application should be available and accessible from different platform without any difference in performance.

Real-Time Data Delivery: The Android Application should be able to deliver data in real-time when-where ever data is requested.

Limited Bandwidth: Although Internet is available to all devices (within the targeted), but many of devices have very slow connection speed and for better costing Limited Bandwidth is to be taken care of.

1.4 Problem Statement

To design file sharing android application we having following problem statements -

1. Create an android-platform as user interface for Sending and Receiving or sharing of files.

2. To create Data base as back end to store Received files.

3. Transfer multiple files at once without losing progress if the transfer is interrupted or cancelled.

4. File transfer speed is about 2-4 MBPS.

5. Designing an user friendly interface for easy handling.

6. Ensuring the encryption of data during sharing process for batter security.

7. Appling several business concepts like Group owner information and server-client information.

CHAPTER 2

PROJECT FUNCTIONALITIES

2.1 Project Functionalities:

- Cross-platform - Only Android platform.
- Transfer multiple files at once, without losing progress if the transfer is interrupted or cancelled.
- File transfer speed is about 2-4 Mbps.
- Files encrypted in transit.
- It supports large file transfer.

2.2 Hardware Requirements:

Processor: i3
Hard Disk: 5GB
Memory: 1GB RAM
Android Phone with KitKat and higher

2.3 Software Requirements:

Windows 7 (ultimate, enterprise, Windows 8,Windows10
Android Studio

CHAPTER 3

Theory and Technologies

Throws light on the theories and technologies related to this project.

3.1 Wi-fi Direct

- Wi-Fi direct is new technology defined by the Wi-Fi alliance aimed at enhancing direct device to device communication without requiring a wireless access point.
- Wi-Fi direct has simple setup, longer range and much higher transfer speed.
- Wi-Fi Direct is a better option than Bluetooth for wireless file transfers between two devices.
- Wi-Fi Direct implement Wi-Fi Protected Setup (WPS) to support a secure connection,

How it works?

1. The app uses Wi-fi P2P API to establish connection.
2. After connection establishment, a socket connection is established between two devices.
3. The group Owner acts as server and other acts as client.
4. Data is sent through streams.

3.2 Languages

3.2.1 Java

- Java is a computer programming language that is concurrent, class-based, object-oriented.
- Java was originally developed by James Gosling at Sun Microsystems (which has since merged into Oracle Corporation) and released in 1995 as a core component of Sun Microsystems' Java platform.
- It works as "write once, run anywhere" (WORA), meaning that code that runs on one platform does not need to be recompiled to run on another.
- Java applications are typically compiled to bytecode (class file) that can run on any Java virtual machine (JVM) regardless of computer architecture.
- Java is, as of 2014, one of the most popular programming languages in use, particularly for client-server web applications, with a reported 9 million developers.
- The language derives much of its syntax from C and C++, but it has fewer low- level facilities than either of them.

3.2.2 Xml

- The design goals of XML emphasize simplicity, generality, and usability over the Internet.
- It is a textual data format with strong support via Unicode for the languages of the world.
- Although the design of XML focuses on documents.

- It is widely used for the representation of arbitrary data structures, for example in web services.

- Many application programming interfaces (APIs) developers with processing XML data, and several based languages have been developed to aid software exist to aid in the definition of XML.

3.3 DATABASE DESIGNING

Database design is the process of producing a detailed data model of a database. This logical data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a Data Definition Language, which can then be used to create a database. A fully attributed data model contains detailed attributes for each entity.

The term database design can be used to describe many different parts of the design of an overall database system. Principally, and most correctly, it can be thought of as the logical design of the base data structures used to store the data. In the relational model these are the tables and views. In an object database the entities and relationships map directly to object classes and named **relationships**. However, the term database design could also be used to apply to the overall process of designing, not just the base data structures, but also the form sand queries used as part of the overall database application within the database management system (DBMS).The process of doing database design generally consists of a number of steps which will be carried out by the database designer.

3.4 ENCRYPTION

In cryptography, encryption is the process of transforming information (referred to as plaintext) using an algorithm (called a cipher) to make it unreadable to anyone except those possessing special knowledge, usually referred to as a key. The result of the process is encrypted information (in cryptography, referred to as cipher text). The reverse process, i.e., to make the encrypted information readable again, is referred to as decryption. Encryption can be used to protect data "at rest", such as files on computers and storage devices (e.g. USB flash drives) mobile telephones, wireless microphones, wireless intercom systems, Bluetooth devices and bank automatic teller machines.

3.5 ANDROID APPLICATION

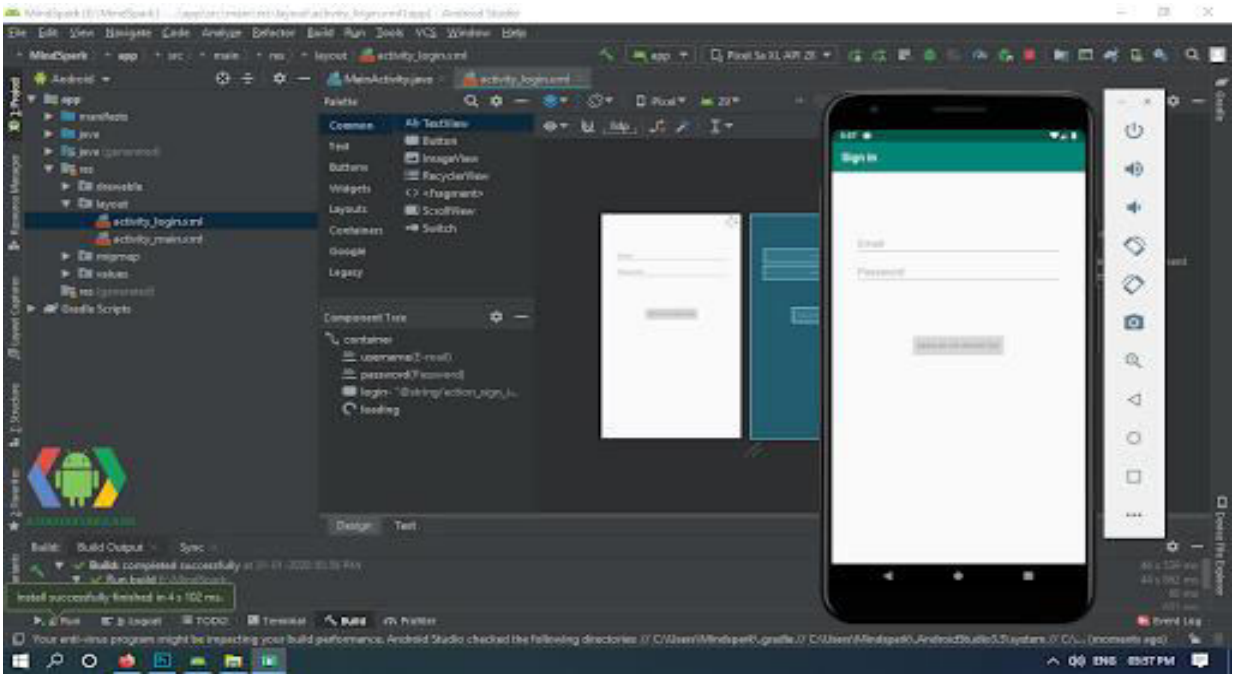
Android, the world's most popular mobile platform, Android powers millions of phones, tablets, and other devices and brings the power of Google and the web into our hands.
With an amazingly fast browser, cloud sync, multi-tasking, easy connect & share, and the latest Google apps (and thousands of other apps available on Google Play) our Android powered device is beyond smart.

The Android SDK includes a virtual mobile device emulator that runs on our computer. The Emulator let's you prototype, develop and test Android applications without using a physical device.

The Android emulator mimics all of the hardware and software features of a typical mobile device, except that it cannot place actual phone calls. It provides a variety of navigation and control keys, which you can "press" using your mouse or keyboard to generate events for your application. It also provides a screen in which our application is displayed, together with any other active Android applications.

The emulator also includes a variety of debug capabilities, such as a console from which you can log kernel output, simulate application interrupts (such as arriving SMS messages or phone calls), and simulate latency effects and dropouts on the data network.

The Android emulator is an application that provides a virtual mobile device on which you can run your android applications. It runs a full Android system stack, down to the kernel level, that includes a set of preinstalled applications.

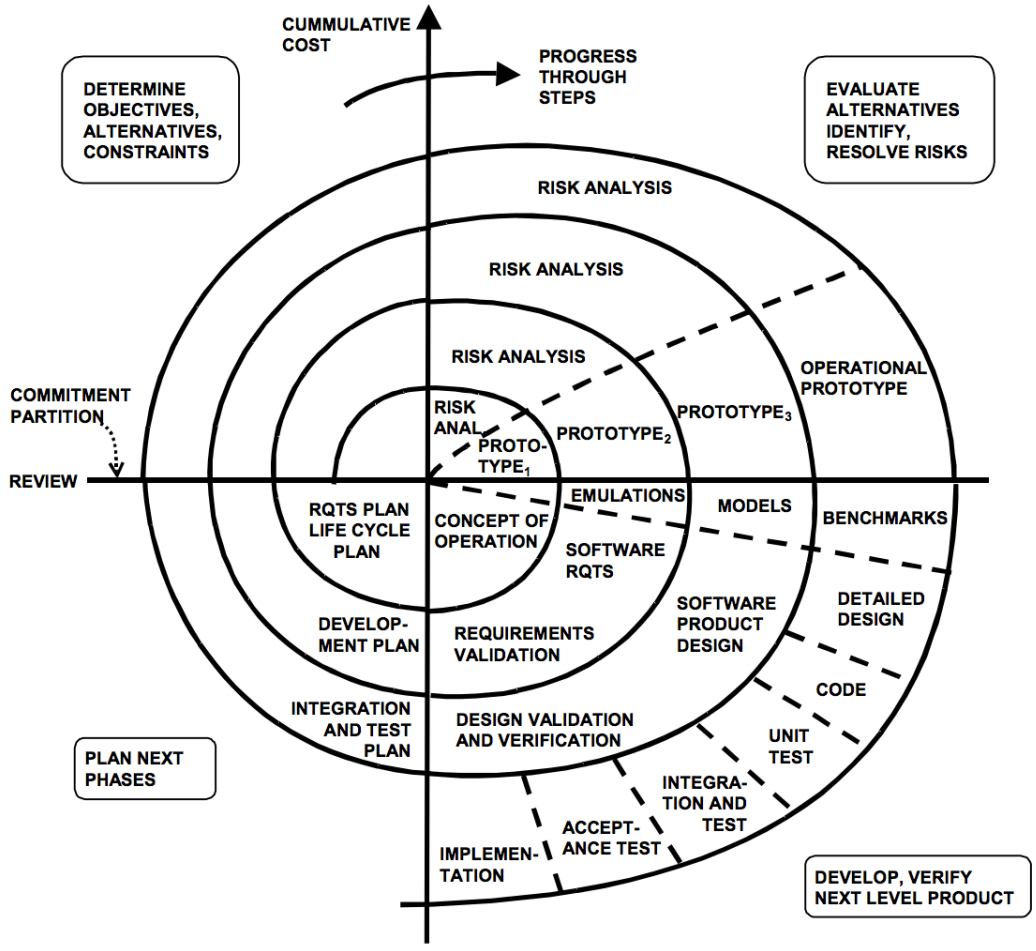


CHAPTER 4

SOFTWARE LIFECYCLE

A software life cycle model (also called process model) is a descriptive and diagrammatic representation of the software life cycle. A life cycle model represents all the activities required to make a software product transit through its life cycle phases. A life cycle model maps the different activities performed on a software product from its inception to retirement.

As we studied different short-coming and industrial approach to projects we found the **SPIRAL MODEL** is found to be most appropriate for our project. So, we have approached spiral model for life cycle of Software development. The Spiral model of software development is shown in figure. The diagrammatic representation of this model appears like a spiral with many loops. The exact number of loops in the spiral is not fixed. Each loop of the spiral represents a phase of the software process.



we see three loops as 3 stages of developments with different and increased models. So, in each quadrant we define 3 levels of development.

FIRST QUADRANT (RISK ANALYSIS AND PROTOTYPE DESIGN)

- **Loop1:** Risk analysis of: prototype1
- **Loop2:** Risk analysis of: prototype2
- **Loop3:** Risk analysis of: prototype3

SECOND QUADRANT (DETERMINE REQUIREMENT ANALYSIS)

- Determine the Requirements Analysis
- **Loop1:** Development of Layout Files: prototype1
- **Loop2:** Development of Java Files: prototype2
- **Loop3:** Development of Android application and access through it: prototype3

THIRD QUADRANT (PLANNING)

- **Loop1:** Software development
- **Loop2:** Development plan
- **Loop3:** Software integration and Test plan

FOURTH QUADRANT (DETAILED DESIGN AND IMPLEMENTATION)

- **Loop1:** Software requirement and requirement validation
- **Loop2:** Software design and design validation
- **Loop3:** Detailed design

The Spiral model development is implemented to this project.

CHAPTER 5

SOFTWARE DESIGN

Software design is the process of defining software methods, functions, objects, and the overall structure and interaction of your code so that the resulting functionality will satisfy your users requirements.

As a part of software design, we first divided the full project to 5 Modules. They are follows:

Module 1: Installing and configuring Android Studio.

Module 2: Development of Layout Files and Java Files.

Module 3: Development of User interface and Synchronization with Wi-fi- Direct.

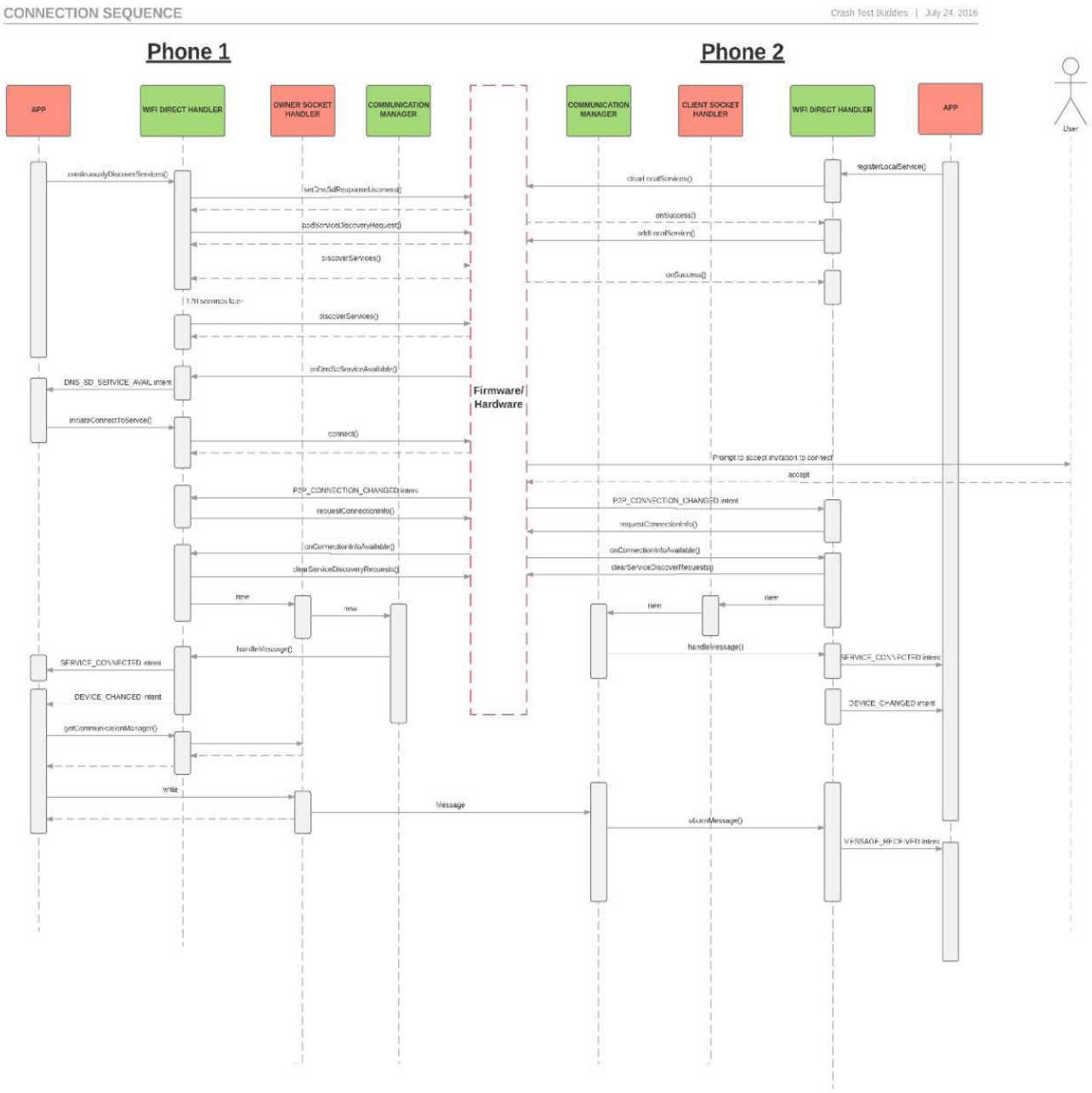
Module 4: Development of Android Application and Access to Wi-fi -Direct

Module 5: Apply of Business models in all modules and Security Enhancements by Encryption

During the design the following points are being taken cared of as:

- The total design should be properly modulated
- **Cohesion** of the project is high
- **Coupling** of the project is low

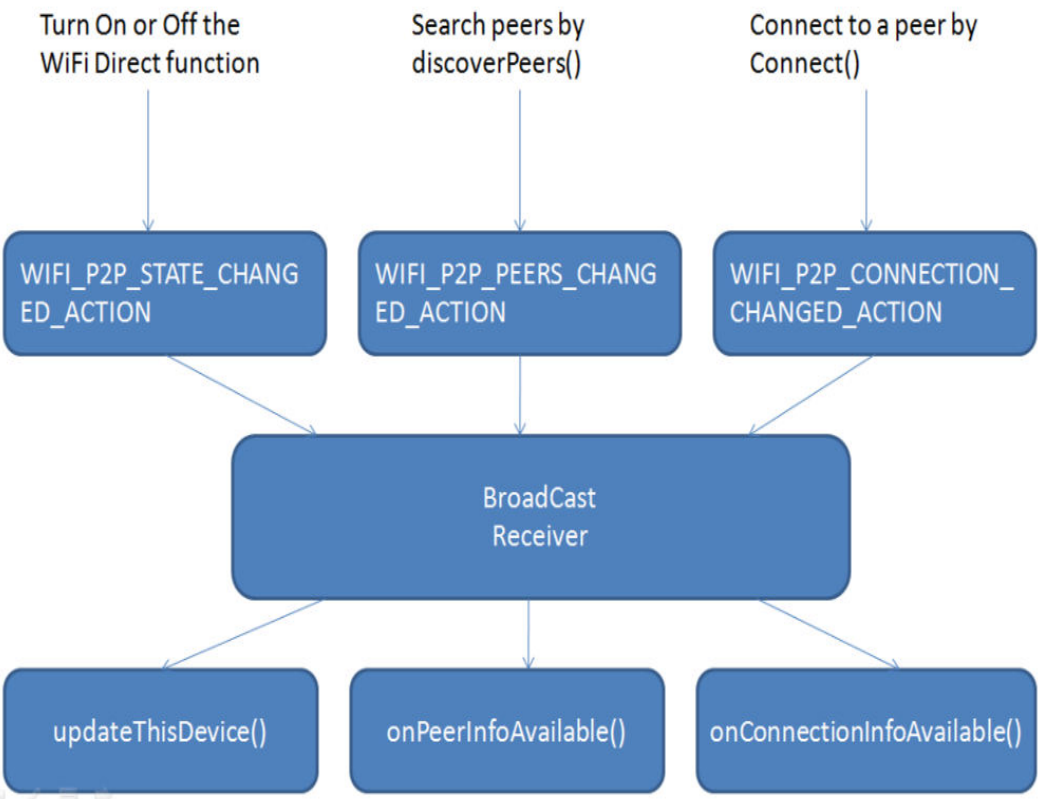
Detailed Modular Design (Cohesion and Coupling)



CHAPTER 6

Implementation and Coding

Implementation Details



1. Classes

WifiP2pManager: This is a class which is used to interact with the Wi-Fi hardware on our device which helps in connecting and discovering the peers.

