Proposal

For

Second Year Project

Bachelor of Science in Information Technology

Share-i

Submitted by

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Gyalpozhing College of Information Technology

Read carefully before filling the form.

1. Please do not alter the layout of the application form. Information must be filled in the spaces provided, under set format.
2. Guidance notes in various fields should not be deleted.
3. Required information should be duly filled in the specified fields.
4. Required heads/fields which are not relevant to the project should be marked **N/A** (Not Applicable) or left blank and should not be deleted.

Guidelines and Forms

Submission Procedure

Duly filled proposal forms completed in all respects should be submitted in form of soft copy and a hard copy to project guide and project coordinator. On receipt of the applications the proposals will be evaluated by reviewer panel and proposal would then be defended by student groups. The project group may need to revise the proposal in light of the evaluator's recommendations.

For further information, please contact:

Project Coordinator

Sonam Wangmo

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Description Page #

Note: To update the table of contents, right click in the table and select '*update field*' and then select 'Update Entire Table'.

A Reference Number:

(for office use only)

B Project Title:

C Project Internal Guide:

Name:

Designation:

Organization:

Mobile # : Tel. # :

Email:

C1. Project External Guide:

Name: **NA**

Designation:

Organization:

Mobile # : Tel. # :

Email:

C2. Student Group Lead:

Name:

Roll No:

Department:

Mobile # : Tel. # :

Email:

D Organizations Involved in the Project:

(Please identify all affiliated organizations collaborating in the project, and describe their role/contribution to the project.)

D1. Industrial Organizations:

#	*Organization Name*	*Role / Contribution*
	NA	

D2. Academic Organizations:

#	*Organization Name*	*Role / Contribution*
	Gyalpozhing College of Information Technology	Providing Guides and Resources

D3. Funding Organizations:

#	*Organization Name*	*Role / Contribution*
	NA	

E Key Words:

(Please provide a maximum of 5 key words that describe the project. The key words will be incorporated in our database.)

- WiFi
- Devices
- Search devices
- Connet devices
- Share image

F Research and Development Theme:

- Implement the use of WiFi technology in sharing image files on an android device: In the past file transfer and sharing with the use of bluetooth devices were slower and provided smaller communication range. But with the advent of technology, peer to peer file sharing with the help of WiFi has supported larger communication range and faster rates compared to bluetooth. Communication occurs by discovering the the devices who comes in the communitation range. So with the use of this technology in an android device, files can be shared by other use.

G Project Status:

(Please mark ☑)

q New ☑ Modification to previous Project

☑ Extension of existing project

H Project Duration:

Expected Starting Date:	3 March 2021
Planned Duration in months:	6 Months

2. Scope, Introduction and Background of the Project

A Scope of the Project:

System scopes:

1. Profile set up: User will be able to create user profile and use the application.
2. Find device: Users can find the nearby devices which are in WiFi communication range.
3. Connet: Users can connect to the devices that are available to share an image.
4. Disconnect: Users can end the connection if he/she do not want to transfer the file.
5. Share file(image): Once the two devices establish the connection, then they can send and receive and image file.
6. Feedback: Users can also give their feedbacks about the app.

User scope:

The android application will be tested and implemented in Gyalpozhing College of Information Technology.

B Introduction (Project Background and Literature Review, Current State of the Art):

(Detailed summary of what all has been done internationally in the proposed area quoting references and bibliography. Please note that this section demonstrates the depth of knowledge of the project team and builds the confidence of the evaluators about capability of the team in achieving the stated objectives.)
(Please describe the current state of the art specific to this research topic.)

The popularity of mobile phones has increased exponentially over years and these devices have evolved from a simple mobile phones to devices which used the Internet to browse, access and read emails, and watch video streams directly from the network and download on local device. Further, these phones can connect with each other using Wi-Fi or Bluetooth. In a WiFi network, when two smartphones come in the communication range of each other, they can discover each other automatically and can be used to transfer files between these devices. As Wi-Fi supports larger communication range and better data transfer rates as compared to Bluetooth, it is preferred for such communication.