2. Methods

WifiP2pManager class provides some methods for peer–to–peer connection.

initialize(): This method registers the application within a Wi-Fi framework, and it is called before calling any other Wi-Fi P2p methods.
connect(): This method is used to start a Wi-Fi pair connection with a device having a specific
discoverPeers(): This method is used to detect all the available peers that are in the range.
cancelConnect(): This method is used to cancel all the connected Wi-Fi pair connections.
removeGroup(): This method is used to remove the current peer–to–peer group.

Intents

When using the Wi-Fi pair connection, we need to listen for broadcast intents and handle the events occurred.

1WIFI_P2P_STATE_CHANGED_ACTION: It indicates a change in the Wi-Fi P2P status
WIFI_P2P_PEERS _CHANGED_ACTION: It indicates a change in the list of available peers
WIFI_P2P_CONNECTION _CHANGED_ACTION: It indicates the state of Wi-Fi P2P

connectivity is changed.
WIFI_P2P_THIS_DEVICE _CHANGED_ACTION: It indicates the device details are changed.

EasyShare with Source code

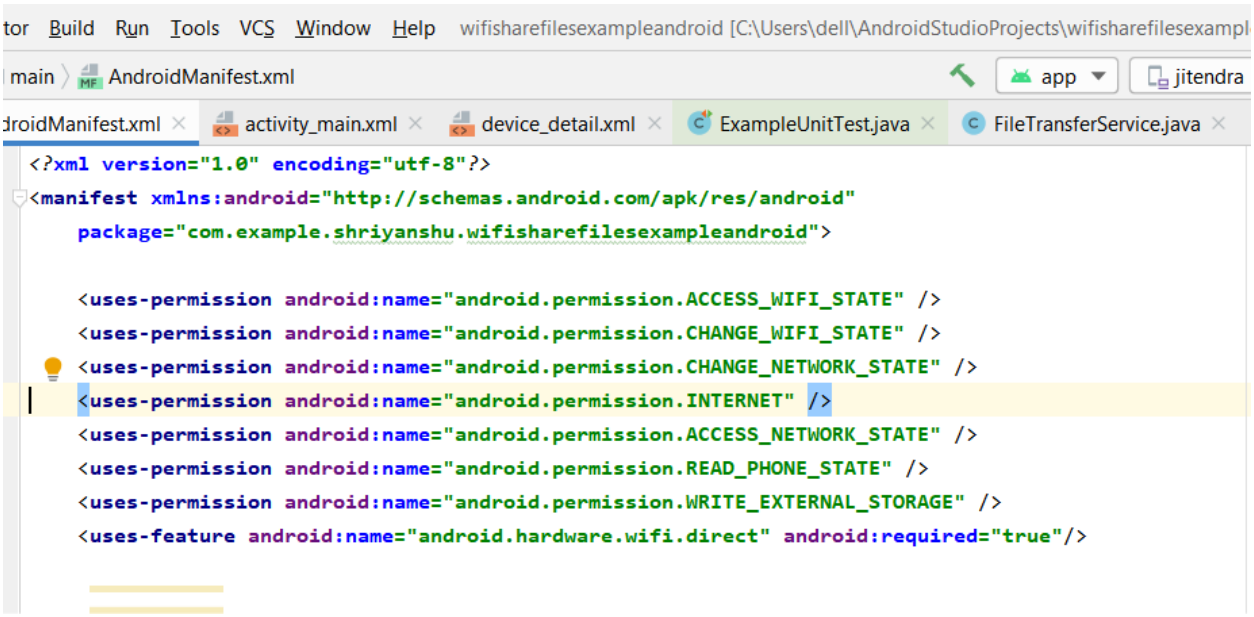
This Android Application which transfers files by creating a Wi-Fi pair connection in Android.

Create an Application **WiFiShareFilesExampleAndroid** in Android Studio
Add the permissions in the **AndroidManifest.xml** file.

AndroidManifest.xml

To use the Wi-Fi pair connection, we have to add some necessary permissions in this file.

Screenshot-



Now do it programmatically by creating some Java files and XML files in our project.

Set up Wi-Fi P2P Framework:

```
WifiP2pManager mManager;
Channel mChannel;
BroadcastReceiver mReceiver;
...
@Override
protected void onCreate(Bundle savedInstanceState){
    ...
    mManager = (WifiP2pManager) getSystemService(Context.WIFI_P2P_SERVICE);
    mChannel = mManager.initialize(this, getMainLooper(), null);
    mReceiver = new WiFiDirectBroadcastReceiver(mManager, mChannel, this);
    ...
}
```

Check Wi-Fi P2P supported or not:

```
// A BroadcastReceiver that notifies of important Wi-Fi p2p events.
public class WiFiDirectBroadcastReceiver extends BroadcastReceiver {

    @Override
    public void onReceive(Context context, Intent intent) {

        String action = intent.getAction();

        if (WifiP2pManager.WIFI_P2P_STATE_CHANGED_ACTION.equals(action)) {

        int state = intent.getIntExtra(WifiP2pManager.EXTRA_WIFI_STATE, -1);
        if (state == WifiP2pManager.WIFI_P2P_STATE_ENABLED) {
            // Wifi P2P is enabled
        } else {
            // Wi-Fi P2P is not enabled
```

Register BroadcastReceiver:

```
IntentFilter mIntentFilter;

...

@Override

protected void onCreate(Bundle savedInstanceState){

    ...

    mIntentFilter = new IntentFilter();

    mIntentFilter.addAction(WifiP2pManager.WIFI_P2P_STATE_CHANGED_ACTION);

    mIntentFilter.addAction(WifiP2pManager.WIFI_P2P_PEERS_CHANGED_ACTION);

    mIntentFilter.addAction(WifiP2pManager.WIFI_P2P_CONNECTION_CHANGED_ACTION);

    mIntentFilter.addAction(WifiP2pManager.WIFI_P2P_THIS_DEVICE_CHANGED_ACTION);

    ...

}
```

Discovering peers:

```
mManager.discoverPeers(channel, new
WifiP2pManager.ActionListener() {

    @Override

    public void onSuccess() {

        ...

    }

    @Override

    public void onFailure(int reasonCode) {

        ...

    }

});
```

```
PeerListListener myPeerListListener;

...

if (WifiP2pManager.WIFI_P2P_PEERS_CHANGED_ACTION.equals(action))
{

// request available peers from the wifi p2p manager. This is an

// asynchronous call and the calling activity is notified with a

// callback on PeerListListener.onPeersAvailable()

    if (mManager != null) {

        mManager.requestPeers(mChannel, myPeerListListener);

    }

}
```

12

Connecting to peers:

```
//obtain a peer from the WifiP2pDeviceList
WifiP2pDevice device;
WifiP2pConfig config = new WifiP2pConfig();
config.deviceAddress = device.deviceAddress;
mManager.connect(mChannel, config, new ActionListener() {

    @Override
    public void onSuccess() {
        //success logic
    }

    @Override
    public void onFailure(int reason) {
        //failure logic
    }
});
```

6.1Layout Files:

1. activity_main.xml

This is our main layout file. Here, we add two fragments inside LinearLayout.

Screenshots

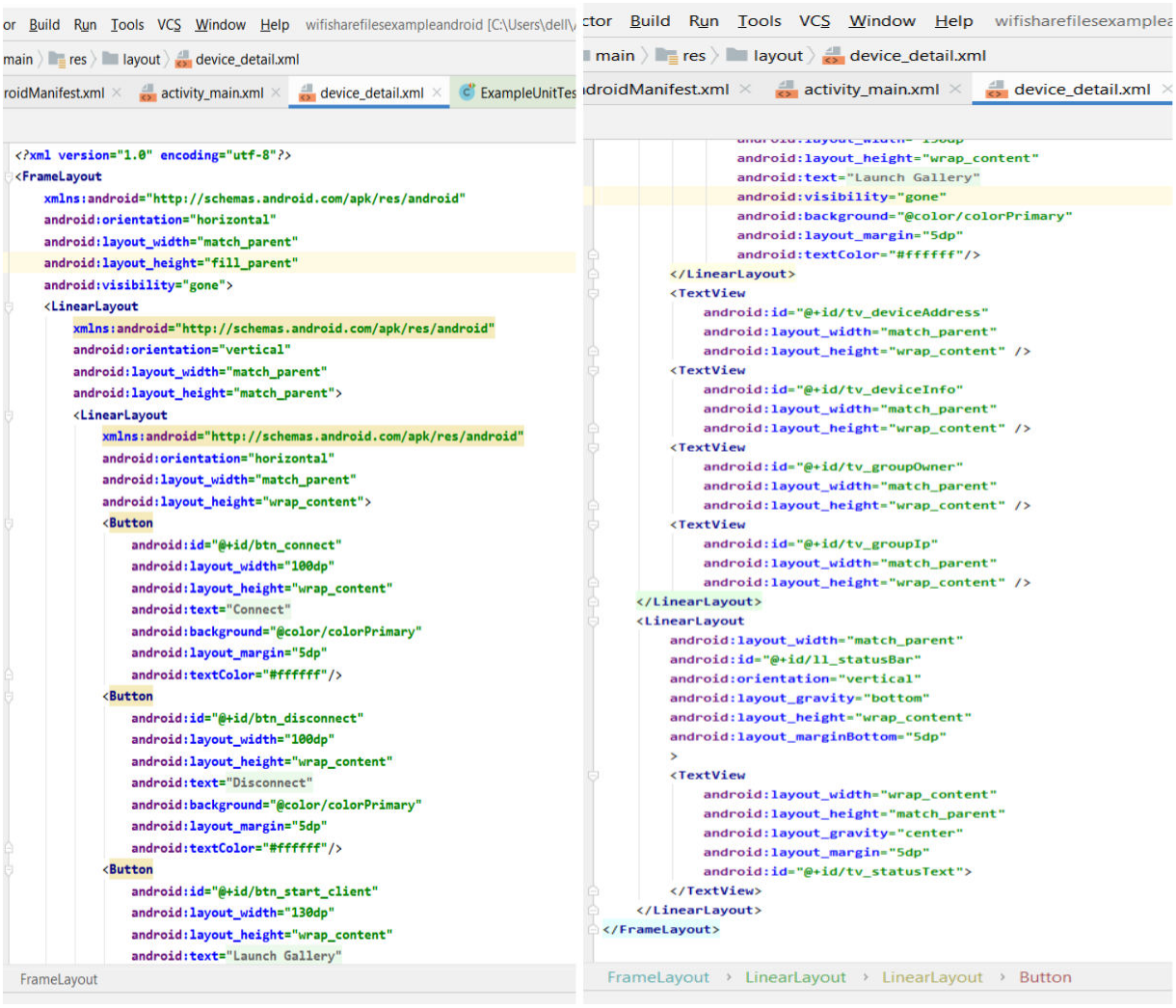
main 〉 res 〉 layout 〉 activity_main.xml app jitendra

activity_main.xml | ExampleUnitTest.java | FileTransferService.java | SharedPreferencesHandler.java | WiFiClie

```
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:orientation="vertical"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:weightSum="1">

    <LinearLayout
        android:id="@+id/linearLayout"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_alignParentTop="true"
        android:layout_weight="0.9"
        android:orientation="vertical">

        <fragment
            android:id="@+id/fragment_list"
            class="com.example.shriyanshu.wifisharefilesexampleandroid.DeviceListFragment"
            android:layout_width="match_parent"
            android:layout_height="200dp"
            tools:layout="@layout/device_list"></fragment>

        <fragment
            android:id="@+id/fragment_detail"
            class="com.example.shriyanshu.wifisharefilesexampleandroid.DeviceDetailFragment"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            tools:layout="@layout/device_detail"></fragment>
    </LinearLayout>

</LinearLayout>
```

2. device_detail.xml

Screenshots

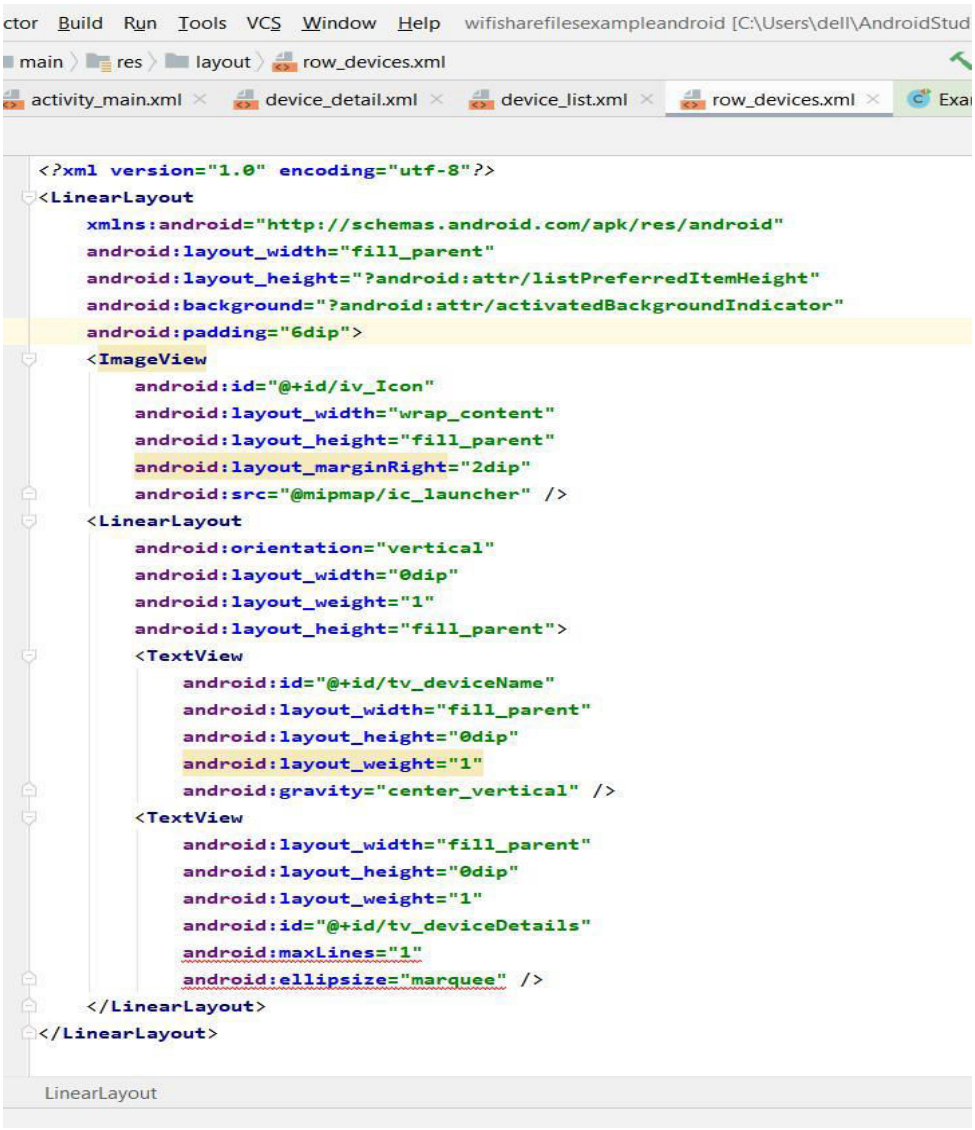


3. device_list.xml

Screenshots

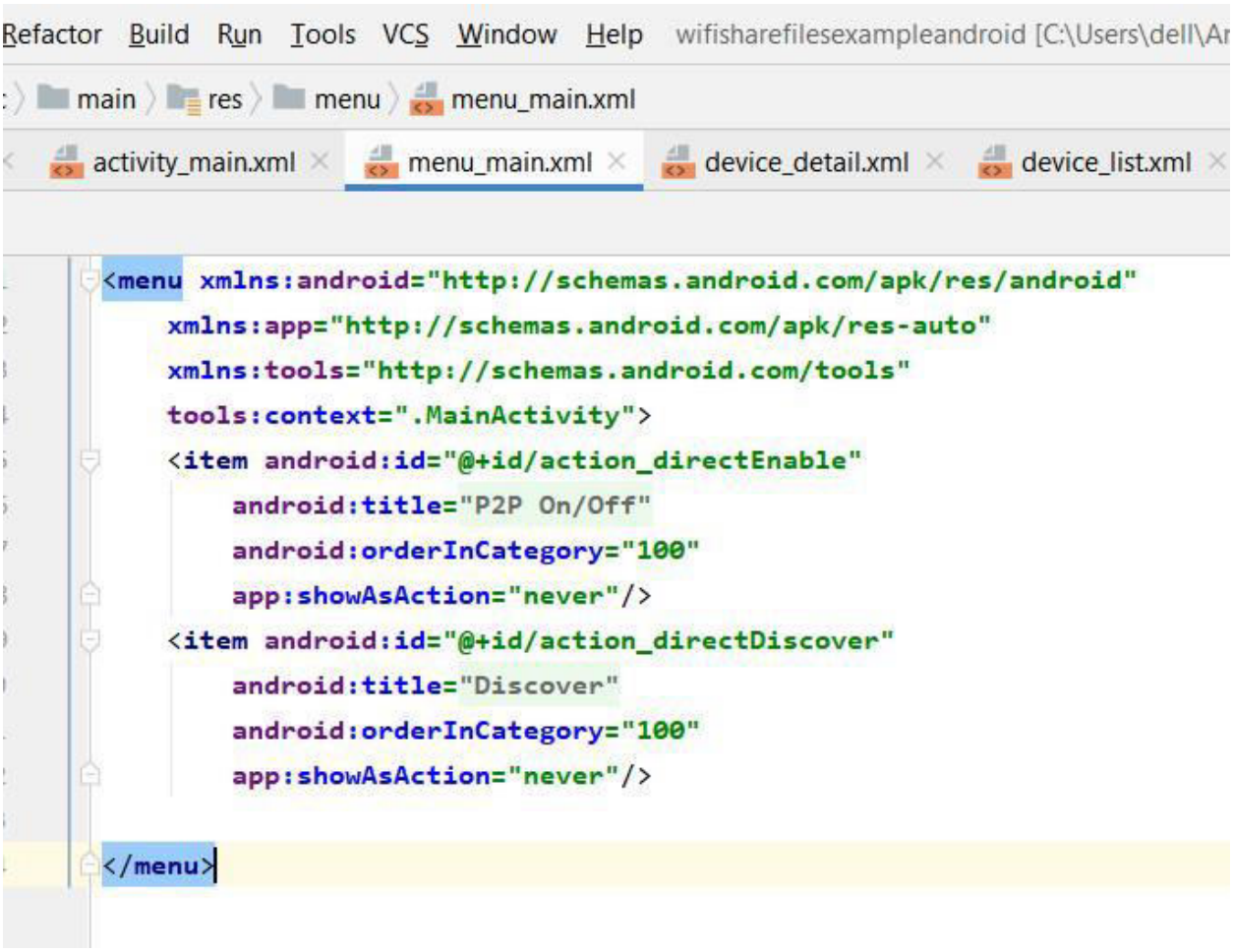
4. row_devices.xml

Screenshots



5. menu_main.xml

Screenshot



6.2Java Files

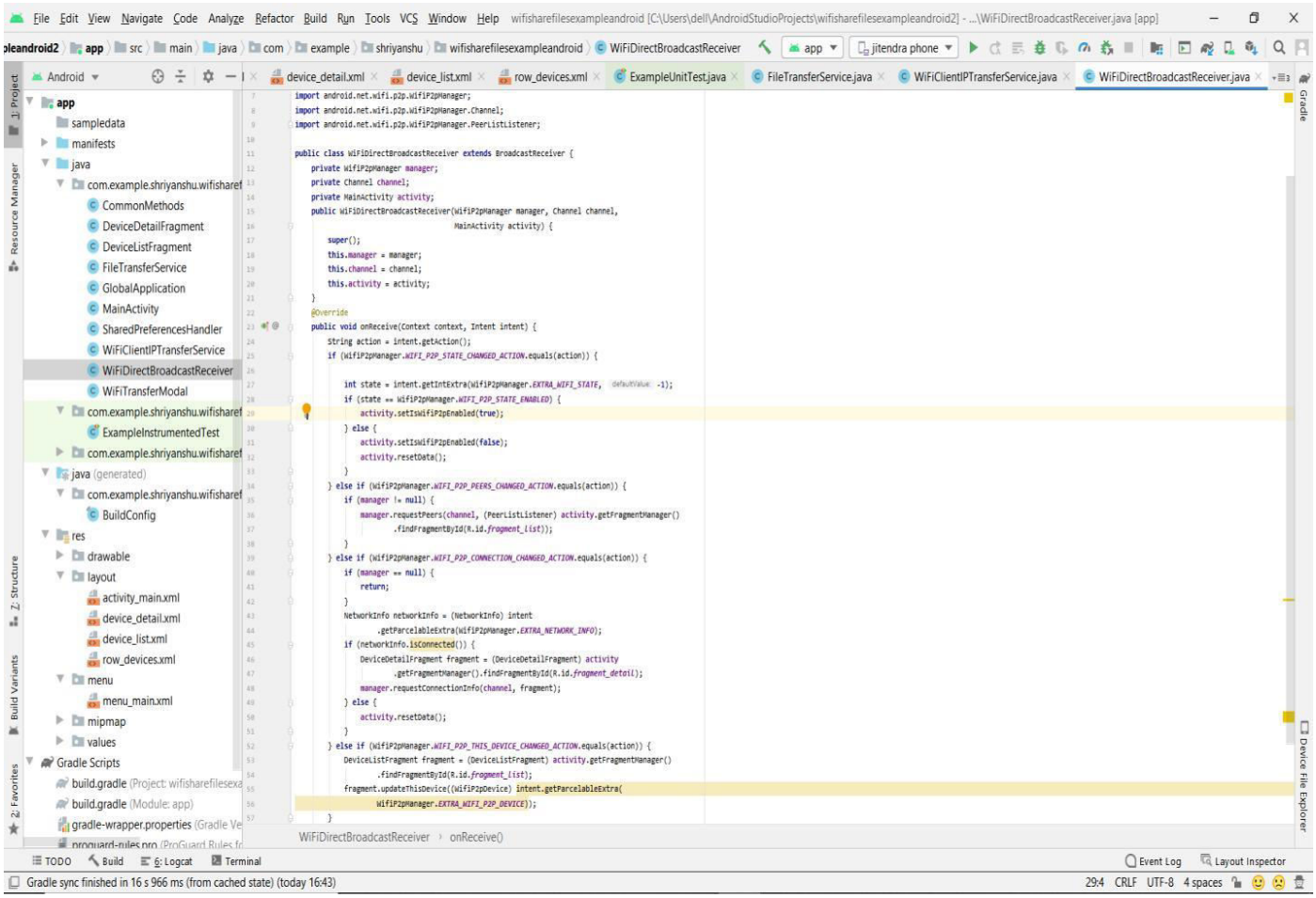
WifiDirectBroadcastReceiver.java

This class and extends with BroadcastReceiver. Here, this class notifies important Wi-Fi P2p events.

Initialize

```
private WifiP2pManager manager;
private Channel channel;
private MainActivity activity;
```

Add the Code in onReceive() Method:



MainActivity.java

This is our Main Activity. Here, it adds the necessary intent values by creating an intent-filter, registers the broadcast receiver, obtains the instance of WifiP2pManager class, registers the application by using initialize() method, also discover peers and connects with the available devices.

Initialize

```
public class MainActivity extends AppCompatActivity implements ChannelListener, DeviceActionListener {


    public static final String TAG = "WiFiShareFilesExampleAndroid";
    private WifiP2pManager manager;
    private boolean isWifiP2pEnabled = false;
    private boolean retryChannel = false;
    private final IntentFilter intentFilter = new IntentFilter();
    private Channel channel;
    private BroadcastReceiver receiver = null;
```

Add the code in onCreate(…){..}:

```
@Override
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    // add necessary intent values to be matched.
    intentFilter.addAction(WifiP2pManager.WIFI_P2P_STATE_CHANGED_ACTION);
    intentFilter.addAction(WifiP2pManager.WIFI_P2P_PEERS_CHANGED_ACTION);
    intentFilter.addAction(WifiP2pManager.WIFI_P2P_CONNECTION_CHANGED_ACTION);
    intentFilter.addAction(WifiP2pManager.WIFI_P2P_THIS_DEVICE_CHANGED_ACTION);

    manager = (WifiP2pManager) getSystemService(Context.WIFI_P2P_SERVICE);
    channel = manager.initialize( srcContext: this, getMainLooper(),  listener: null);
}
```

Now, register the receiver in onResume() method

```
@Override
public void onResume() {
    super.onResume();
    receiver = new WiFiDirectBroadcastReceiver(manager, channel,  activity: this);
    registerReceiver(receiver, intentFilter);
}

@Override
public void onPause() {
    super.onPause();
    unregisterReceiver(receiver);
}
```

Add the code for discover peers

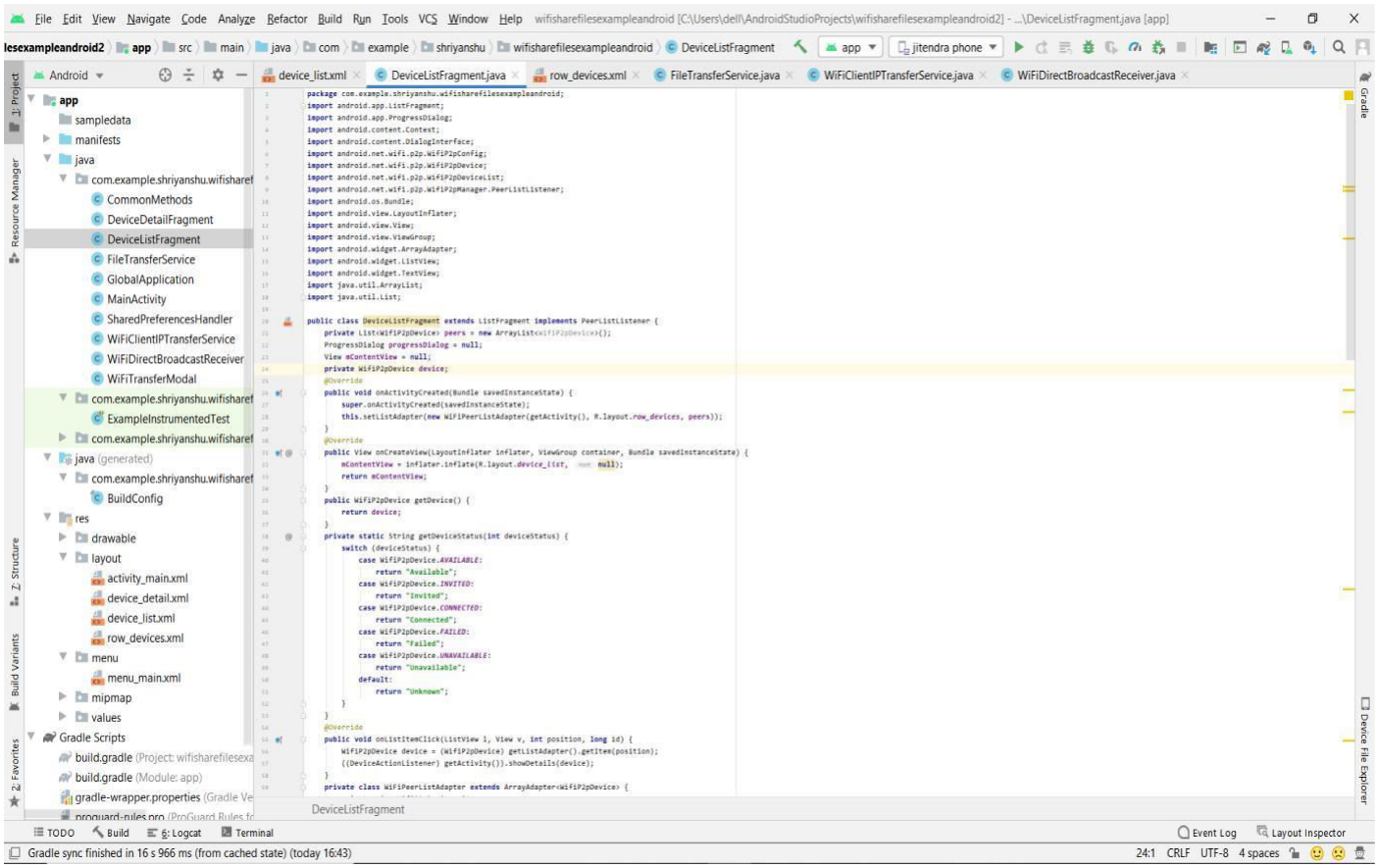
```
        final DeviceListFragment fragment = (DeviceListFragment) getFragmentManager()
                .findFragmentById(R.id.fragment_list);
        fragment.onInitiateDiscovery();
        manager.discoverPeers(channel, new WifiP2pManager.ActionListener() {

            @Override
            public void onSuccess() {
                Toast.makeText( context: MainActivity.this, text: "Discovery Initiated",
                        Toast.LENGTH_SHORT).show();
            }

            @Override
            public void onFailure(int reasonCode) {
                Toast.makeText( context: MainActivity.this, text: "Discovery Failed : " + reasonCode,
                        Toast.LENGTH_SHORT).show();
            }
        });
        return true;
    default:
        return super.onOptionsItemSelected(item);
}
```

Now call connect() method for connecting with an available peer.

```
    @Override
    public void connect(WifiP2pConfig config) {
        manager.connect(channel, config, new ActionListener() {

            @Override
            public void onSuccess() {
                // WiFiDirectBroadcastReceiver will notify us. Ignore for now.
            }

            @Override
            public void onFailure(int reason) {
                Toast.makeText( context: MainActivity.this, text: "Connect failed. Retry.",
                        Toast.LENGTH_SHORT).show();
            }
        });
    }
```

DeviceDetailFragment.java

This fragment class manages with a particular peer and “allows the interaction with the device” means when a connection is established successfully, we can transfer the data to the device by setting up a network connection.
Added the code here by creating a server socket that accepts the connection.



CHAPTER 7

SOFTWARE TESTING AND DEBUGGING

7.1 Software Testing

Software testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under test. Software testing can also provide an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation. Test techniques include, but are not limited to, the process of executing a program or application with the intent of finding software bugs (errors or other defects).

7.1.1 Unit testing

Unit testing, also known as component testing, refers to tests that verify the functionality of a specific section of code, usually at the function level. In an object-oriented environment, this is usually at the class level, and the minimal unit tests include the constructors and destructors.

We verified every Class and methods for functionality under unit testing.

7.1.2 Integration testing

Integration testing is any type of software testing that seeks to verify the interfaces between components against a software design. Software components may be integrated in an iterative way or all together ("big bang"). Normally the former is considered a better practice since it allows interface issues to be localized more quickly and fixed.

Under this testing, we integrated the system and the functionality is compared with the software design, And the system performance is checked.

Phase 1: Module 1 is tested by integrating all the classes
Phase 2: Module 2 is tested by integrating all the classes
Phase 3: Module 2 is tested by integrating all the classes

7.1.3 System testing

System testing tests a completely integrated system to verify that it meets its requirements.

Under this testing strategy, we tested the whole system.
All the modules integrated in previous phases were tested.

7.2 Approaches for Testing

7.2.1 White-box testing

White-box testing is when the tester has access to the internal data structures and algorithms including the code that implement these.

7.2.2 Black-box testing

Black-box testing treats the software as a "black box"—without any knowledge of internal implementation. Black-box testing methods include: equivalence partitioning, boundary value analysis, all-pairs testing, fuzz testing, model-based testing, exploratory testing and specification based testing.

7.3 Debugging

Debugging is a methodical process of finding and reducing the number of bugs, or defects, in a computer program or a piece of electronic hardware, thus making it behave as expected. Debugging tends to be harder when various subsystems are tightly coupled, as changes in one may cause bugs to emerge in another. Many books have been written about debugging (see below: Further reading), as it involves numerous aspects, including interactive debugging, control flow, integration testing, log files, monitoring (application, system), memory dumps, profiling, Statistical Process Control, and special design tactics to improve detection while simplifying changes.

Approaches for debugging applied

7.3.1 Brute force method

Brute force method is common method but it is least efficient method. In this approach, print statements are inserted throughout the program.

```
        final DeviceListFragment fragment = (DeviceListFragment) getFragmentManager()
                .findFragmentById(R.id.fragment_list);
        fragment.onInitiateDiscovery();
        manager.discoverPeers(channel, new WifiP2pManager.ActionListener() {

            @Override
            public void onSuccess() {
                Toast.makeText( context: MainActivity.this,  text: "Discovery Initiated",
                        Toast.LENGTH_SHORT).show();
            }

            @Override
            public void onFailure(int reasonCode) {
                Toast.makeText( context: MainActivity.this,  text: "Discovery Failed : " + reasonCode,
                        Toast.LENGTH_SHORT).show();
            }
        });
        return true;
    default:
        return super.onOptionsItemSelected(item);
}
```

7.3.2 Backtracking

In this approach, beginning from the statement at which an error symptom has been observed, the source code is traced backwards until the error is discovered. it is a fairly common approach.