File sharing provides the mechanism to share different kinds of files between the devices. It is transferring or sharing of the digital data such as image, audio, video, documents stored on an electronic device (mobile, laptop etc.) with other similar electronic devices. Nowadays, file sharing is mostly done through a wireless medium and peer-to-peer file sharing is has become more common. This kind of file sharing became in existence since the users want the file from other users who have the file rather than paying or downloading with the use of internet. SHAREit is a well-known example which works without an internet connection but it requires only to turn on WiFi in order to find the available devices and connect for sharing.

This project will focus on developing an android application with which users can share an image file to the receiver device and then the receiver can access a file shared from the sender device. Two smartphones will have to come within the WiFi communication range of each other, WiFi-direct and exchange required files.

Literature Review:

<u>WiFi Technology</u>
WiFi is the popular name for the wireless Ethernet 802.11b standard for WLANs and it refers to the technology surrounding the radio transmission of the Internet protocol data from an Internet connection wirelessly to a host computer. Most often the Internet connection is a higher speed one such as satellite, DSL or cable rather than slower dial-up connections. It is essentially a wireless connection between your computer and the Internet connection. Wireless Fidelity (WiFi) refers to an over-the-air connection with a wireless client and a base between two wireless clients. Internet connectivity occurs through a wireless router. When accessing Wi-Fi, devices connect to a wireless router that allows Wi-Fi-compatible devices to interface with the Internet.

The paper “WiFi Technology: Future Market Challenges and Opportunities” by Adel Ismail in 2006 discusses the implementation of WiFi with respect to future market opportunities in the Kingdom of Bahrain and says that the minimal cost of implementing Wireless LAN compared to wired LAN will ensure that far more users

will have wireless laptops than it was previously predicted. The wireless LAN (WLAN) industry has also been growing rapidly due to lower priced WiFi stations and rapid standardization of the WiFi technology.

Peer To Peer file sharing

A peer-to-peer (P2P) network is a group of computers, each of which acts as a node for sharing files within the group. Instead of having a central server to act as a shared drive, each computer acts as the server for the files stored upon it. When a P2P network is established over the Internet, a central server can be used to index files, or a distributed network can be established where the sharing of files is split between all the users in the network that are storing a given file.

In the paper "Mobile Torrent: Peer-To-Peer File Sharing In Android Devices" by Rutal Shah and Zunnun Narmawala, they developed an android application for peer-to-peer file sharing named "Mobile Torrent" using which files can be shared between smartphones within a campus without using the Internet. Each application user can share files and can register a request to download a file shared by any other application user even if the source is not directly connected. Initially, they have implemented the same for single hop; i.e. when two smartphones come in the Wi-Fi communication range of each other, they auto-discover each other using Wi-Fi Direct and automatically exchange required files.

Analysis of File Sharing Applications

Anas Irfan and Aqeel Khalique, in the paper "A Comparative Demonstration and Analysis of File Sharing Applications on Android Mobile Devices" 2016, performed a comparative study and analysis of file sharing applications. 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. The work primarily focused on the commonly used file sharing applications in Smartphone's worldwide namely SHAREit, Xender and Zapya.

The findings based on the research and analysis were:

- While file is been shared among sender and receiver, all data services like mobile data or Wi-Fi connectivity is disabled till both sender and receiver are connected to WLAN network created for file sharing.
- Both devices (Sender & Receiver) should have identical file sharing application for file sharing.
- Both devices (Sender & Receiver) should have WLAN (Wi-Fi Hotspot) features enabled device to use these file sharing applications.
- Both devices (Sender & Receiver) should stay within the WLAN network's range created for file sharing. Even if either one of the two devices moves out from the WLAN network range, then file sharing will abort and fail.

- If file sharing was interrupted for some reason then in SHAREit application it will resume file sharing from the point of interruption earlier.