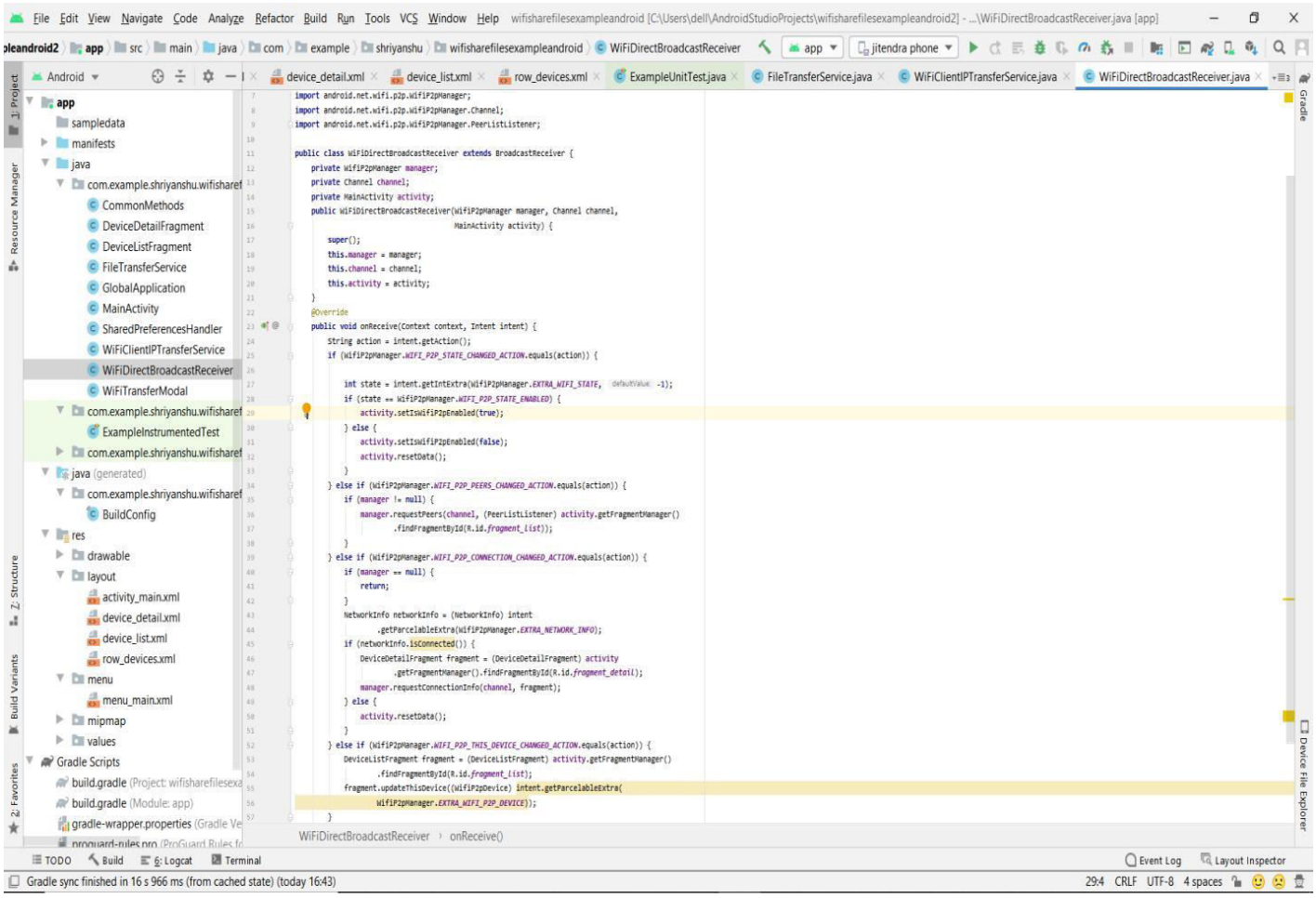


Fig- The error is traced from the top to lower hierarchy of the files.

CHAPTER 8

CONCLUSION AND FUTURE SCOPE

Our project has reached the milestone as we designed to meet the requirements, The Android Application provides user friendly interface for users and Android application is in Good working conditions.

The primary goal of this project is to give an idea about file Sending among android mobile and Tablet with Wi-fi-Direct. This project has given us a depth information about java technology, j2ee and ANDROID technology and its applications in day today life. This project offers several benefits due to the use of simple and easy to understand interface. This project is developed using java and android platform, which is easy to read, learn, scales well, performs well for being interpreted, and is incredibly well- documented.

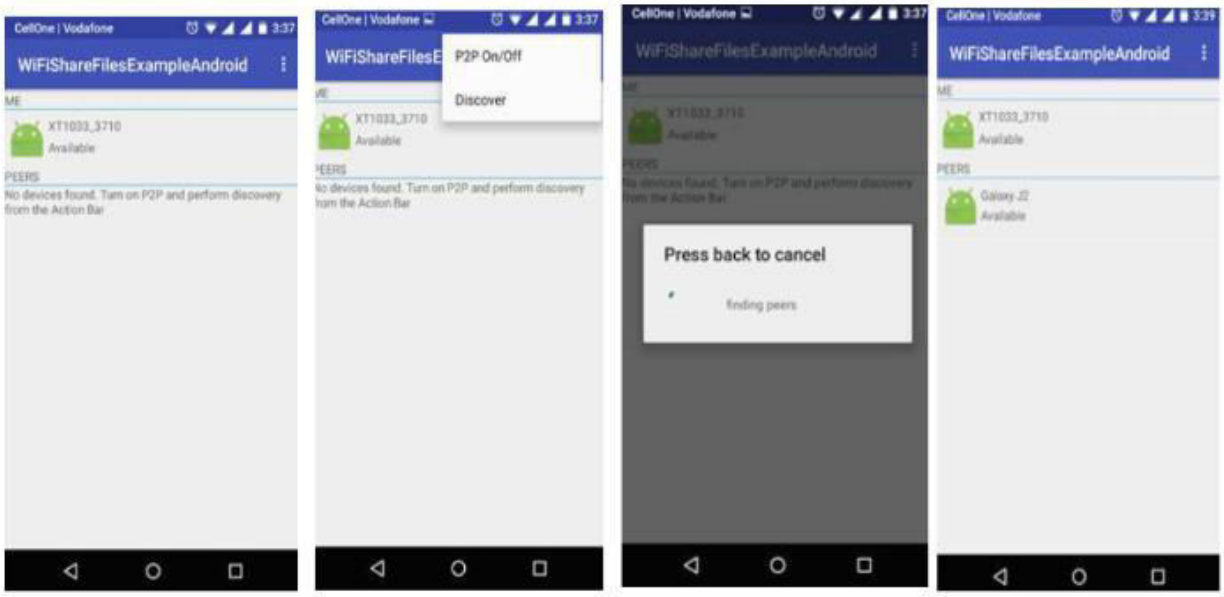
As the final result meet to our expectation of File sharing. We are expecting to bring this project to market with real-time cloud file sharing platform. The file sharing application and the platform is ready.

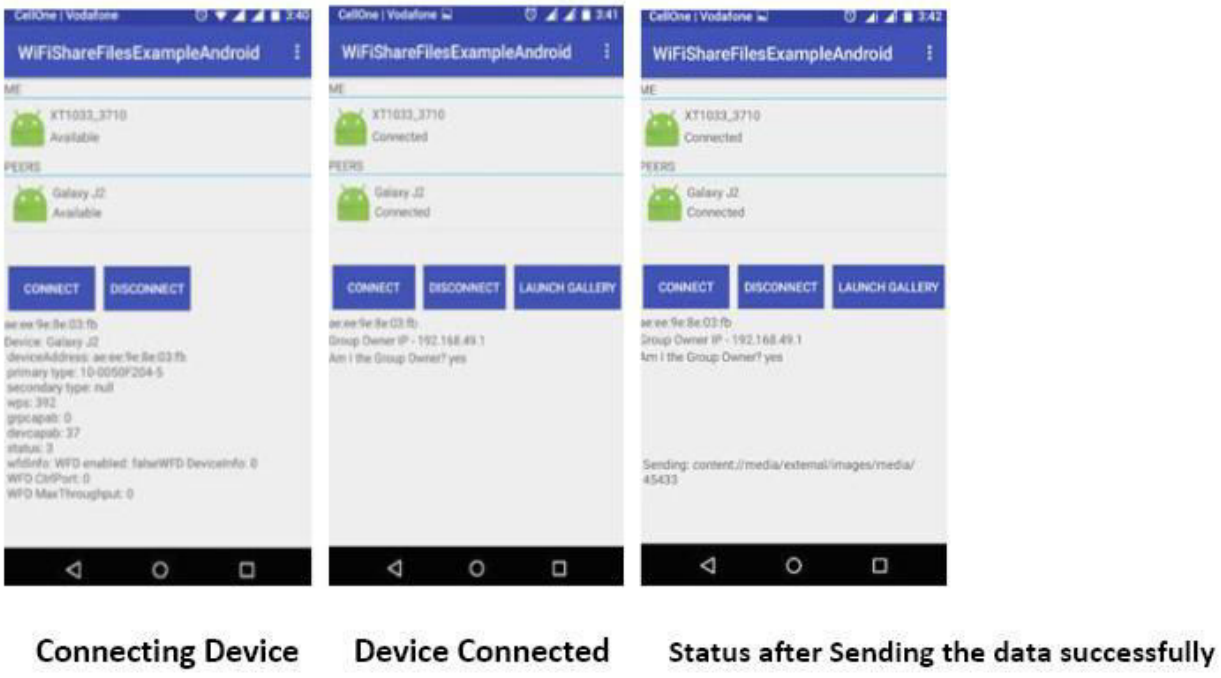
Future Scope

- It can extend into a cloud-based productivity platform like *Google Drive* and *Dropbox.*
- Transferring large files quicker by seeding process as seen in *Spotify* and *BitTorrent.*
- It can work as a built-in capability of an OS to share files among computers with the same OS.
- It can extend into a centralized File system like *IBM Aspera.*

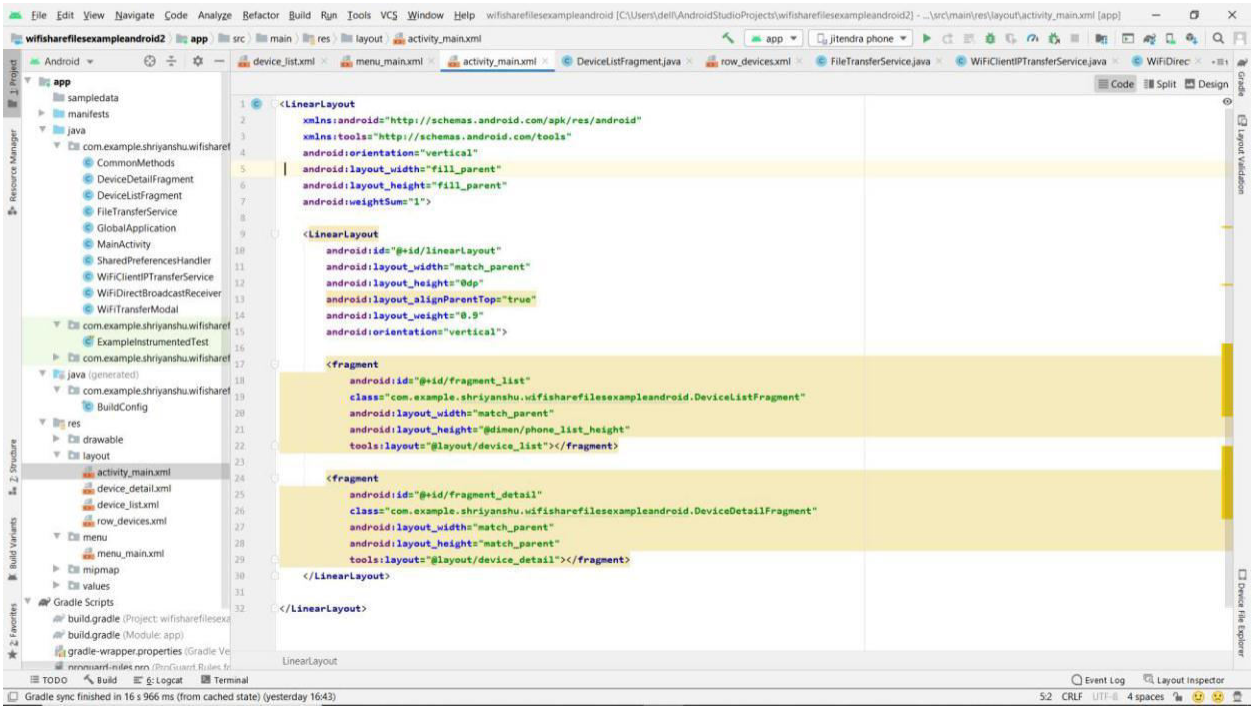
6.1 Screenshots

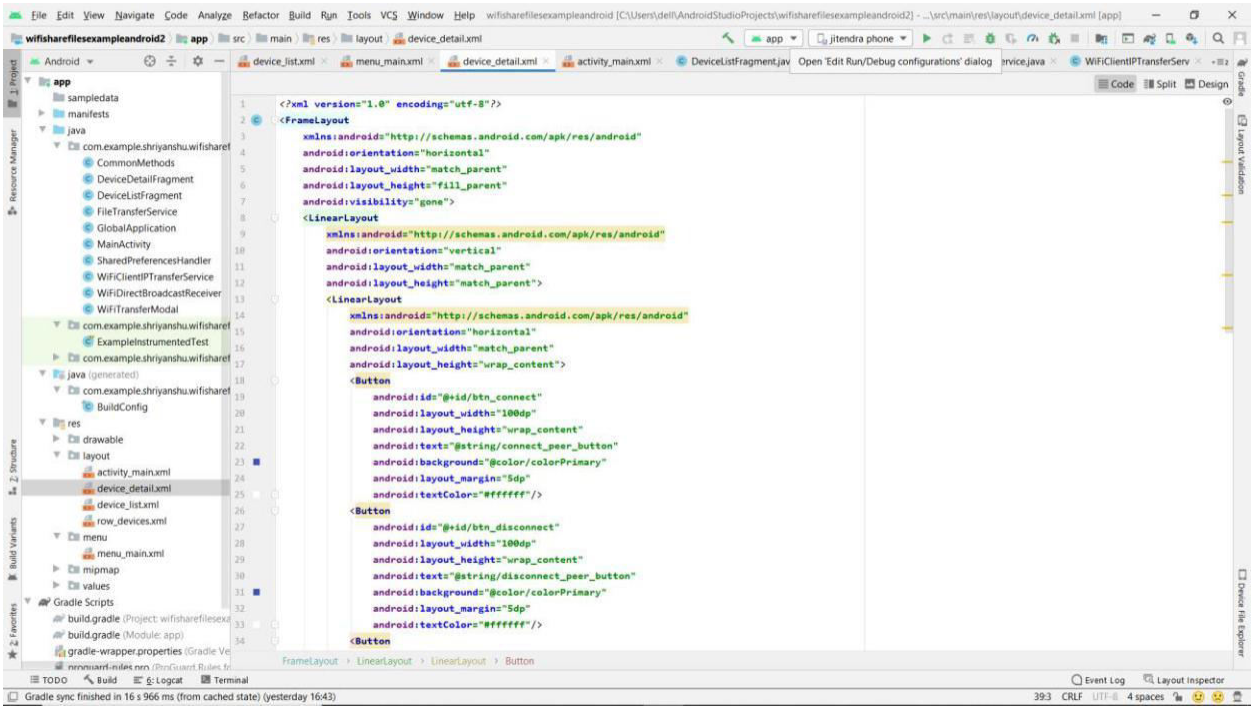
6.1.1 Screenshot of User interface of Android Application





6.1.2 Screenshots of Source code




File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
wifisharefilesexampleandroid [C:\Users\dell\AndroidStudioProjects\wifisharefilesexampleandroid2] - ...\src\main\res\layout\device_detail.xml [app]
wifisharefilesexampleandroid2 app src main res layout device_detail.xml
app jitendra phone
Android
app
sampledata
manifests
java
com.example.shriyanshu.wifisharef
CommonMethods
DeviceDetailFragment
DeviceListFragment
FileTransferService
GlobalApplication
MainActivity
SharedPreferencesHandler
WiFiClientIPTransferService
WiFiDirectBroadcastReceiver
WiFiTransferModal
com.example.shriyanshu.wifisharef
ExampleInstrumentedTest
com.example.shriyanshu.wifisharef
java (generated)
com.example.shriyanshu.wifisharef
BuildConfig
res
drawable
layout
activity_main.xml
device_detail.xml
device_list.xml
row_devices.xml
menu
menu_main.xml
mipmap
values
Gradle Scripts
build.gradle (Project: wifisharefilesexa
build.gradle (Module: app)
gradle-wrapper.properties (Gradle Ve
device_list.xml
menu_main.xml
device_detail.xml
activity_main.xml
DeviceListFragment.jav
Open 'Edit Run/Debug configurations' dialog
WiFiClientIPTransferServ
Code Split Design
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout
xmlns:android="http://schemas.android.com/apk/res/android"
android:orientation="horizontal"
android:layout_width="match_parent"
android:layout_height="fill_parent"
android:visibility="gone">
<LinearLayout
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android:orientation="vertical"
android:layout_width="match_parent"
android:layout_height="match_parent">
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android:orientation="horizontal"
android:layout_width="match_parent"
android:layout_height="wrap_content">
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android:layout_width="100dp"
android:layout_height="wrap_content"
android:text="@string/connect_peer_button"
android:background="@color/colorPrimary"
android:layout_margin="5dp"
android:textColor="#ffffff"/>
<Button
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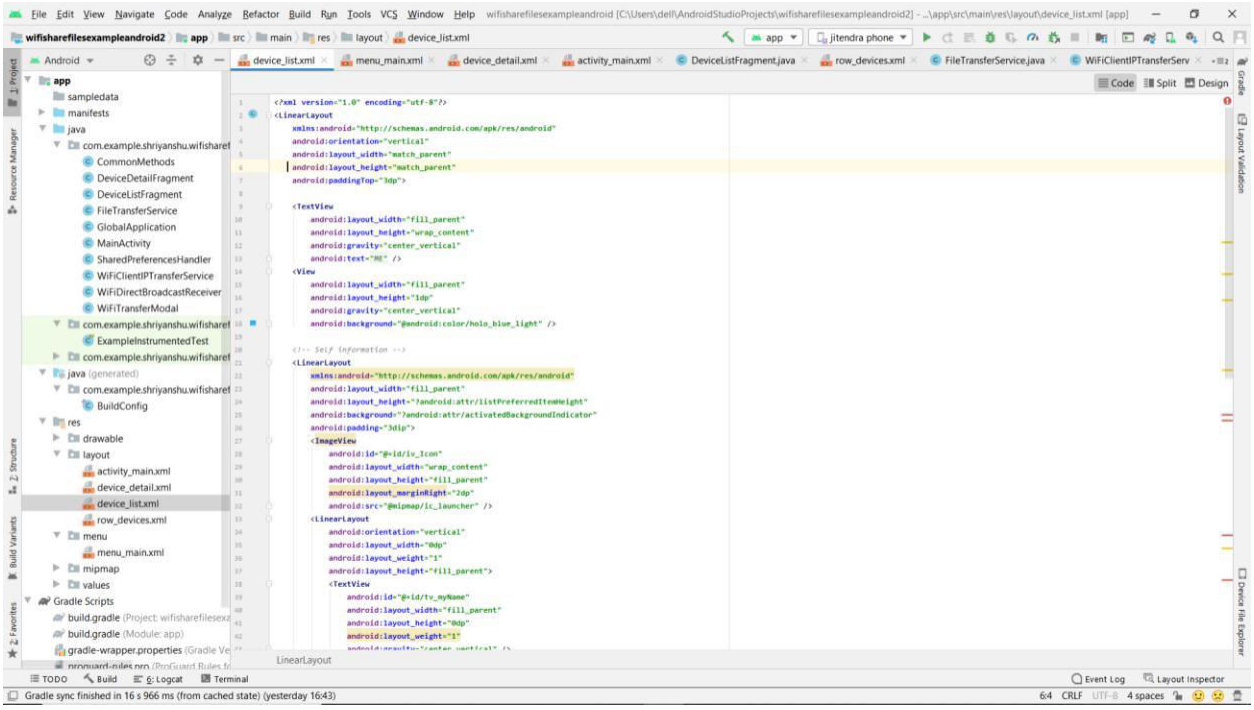
android:layout_width="100dp"
android:layout_height="wrap_content"
android:text="@string/disconnect_peer_button"
android:background="@color/colorPrimary"
android:layout_margin="5dp"
android:textColor="#ffffff"/>
<Button
FrameLayout › LinearLayout › LinearLayout › Button
TODO Build 6: Logcat Terminal
Event Log Layout Inspector
Gradle sync finished in 16 s 966 ms (from cached state) (yesterday 16:43)
39:3 CRLF UTF-8 4 spaces


File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
wifisharefilesexampleandroid [C:\Users\dell\AndroidStudioProjects\wifisharefilesexampleandroid2] - ...\app\src\main\res\layout\device_list.xml [app]
wifisharefilesexampleandroid2 app src main res layout device_list.xml
app jitendra phone
Android
app
sampledata
manifests
java
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DeviceListFragment
FileTransferService
GlobalApplication
MainActivity
SharedPreferencesHandler
WiFiClientIPTransferService
WiFiDirectBroadcastReceiver
WiFiTransferModal
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ExampleInstrumentedTest
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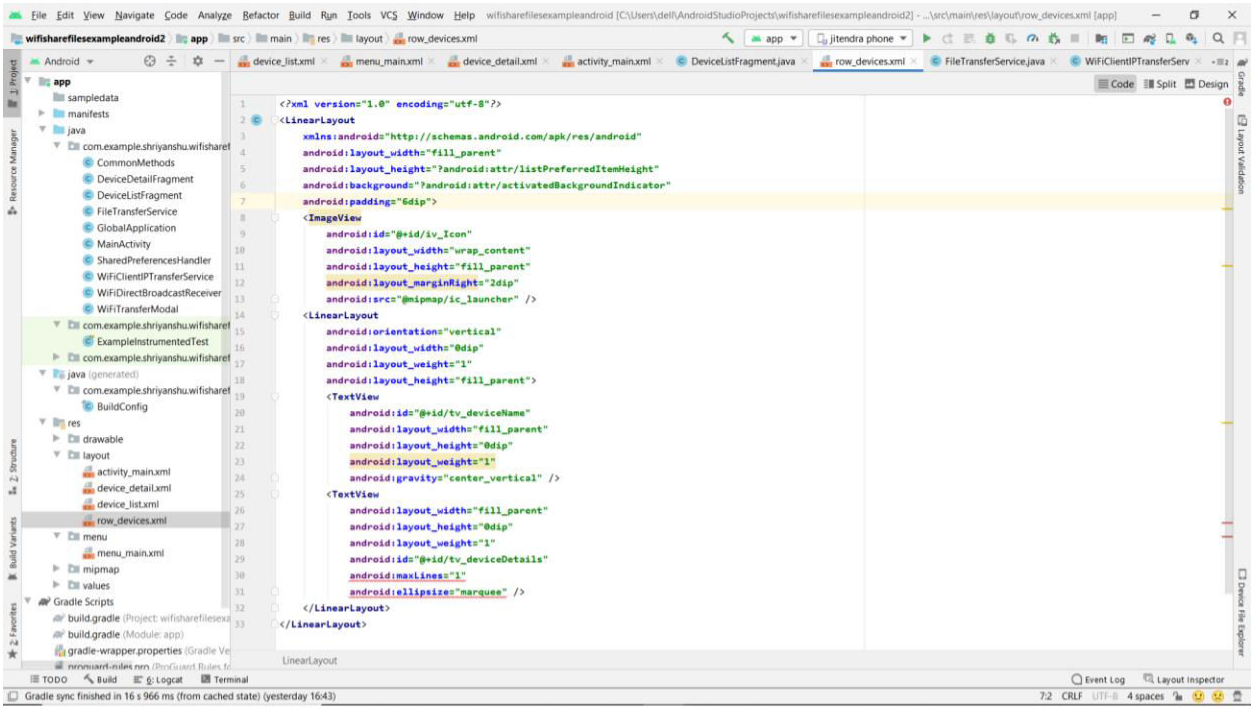
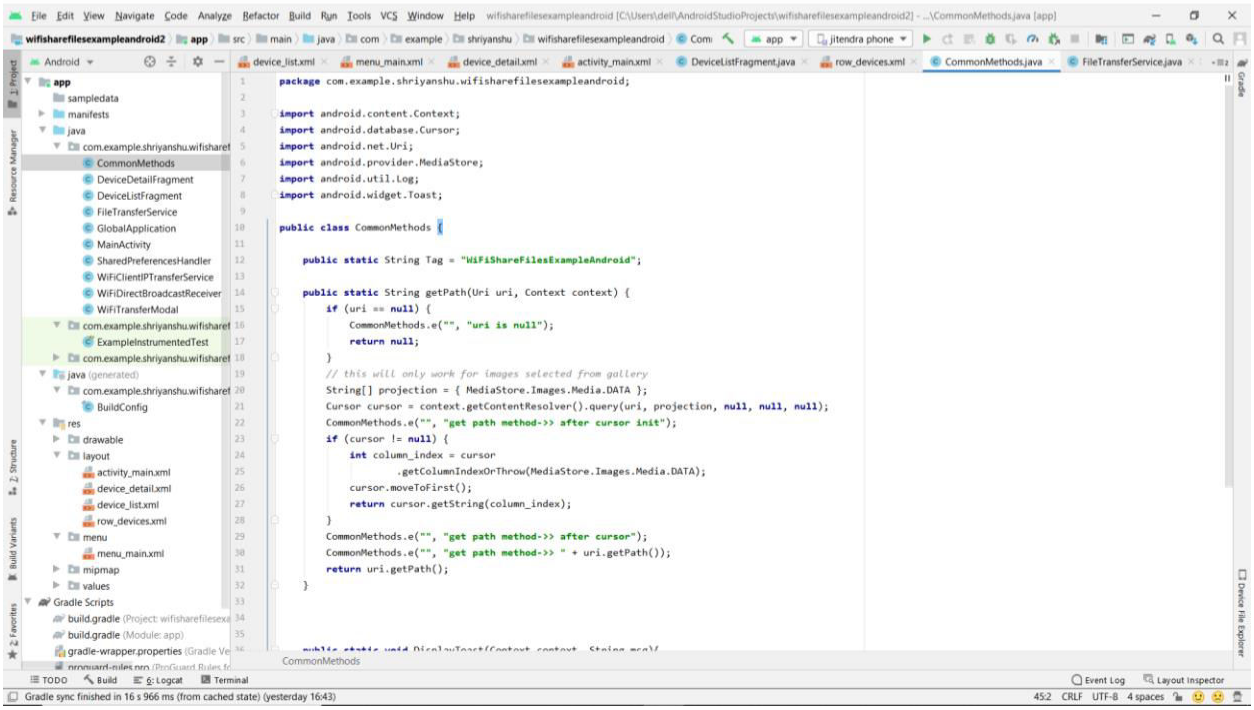
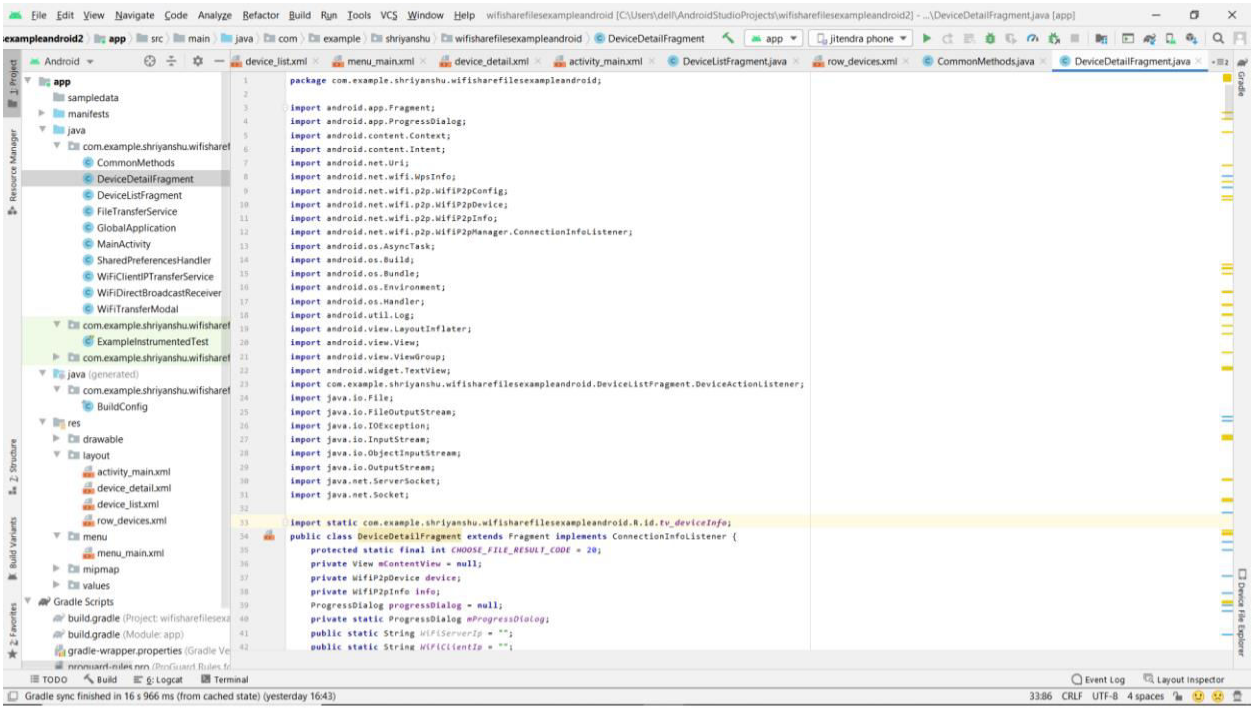
java (generated)
com.example.shriyanshu.wifisharef
BuildConfig
res
drawable
layout
activity_main.xml
device_detail.xml
device_list.xml
row_devices.xml
menu
menu_main.xml
mipmap
values
Gradle Scripts
build.gradle (Project: wifisharefilesexa
build.gradle (Module: app)
gradle-wrapper.properties (Gradle Ve
device_list.xml
menu_main.xml
device_detail.xml
activity_main.xml
DeviceListFragment.java
row_devices.xml
FileTransferService.java
WiFiClientIPTransferServ
Code Split Design
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
android:orientation="vertical"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:paddingTop="10dp">
<TextView
android:layout_width="fill_parent"
android:layout_height="wrap_content"
android:gravity="center_vertical"
android:text="ME" />
<View
android:layout_width="fill_parent"
android:layout_height="1dp"
android:gravity="center_vertical"
android:background="@android:color/holo_blue_light" />
<!-- Self Information -->
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
android:layout_width="fill_parent"
android:layout_height="?android:attr/listPreferredItemHeight"
android:background="?android:attr/activatedBackgroundIndicator"
android:padding="3dip">
<ImageView
android:id="@+id/iv_icon"
android:layout_width="wrap_content"
android:layout_height="fill_parent"
android:layout_marginRight="2dp"
android:src="@mipmap/ic_launcher" />
<LinearLayout
android:orientation="vertical"
android:layout_width="0dp"
android:layout_weight="1"
android:layout_height="fill_parent">
<TextView
android:id="@+id/tv_myName"
android:layout_width="fill_parent"
android:layout_height="0dp"
android:layout_weight="1"
LinearLayout
TODO Build 6: Logcat Terminal
Event Log Layout Inspector
Gradle sync finished in 16 s 966 ms (from cached state) (yesterday 16:43)
6:4 CRLF UTF-8 4 spaces



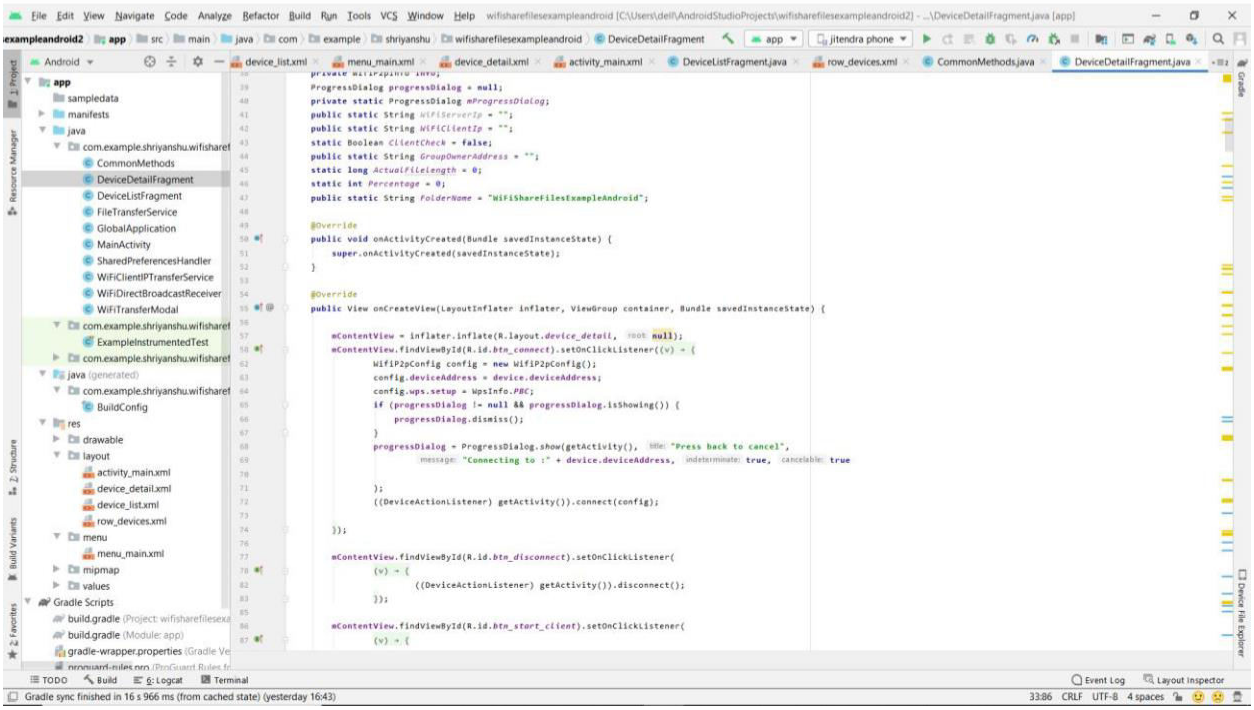
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="?android:attr/listPreferredItemHeight"
    android:background="?android:attr/activatedBackgroundIndicator"
    android:padding="6dip">
    <ImageView
        android:id="@+id/iv_Icon"
        android:layout_width="wrap_content"
        android:layout_height="fill_parent"
        android:layout_marginRight="2dip"
        android:src="@mipmap/ic_launcher" />
    <LinearLayout
        android:orientation="vertical"
        android:layout_width="0dip"
        android:layout_weight="1"
        android:layout_height="fill_parent">
        <TextView
            android:id="@+id/tv_deviceName"
            android:layout_width="fill_parent"
            android:layout_height="0dip"
            android:layout_weight="1"
            android:gravity="center_vertical" />
        <TextView
            android:layout_width="fill_parent"
            android:layout_height="0dip"
            android:layout_weight="1"
            android:id="@+id/tv_deviceDetails"
            android:maxLines="1"
            android:ellipsize="marquee" />
    </LinearLayout>
</LinearLayout>
```



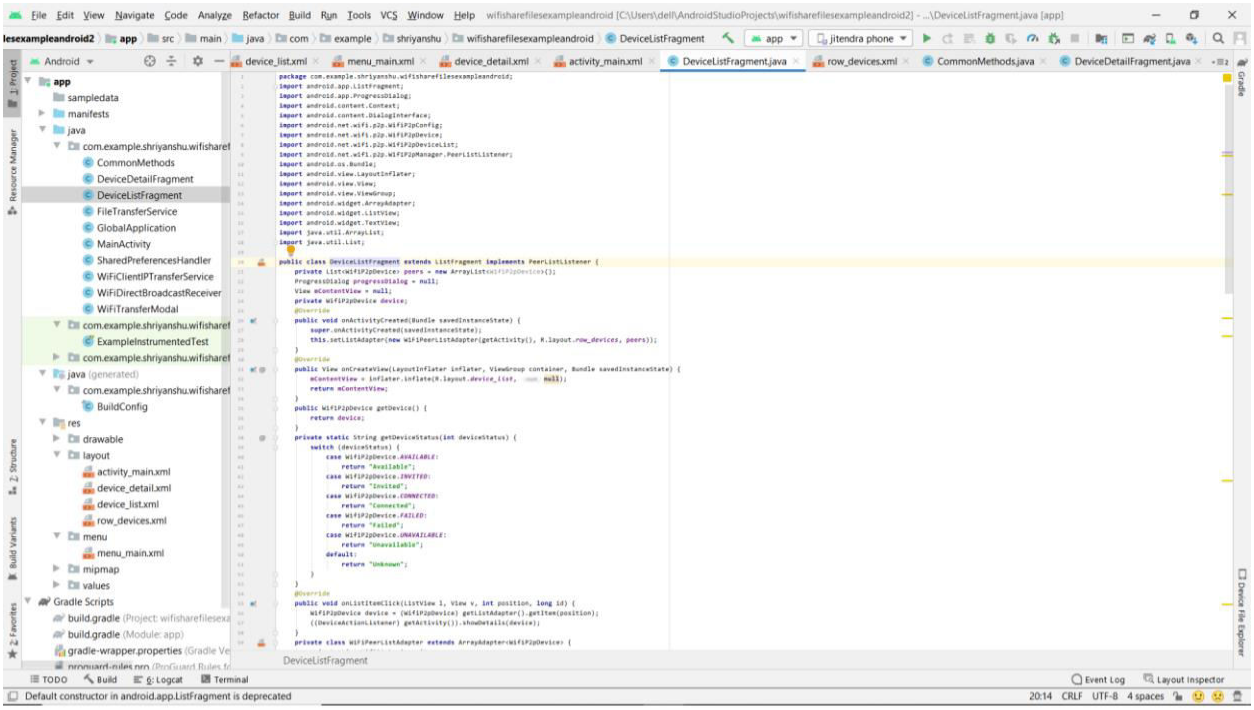
```
package com.example.shriyanshu.wifisharefilesexampleandroid;

import android.content.Context;
import android.database.Cursor;
import android.net.Uri;
import android.provider.MediaStore;
import android.util.Log;
import android.widget.Toast;

public class CommonMethods {

    public static String Tag = "WiFiShareFilesExampleAndroid";

    public static String getPath(Uri uri, Context context) {
        if (uri == null) {
            CommonMethods.e("", "uri is null");
            return null;
        }
        // this will only work for images selected from gallery
        String[] projection = { MediaStore.Images.Media.DATA };
        Cursor cursor = context.getContentResolver().query(uri, projection, null, null, null);
        CommonMethods.e("", "get path method->> after cursor init");
        if (cursor != null) {
            int column_index = cursor
                    .getColumnIndexOrThrow(MediaStore.Images.Media.DATA);
            cursor.moveToFirst();
            return cursor.getString(column_index);
        }
        CommonMethods.e("", "get path method->> after cursor");
        CommonMethods.e("", "get path method->> " + uri.getPath());
        return uri.getPath();
    }
```



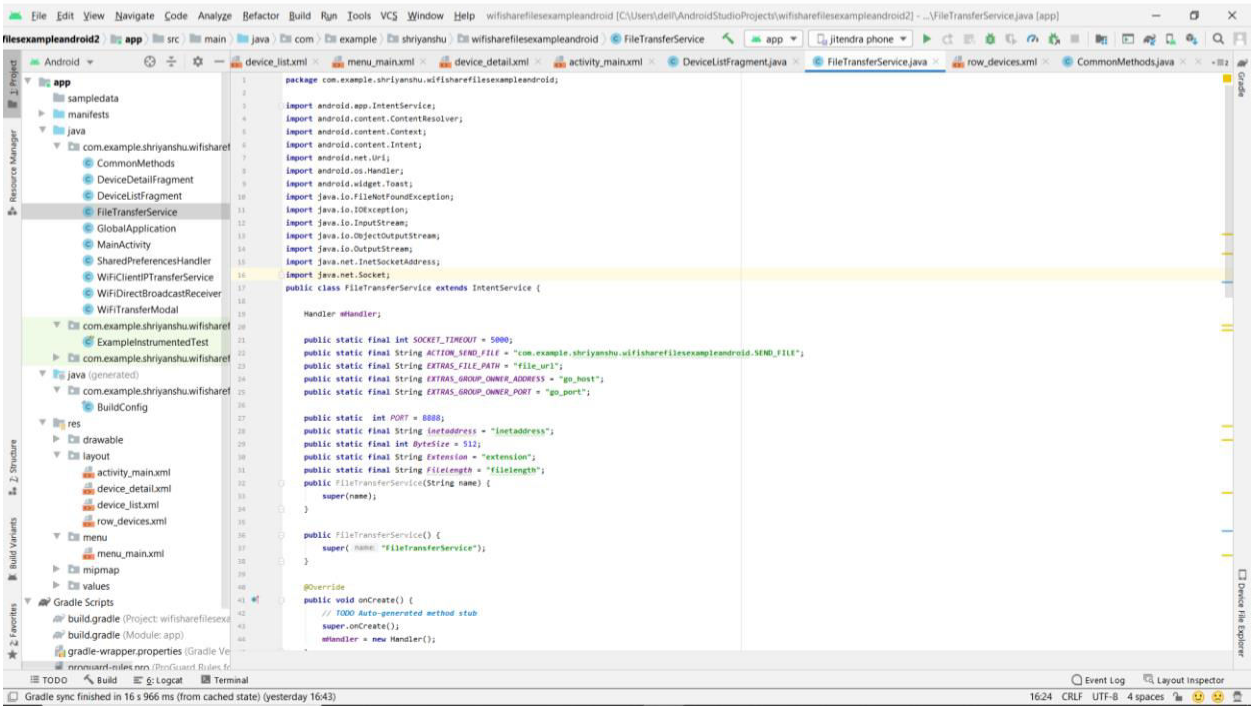
```
package com.example.shriyanshu.wifisharefilesexampleandroid;

import android.app.Fragment;
import android.app.ProgressDialog;
import android.content.Context;
import android.content.Intent;
import android.net.Uri;
import android.net.wifi.WpsInfo;
import android.net.wifi.p2p.WifiP2pConfig;
import android.net.wifi.p2p.WifiP2pDevice;
import android.net.wifi.p2p.WifiP2pInfo;
import android.net.wifi.p2p.WifiP2pManager.ConnectionInfoListener;
import android.os.AsyncTask;
import android.os.Build;
import android.os.Bundle;
import android.os.Environment;
import android.os.Handler;
import android.util.Log;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.TextView;
import com.example.shriyanshu.wifisharefilesexampleandroid.DeviceListFragment.DeviceActionListener;
import java.io.File;
import java.io.FileOutputStream;
import java.io.IOException;
import java.io.InputStream;
import java.io.ObjectInputStream;
import java.io.OutputStream;
import java.net.ServerSocket;
import java.net.Socket;

import static com.example.shriyanshu.wifisharefilesexampleandroid.R.id.tv_deviceInfo;
public class DeviceDetailFragment extends Fragment implements ConnectionInfoListener {
    protected static final int CHOOSE_FILE_RESULT_CODE = 20;
    private View mContentView = null;
    private WifiP2pDevice device;
    private WifiP2pInfo info;
    ProgressDialog progressDialog = null;
    private static ProgressDialog mProgressDialog;
    public static String WiFiServerIp = "";
    public static String WiFiClientIp = "";
```



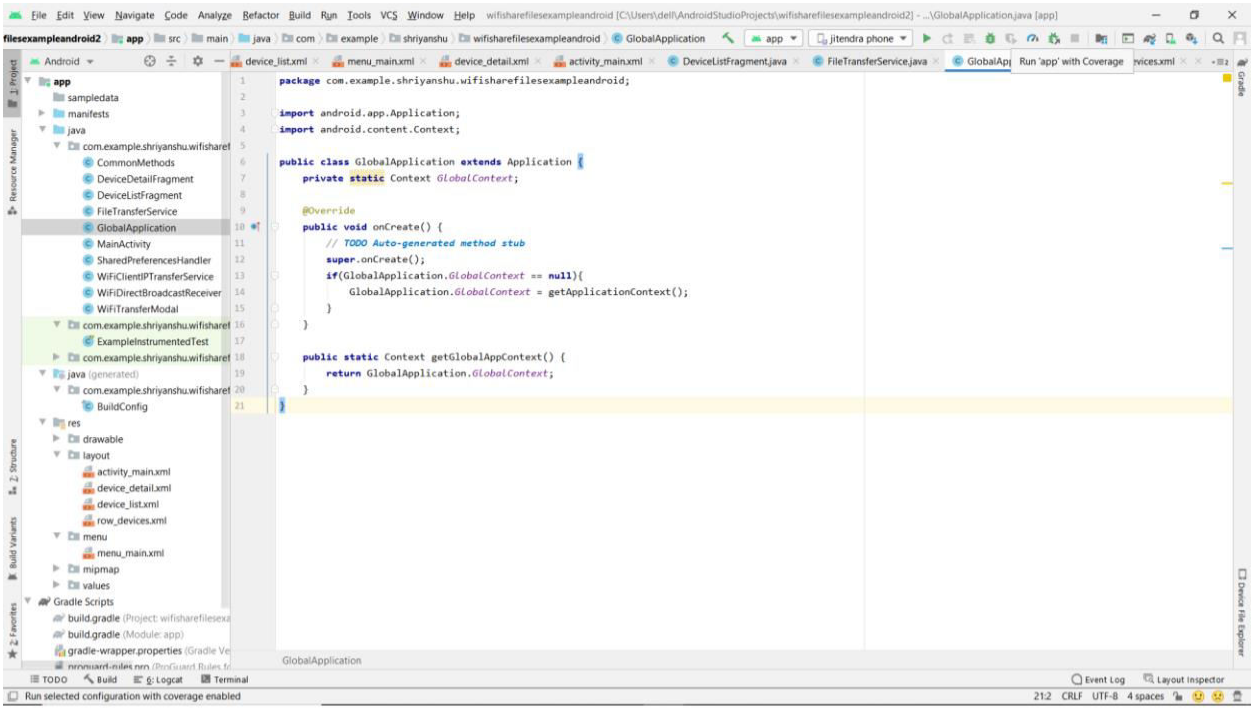
```
    ProgressDialog progressDialog = null;
    private static ProgressDialog mProgressDialog;
    public static String WiFiServerIp = "";
    public static String WiFiClientIp = "";
    static Boolean ClientCheck = false;
    public static String GroupOwnerAddress = "";
    static long ActualFileLength = 0;
    static int Percentage = 0;
    public static String FolderName = "WiFiShareFilesExampleAndroid";

    @Override
    public void onActivityCreated(Bundle savedInstanceState) {
        super.onActivityCreated(savedInstanceState);
    }

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle savedInstanceState) {

        mContentView = inflater.inflate(R.layout.device_detail, root: null);
        mContentView.findViewById(R.id.btn_connect).setOnClickListener((v) -> {
                WifiP2pConfig config = new WifiP2pConfig();
                config.deviceAddress = device.deviceAddress;
                config.wps.setup = WpsInfo.PBC;
                if (progressDialog != null && progressDialog.isShowing()) {
                    progressDialog.dismiss();
                }
                progressDialog = ProgressDialog.show(getActivity(), title: "Press back to cancel",
                        message: "Connecting to :" + device.deviceAddress, indeterminate: true, cancelable: true

                );
                ((DeviceActionListener) getActivity()).connect(config);

        });

        mContentView.findViewById(R.id.btn_disconnect).setOnClickListener(
                (v) -> {
                        ((DeviceActionListener) getActivity()).disconnect();
                });

        mContentView.findViewById(R.id.btn_start_client).setOnClickListener(
                (v) -> {
```



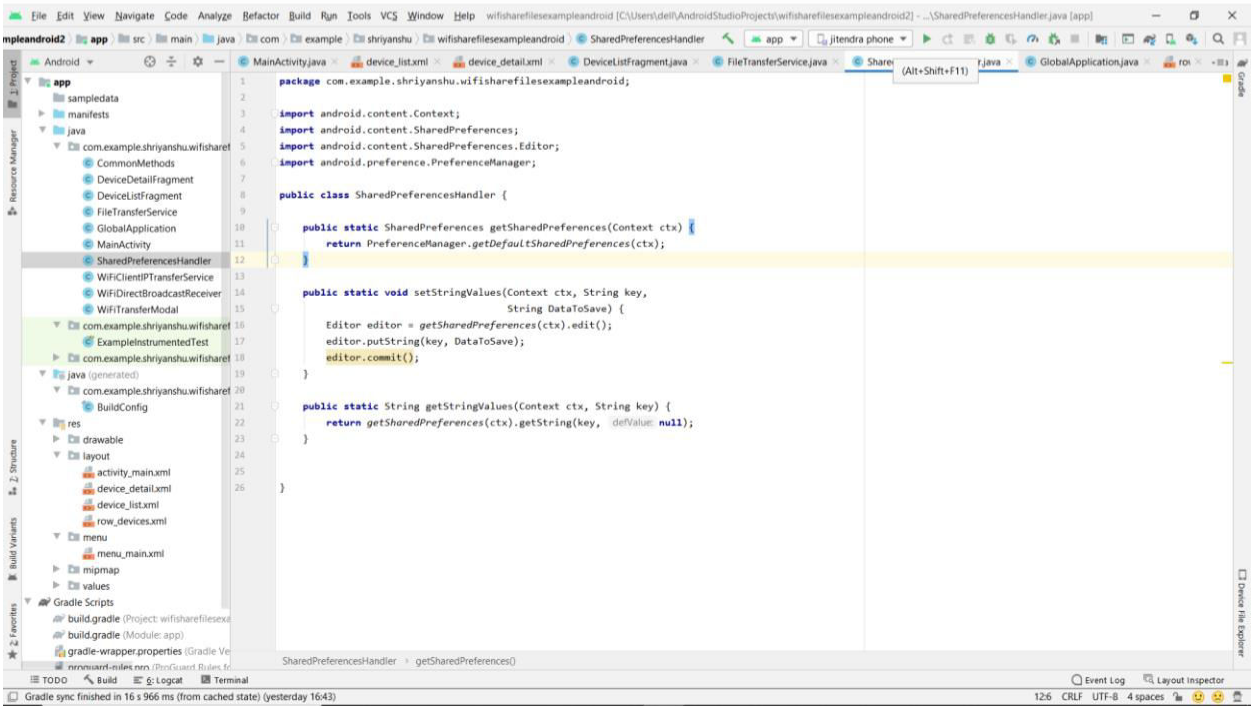
```
package com.example.shriyanshu.wifisharefilesexampleandroid;
import android.app.ListFragment;
import android.app.ProgressDialog;
import android.content.Context;
import android.content.DialogInterface;
import android.net.wifi.p2p.WifiP2pConfig;
import android.net.wifi.p2p.WifiP2pDevice;
import android.net.wifi.p2p.WifiP2pDeviceList;
import android.net.wifi.p2p.WifiP2pManager.PeerListListener;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.TextView;
import java.util.ArrayList;
import java.util.List;

public class DeviceListFragment extends ListFragment implements PeerListListener {
    private List<WifiP2pDevice> peers = new ArrayList<WifiP2pDevice>();
    ProgressDialog progressDialog = null;
    View mContentView = null;
    private WifiP2pDevice device;
    @Override
    public void onActivityCreated(Bundle savedInstanceState) {
        super.onActivityCreated(savedInstanceState);
        this.setListAdapter(new WiFiPeerListAdapter(getActivity(), R.layout.row_devices, peers));
    }
    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle savedInstanceState) {
        mContentView = inflater.inflate(R.layout.device_list, null);
        return mContentView;
    }
    public WifiP2pDevice getDevice() {
        return device;
    }
    private static String getDeviceStatus(int deviceStatus) {
        switch (deviceStatus) {
            case WifiP2pDevice.AVAILABLE:
                return "Available";
            case WifiP2pDevice.INVITED:
                return "Invited";
            case WifiP2pDevice.CONNECTED:
                return "Connected";
            case WifiP2pDevice.FAILED:
                return "Failed";
            case WifiP2pDevice.UNAVAILABLE:
                return "Unavailable";
            default:
                return "Unknown";
        }
    }
    @Override
    public void onListItemClick(ListView l, View v, int position, long id) {
        WifiP2pDevice device = (WifiP2pDevice) getListAdapter().getItem(position);
        ((DeviceActionListener) getActivity()).showDetails(device);
    }
    private class WiFiPeerListAdapter extends ArrayAdapter<WifiP2pDevice> {
```



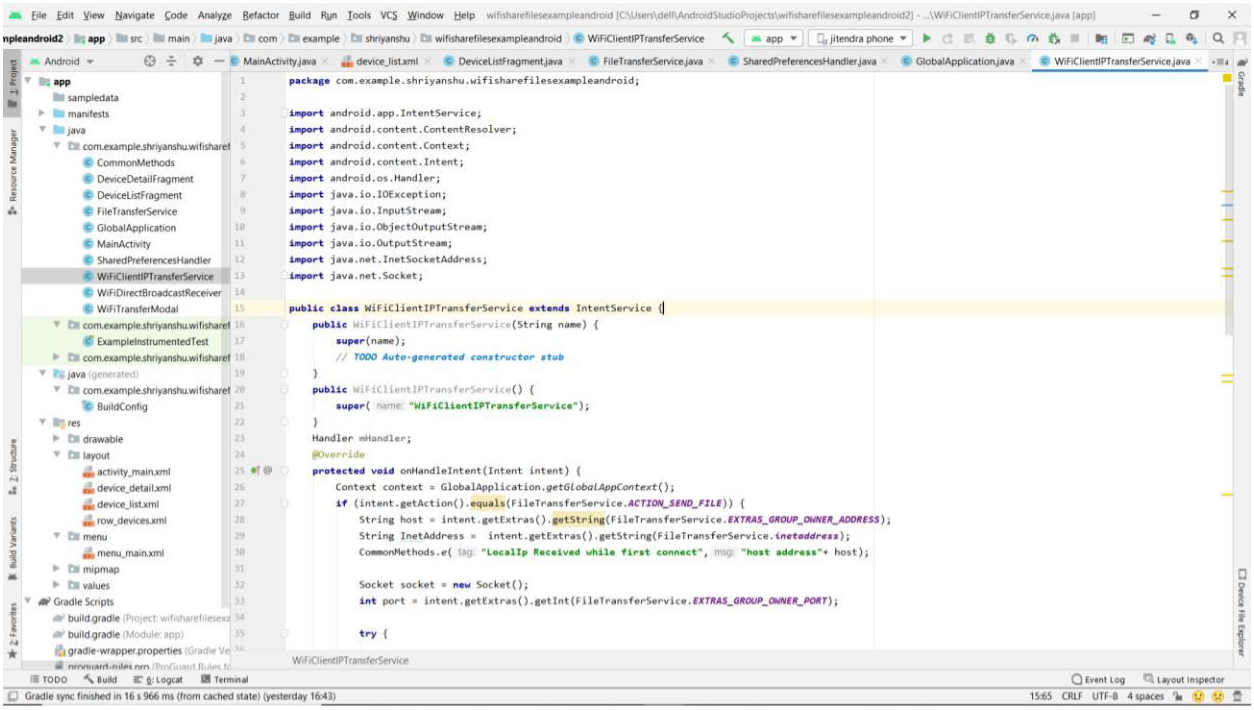
```
package com.example.shriyanshu.wifisharefilesexampleandroid;

import android.app.IntentService;
import android.content.ContentResolver;
import android.content.Context;
import android.content.Intent;
import android.net.Uri;
import android.os.Handler;
import android.widget.Toast;
import java.io.FileNotFoundException;
import java.io.IOException;
import java.io.InputStream;
import java.io.ObjectOutputStream;
import java.io.OutputStream;
import java.net.InetSocketAddress;
import java.net.Socket;
public class FileTransferService extends IntentService {

    Handler mHandler;

    public static final int SOCKET_TIMEOUT = 5000;
    public static final String ACTION_SEND_FILE = "com.example.shriyanshu.wifisharefilesexampleandroid.SEND_FILE";
    public static final String EXTRAS_FILE_PATH = "file_url";
    public static final String EXTRAS_GROUP_OWNER_ADDRESS = "go_host";
    public static final String EXTRAS_GROUP_OWNER_PORT = "go_port";

    public static  int PORT = 8888;
    public static final String inetaddress = "inetaddress";
    public static final int ByteSize = 512;
    public static final String Extension = "extension";
    public static final String File(ength = "filelength";
    public FileTransferService(String name) {
        super(name);
    }

    public FileTransferService() {
        super( name: "FileTransferService");
    }

    @Override
    public void onCreate() {
        // TODO Auto-generated method stub
        super.onCreate();
        mHandler = new Handler();
```



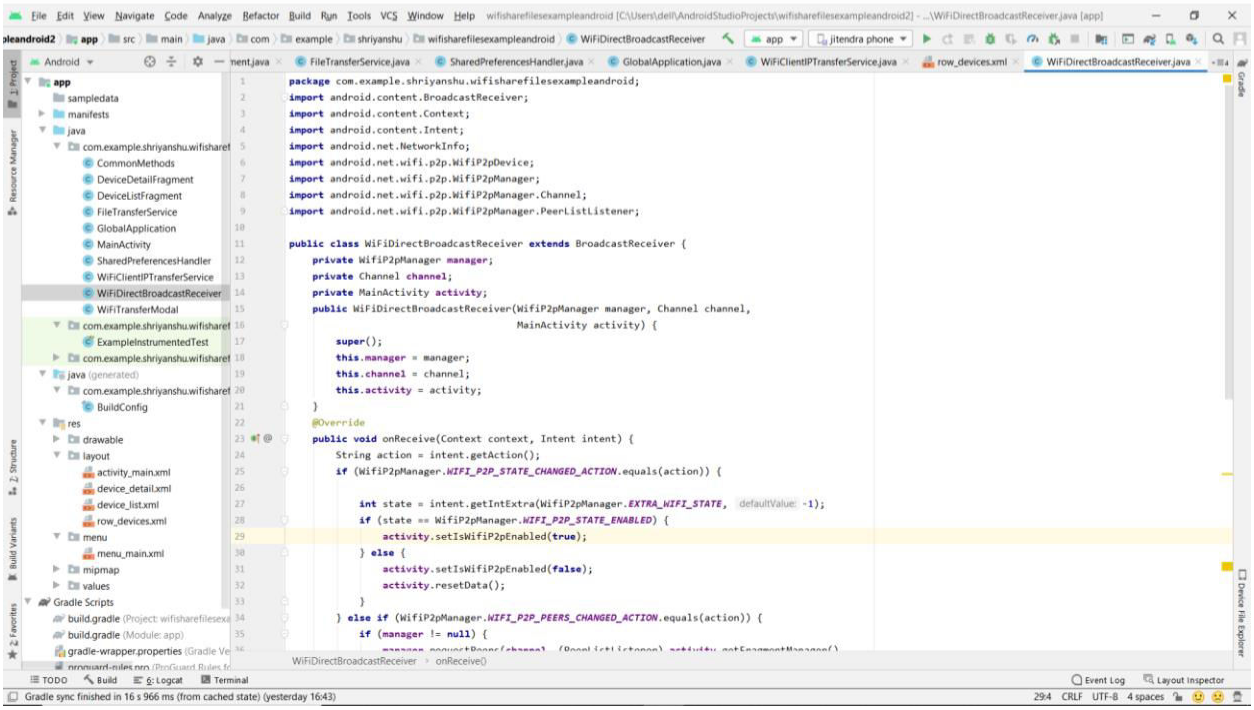
```
package com.example.shriyanshu.wifisharefilesexampleandroid;

import android.app.Application;
import android.content.Context;

public class GlobalApplication extends Application {
    private static Context GlobalContext;

    @Override
    public void onCreate() {
        // TODO Auto-generated method stub
        super.onCreate();
        if(GlobalApplication.GlobalContext == null){
            GlobalApplication.GlobalContext = getApplicationContext();
        }
    }

    public static Context getGlobalAppContext() {
        return GlobalApplication.GlobalContext;
    }
}
```



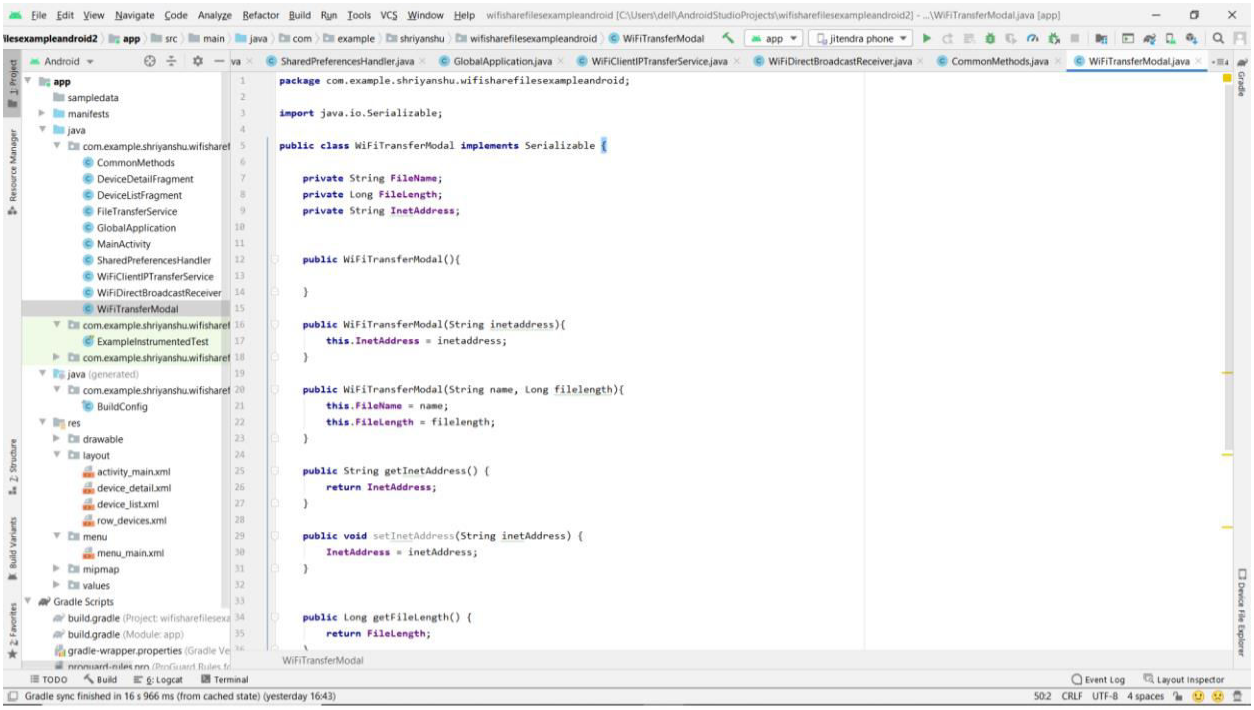
```
package com.example.shriyanshu.wifisharefilesexampleandroid;

import android.content.Context;
import android.content.SharedPreferences;
import android.content.SharedPreferences.Editor;
import android.preference.PreferenceManager;

public class SharedPreferencesHandler {

    public static SharedPreferences getSharedPreferences(Context ctx) {
        return PreferenceManager.getDefaultSharedPreferences(ctx);
    }

    public static void setStringValues(Context ctx, String key,
                                       String DataToSave) {
        Editor editor = getSharedPreferences(ctx).edit();
        editor.putString(key, DataToSave);
        editor.commit();
    }

    public static String getStringValues(Context ctx, String key) {
        return getSharedPreferences(ctx).getString(key, defValue: null);
    }


}
```



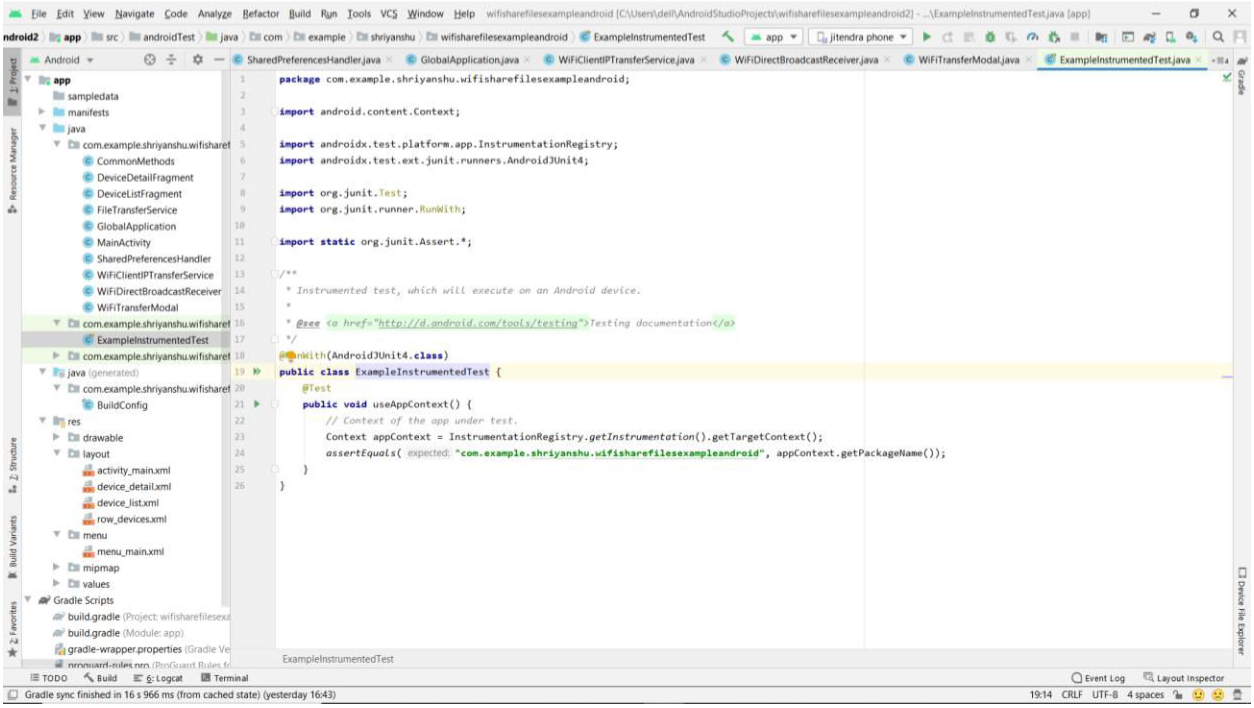
```
package com.example.shriyanshu.wifisharefilesexampleandroid;

import android.app.IntentService;
import android.content.ContentResolver;
import android.content.Context;
import android.content.Intent;
import android.os.Handler;
import java.io.IOException;
import java.io.InputStream;
import java.io.ObjectOutputStream;
import java.io.OutputStream;
import java.net.InetSocketAddress;
import java.net.Socket;

public class WiFiClientIPTransferService extends IntentService {
    public WiFiClientIPTransferService(String name) {
        super(name);
        // TODO Auto-generated constructor stub
    }
    public WiFiClientIPTransferService() {
        super( name: "WiFiClientIPTransferService");
    }
    Handler mHandler;
    @Override
    protected void onHandleIntent(Intent intent) {
        Context context = GlobalApplication.getGlobalAppContext();
        if (intent.getAction().equals(FileTransferService.ACTION_SEND_FILE)) {
            String host = intent.getExtras().getString(FileTransferService.EXTRAS_GROUP_OWNER_ADDRESS);
            String InetAddress =  intent.getExtras().getString(FileTransferService.inetaddress);
            CommonMethods.e( tag: "LocalIp Received while first connect", msg: "host address"+ host);

            Socket socket = new Socket();
            int port = intent.getExtras().getInt(FileTransferService.EXTRAS_GROUP_OWNER_PORT);

            try {
```



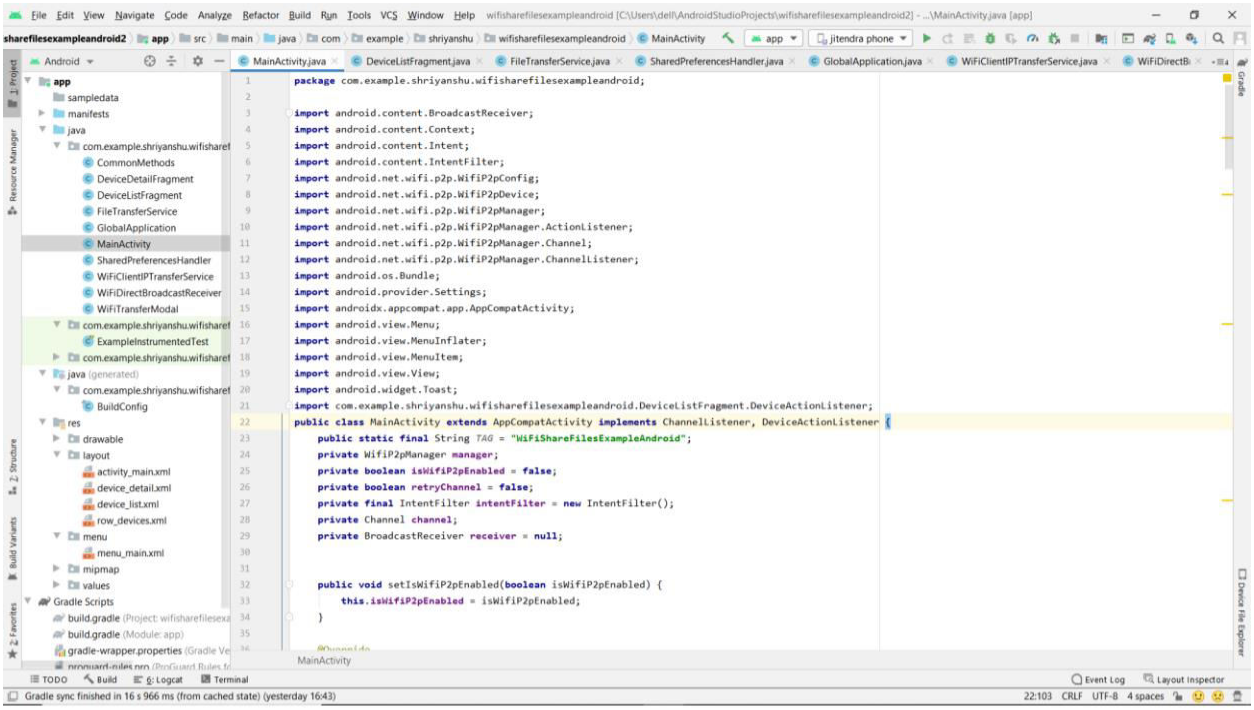
```
package com.example.shriyanshu.wifisharefilesexampleandroid;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.net.NetworkInfo;
import android.net.wifi.p2p.WifiP2pDevice;
import android.net.wifi.p2p.WifiP2pManager;
import android.net.wifi.p2p.WifiP2pManager.Channel;
import android.net.wifi.p2p.WifiP2pManager.PeerListListener;

public class WiFiDirectBroadcastReceiver extends BroadcastReceiver {
    private WifiP2pManager manager;
    private Channel channel;
    private MainActivity activity;
    public WiFiDirectBroadcastReceiver(WifiP2pManager manager, Channel channel,
                                       MainActivity activity) {
        super();
        this.manager = manager;
        this.channel = channel;
        this.activity = activity;
    }
    @Override
    public void onReceive(Context context, Intent intent) {
        String action = intent.getAction();
        if (WifiP2pManager.WIFI_P2P_STATE_CHANGED_ACTION.equals(action)) {

            int state = intent.getIntExtra(WifiP2pManager.EXTRA_WIFI_STATE,  defaultValue: -1);
            if (state == WifiP2pManager.WIFI_P2P_STATE_ENABLED) {
                activity.setIsWifiP2pEnabled(true);
            } else {
                activity.setIsWifiP2pEnabled(false);
                activity.resetData();
            }
        } else if (WifiP2pManager.WIFI_P2P_PEERS_CHANGED_ACTION.equals(action)) {
            if (manager != null) {
```



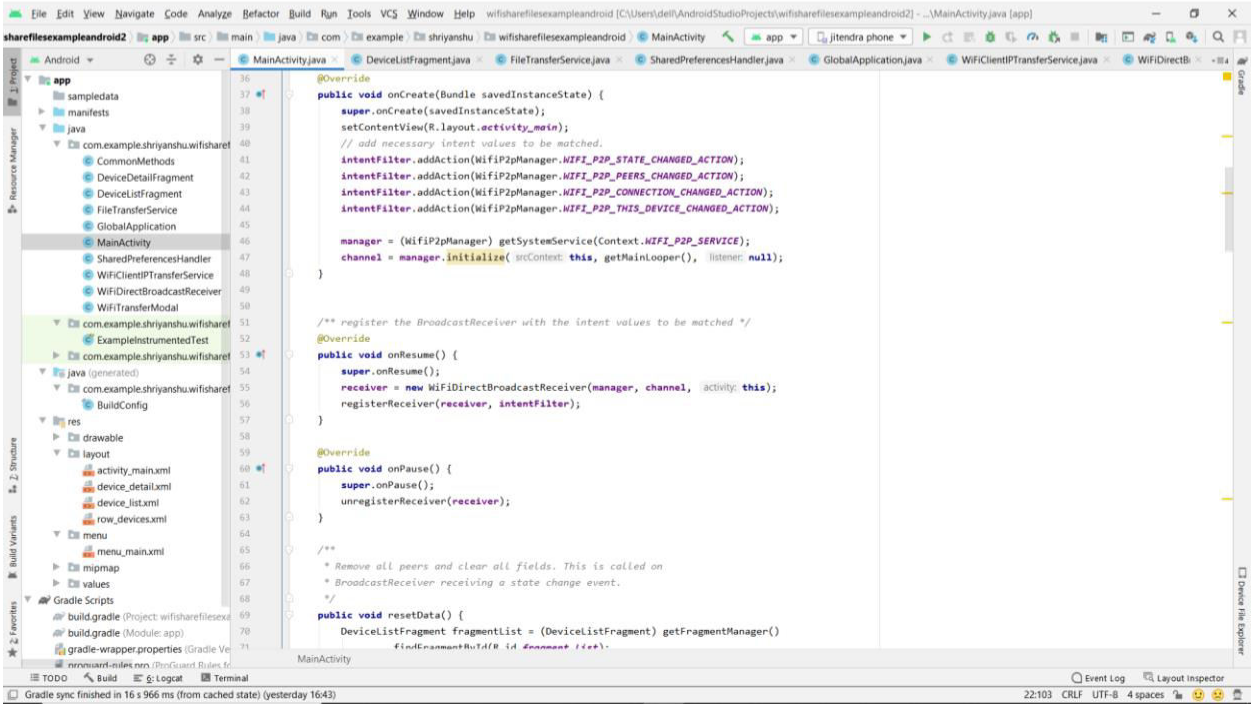
```
package com.example.shriyanshu.wifisharefilesexampleandroid;

import java.io.Serializable;

public class WiFiTransferModal implements Serializable {

    private String FileName;
    private Long FileLength;
    private String InetAddress;


    public WiFiTransferModal(){

    }

    public WiFiTransferModal(String inetaddress){
        this.InetAddress = inetaddress;
    }

    public WiFiTransferModal(String name, Long filelength){
        this.FileName = name;
        this.FileLength = filelength;
    }

    public String getInetAddress() {
        return InetAddress;
    }

    public void setInetAddress(String inetAddress) {
        InetAddress = inetAddress;
    }


    public Long getFileLength() {
        return FileLength;
```



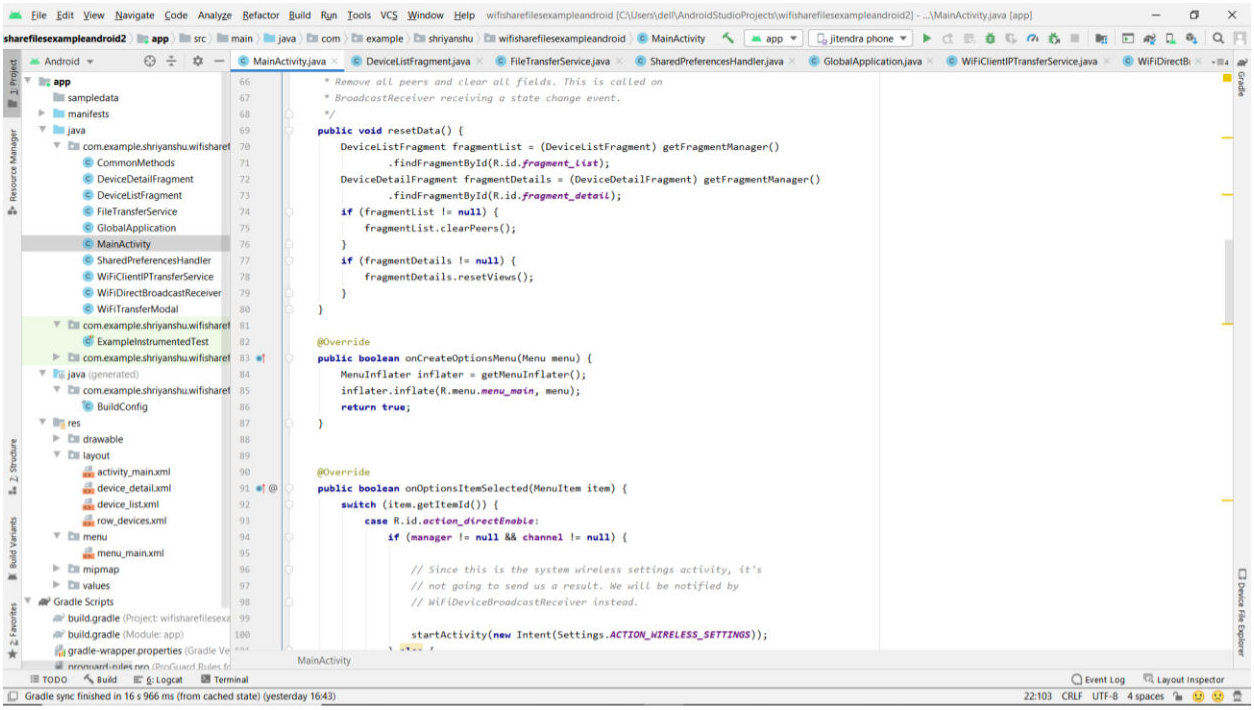
```
package com.example.shriyanshu.wifisharefilesexampleandroid;

import android.content.Context;

import androidx.test.platform.app.InstrumentationRegistry;
import androidx.test.ext.junit.runners.AndroidJUnit4;

import org.junit.Test;
import org.junit.runner.RunWith;

import static org.junit.Assert.*;

/**
 * Instrumented test, which will execute on an Android device.
 *
 * @see <a href="http://d.android.com/tools/testing">Testing documentation</a>
 */
@RunWith(AndroidJUnit4.class)
public class ExampleInstrumentedTest {
    @Test
    public void useAppContext() {
        // Context of the app under test.
        Context appContext = InstrumentationRegistry.getInstrumentation().getTargetContext();
        assertEquals( expected: "com.example.shriyanshu.wifisharefilesexampleandroid", appContext.getPackageName());
    }
}
```



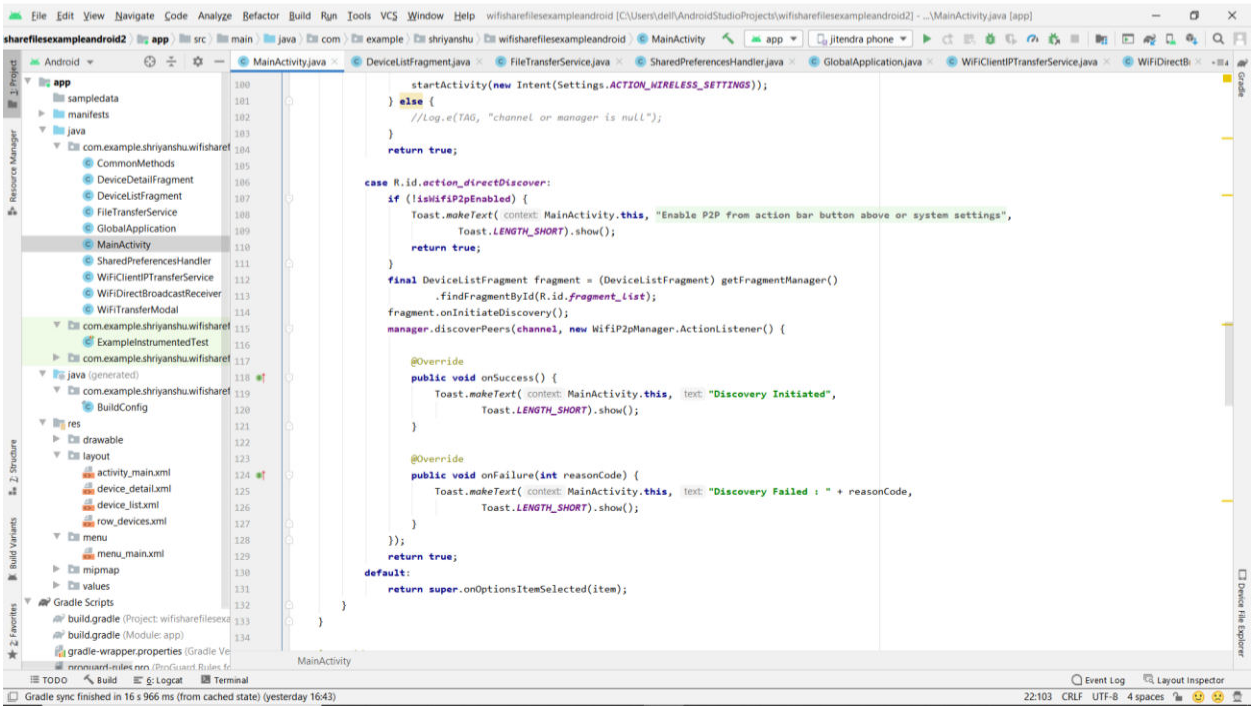
```
package com.example.shriyanshu.wifisharefilesexampleandroid;

import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.net.wifi.p2p.WifiP2pConfig;
import android.net.wifi.p2p.WifiP2pDevice;
import android.net.wifi.p2p.WifiP2pManager;
import android.net.wifi.p2p.WifiP2pManager.ActionListener;
import android.net.wifi.p2p.WifiP2pManager.Channel;
import android.net.wifi.p2p.WifiP2pManager.ChannelListener;
import android.os.Bundle;
import android.provider.Settings;
import androidx.appcompat.app.AppCompatActivity;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.view.View;
import android.widget.Toast;
import com.example.shriyanshu.wifisharefilesexampleandroid.DeviceListFragment.DeviceActionListener;
public class MainActivity extends AppCompatActivity implements ChannelListener, DeviceActionListener {
    public static final String TAG = "WiFiShareFilesExampleAndroid";
    private WifiP2pManager manager;
    private boolean isWifiP2pEnabled = false;
    private boolean retryChannel = false;
    private final IntentFilter intentFilter = new IntentFilter();
    private Channel channel;
    private BroadcastReceiver receiver = null;


    public void setIsWifiP2pEnabled(boolean isWifiP2pEnabled) {
        this.isWifiP2pEnabled = isWifiP2pEnabled;
    }
```



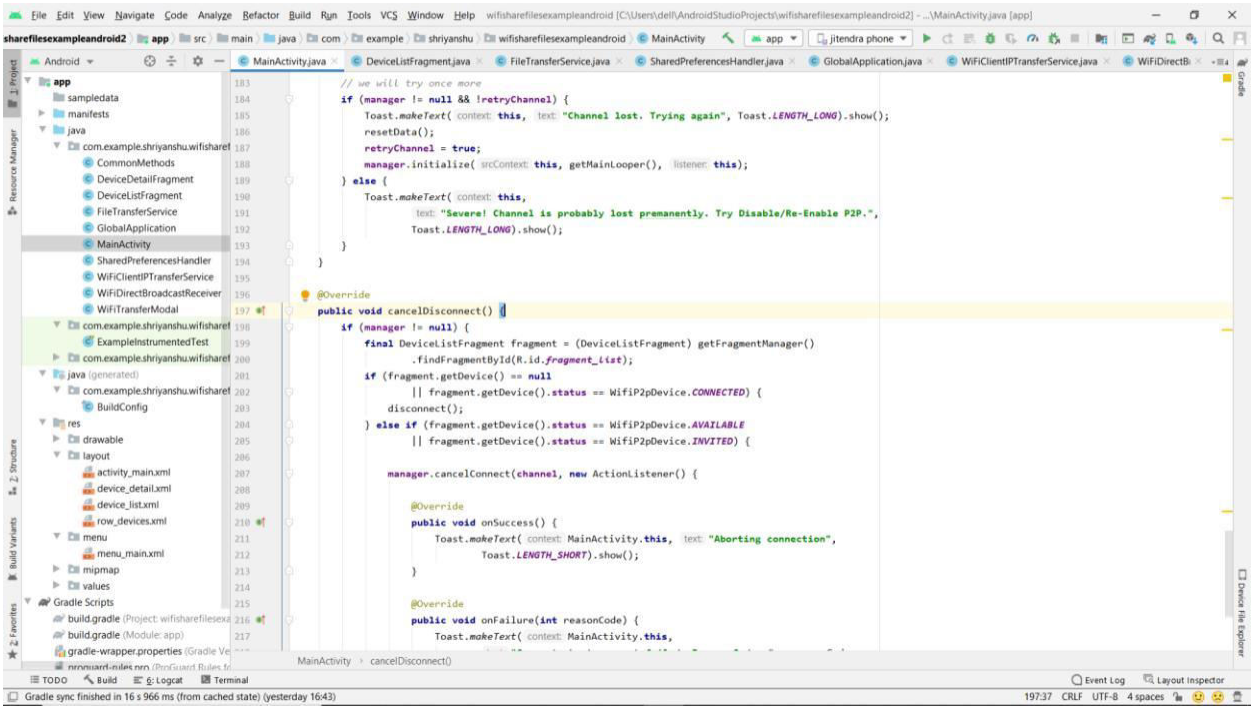
```
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        // add necessary intent values to be matched.
        intentFilter.addAction(WifiP2pManager.WIFI_P2P_STATE_CHANGED_ACTION);
        intentFilter.addAction(WifiP2pManager.WIFI_P2P_PEERS_CHANGED_ACTION);
        intentFilter.addAction(WifiP2pManager.WIFI_P2P_CONNECTION_CHANGED_ACTION);
        intentFilter.addAction(WifiP2pManager.WIFI_P2P_THIS_DEVICE_CHANGED_ACTION);

        manager = (WifiP2pManager) getSystemService(Context.WIFI_P2P_SERVICE);
        channel = manager.initialize( srcContext: this, getMainLooper(), listener: null);
    }


    /** register the BroadcastReceiver with the intent values to be matched */
    @Override
    public void onResume() {
        super.onResume();
        receiver = new WiFiDirectBroadcastReceiver(manager, channel, activity: this);
        registerReceiver(receiver, intentFilter);
    }

    @Override
    public void onPause() {
        super.onPause();
        unregisterReceiver(receiver);
    }

    /**
     * Remove all peers and clear all fields. This is called on
     * BroadcastReceiver receiving a state change event.
     */
    public void resetData() {
        DeviceListFragment fragmentList = (DeviceListFragment) getFragmentManager()
```



```
* Remove all peers and clear all fields. This is called on
* BroadcastReceiver receiving a state change event.
*/
public void resetData() {
    DeviceListFragment fragmentList = (DeviceListFragment) getFragmentManager()
            .findFragmentById(R.id.fragment_list);
    DeviceDetailFragment fragmentDetails = (DeviceDetailFragment) getFragmentManager()
            .findFragmentById(R.id.fragment_detail);
    if (fragmentList != null) {
        fragmentList.clearPeers();
    }
    if (fragmentDetails != null) {
        fragmentDetails.resetViews();
    }
}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    MenuInflater inflater = getMenuInflater();
    inflater.inflate(R.menu.menu_main, menu);
    return true;
}


@Override
public boolean onOptionsItemSelected(MenuItem item) {
    switch (item.getItemId()) {
        case R.id.action_directEnable:
            if (manager != null && channel != null) {

                // Since this is the system wireless settings activity, it's
                // not going to send us a result. We will be notified by
                // WiFiDeviceBroadcastReceiver instead.

                startActivity(new Intent(Settings.ACTION_WIRELESS_SETTINGS));
```



```
                startActivity(new Intent(Settings.ACTION_WIRELESS_SETTINGS));
            } else {
                //Log.e(TAG, "channel or manager is null");
            }
            return true;

        case R.id.action_directDiscover:
            if (!isWifiP2pEnabled) {
                Toast.makeText( context: MainActivity.this, "Enable P2P from action bar button above or system settings",
                        Toast.LENGTH_SHORT).show();
                return true;
            }
            final DeviceListFragment fragment = (DeviceListFragment) getFragmentManager()
                    .findFragmentById(R.id.fragment_list);
            fragment.onInitiateDiscovery();
            manager.discoverPeers(channel, new WifiP2pManager.ActionListener() {

                @Override
                public void onSuccess() {
                    Toast.makeText( context: MainActivity.this,  text: "Discovery Initiated",
                            Toast.LENGTH_SHORT).show();
                }

                @Override
                public void onFailure(int reasonCode) {
                    Toast.makeText( context: MainActivity.this,  text: "Discovery Failed : " + reasonCode,
                            Toast.LENGTH_SHORT).show();
                }
            });
            return true;
        default:
            return super.onOptionsItemSelected(item);
    }
}
```



GitHub Link : https://github.com/Nehaadnekar/File-Sharing-App-MINI-PROJECT

References

1. Solo-learn :- www.sololearn.com

2. Google Scholar :- www.scholar.google.com

3. W3schools :- www.w3schools.com

4. JavaTpoint :-www.javatpoint.com

5. Youtube :- www.youtube.com

6- StackOverFlow :- www.stackoverflow.com

Other Links -

- https://nevonprojects.com/secure-file-sharing-using-access-control/
- https://freeprojectsforall.com/an046-secure-file-sharing-using-access-control/
- https://ijarcce.com/wp-content/uploads/2012/03/IJARCCE5G_a_shailes_secured.pdf
- http://developer.android.com/guide/topics/connectivity/wifip2p.html
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- http://developer.android.com/develop/index.html,