- In SHAREit, if a device (user) is in receiving mode, then the (receiving device) Receiver will create an ad-hoc WLAN (Wi-Fi Hotspot) network and anyone within the range can send file to that user (receiving device) by connecting to that same network, as SHAREit does not use any security mechanism to ensure authenticity and confidentiality of sender and receiver.

However, these file sharing applications have issues related to security aspects such as confidentiality, authentication, integrity etc. By enabling these security mechanism file sharing through WLAN (Wi-Fi Hotspot) will be made more secure and more reliable in the future.

C Challenges:

(Please describe the challenges, specific to this research topic, currently being faced internationally.)

Some of the challenges are:

- Less number of users due to small user scope.
- Ensuring data/file security is the biggest challenge for many organizations.
- Lack of visibility over the file movements which may cause errors.

D Motivation and Need:

(Please describe the motivation and need for this work.)

There is always a need of file sharing application and as technology advancement is taking place, sharing files needs to be made less time consuming with faster data transfer rate and these have been achieved through the use of wireless medium using WLAN. In recent days, various file transferring applicatications were intoduced among the mobile devices which used WLAN. According to statistical data in 2016, there are around 700 Million of SHAREit users of the total 2.6 Billion smartphone users worldwide. So firstly, this project is mainly to to understand the use of WLAN in sharing files and implement it to develop a similar type of simple image sharing app and the security features which are not being provided by many of the existing applications to be included in its future work.

3. Aim and Objectives of the Project

(Please write the actual aim of your project. Also, describe the measurable objectives of the project and define the expected results. Use results-oriented wording with verbs such as 'to develop..', 'to implement..', 'to research..', 'to determine..', 'to identify..' The objectives should not be statements and should not include explanations and benefits. The objective should actually specify in simple words what the project team intends to achieve (something concrete and measurable/ deliverable). Fill only those objectives that are applicable to the proposed project.)

AIM : To develop an android application that can be used for sharing an image files.

OBJECTIVES :

- Help transfer the images from one mobile device to another.
  In this android app, image from one device can be shared to the other device who is receiving by establishing a connection over a WiFi and the receiver can get the image shared.
- Help nearby devices to easily transfer an image without internet connection.
  The application will be using a WiFi communication range to connect the nearby mobiles present within the operating range.

4. Methodology

A Development / Research / Test Methodology:

(Please describe the technical details and justification of your development and research plan and test plan and testing strategies. Identify specialized equipment, facilities and infrastructure which are required for the project and their utilization plan. The block diagrams, system flow charts, high level algorithm details etc. have to be provided in this section. Also, describe the overall methodology to be used for the particular research topic)

Agile methodology will be used for developing this project. This method promotes continuous iteration of development and testing throughout the software development lifecycle of the project. In the Agile model, both development and testing activities are concurrent unlike the Waterfall model. This software development approach employs continual planning, learning, improvement, evolutionary development, and early delivery. So it provides flexibility to change.

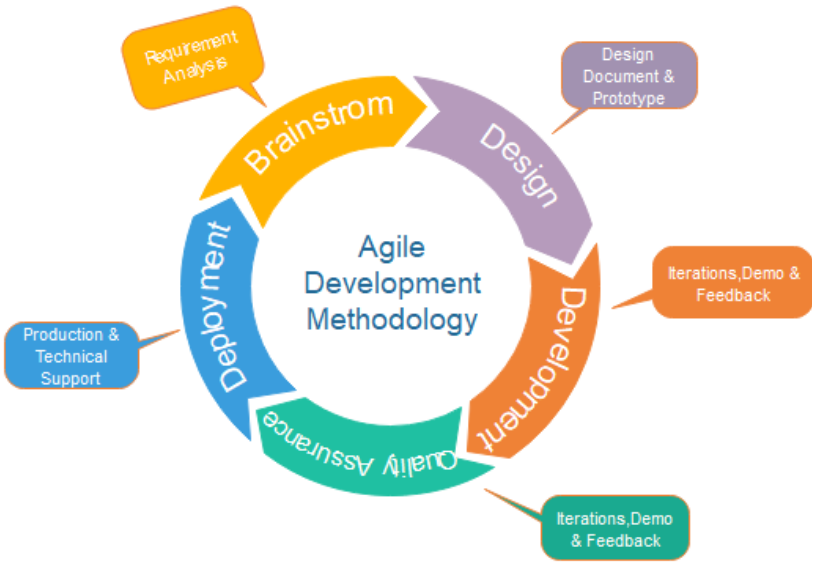


Fig. Agile Model

The phases for the project development are:

1. Requirements gathering: Defining of project requirements, plan the time effort needed to develop the project and evaluating the technical and economical feasibility based on this information.

2. Design the requirements: Designing the requirements with use of diagrams

3. Construction/ iteration: Start working on the project once the requirements are defined with the aim to deploy a working product. The product might undergo various changes, so it includes simple and minimal functionality.

4. Testing: Examine the product's performance and look for the bug.

5. Deployment: Issue a product in the user's environment.

6. Feedback: Feedbacks about the product and work based on the feedback.

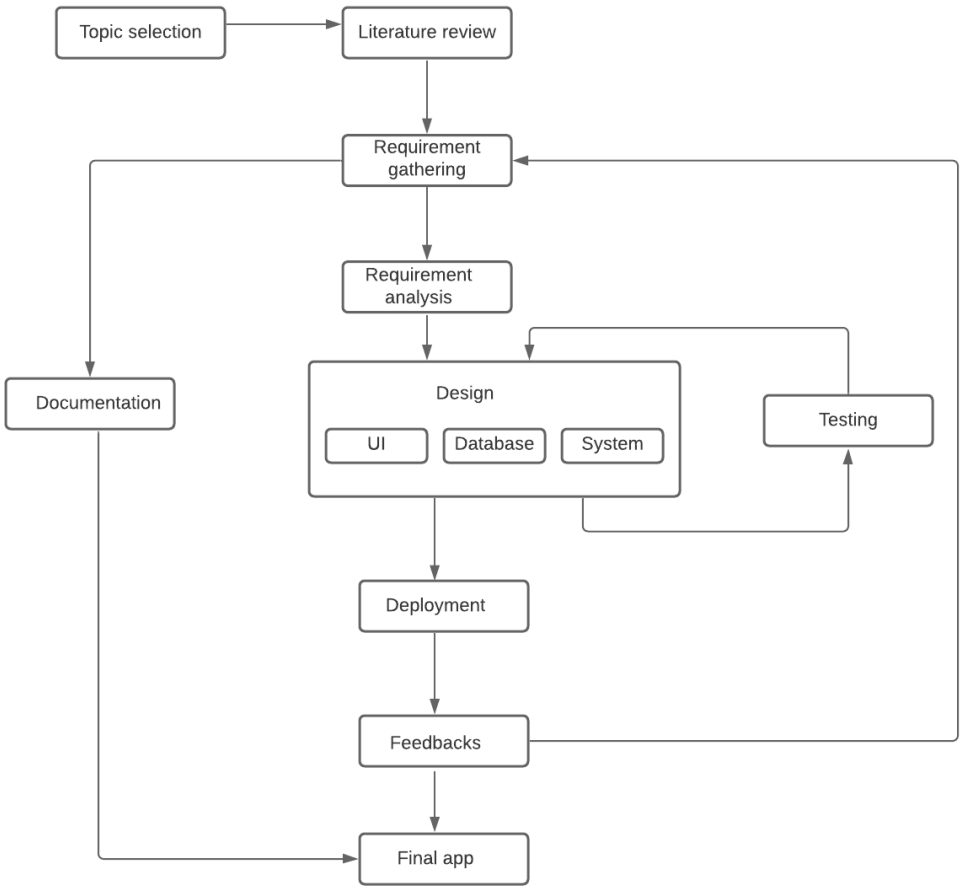


Figure: Methodology

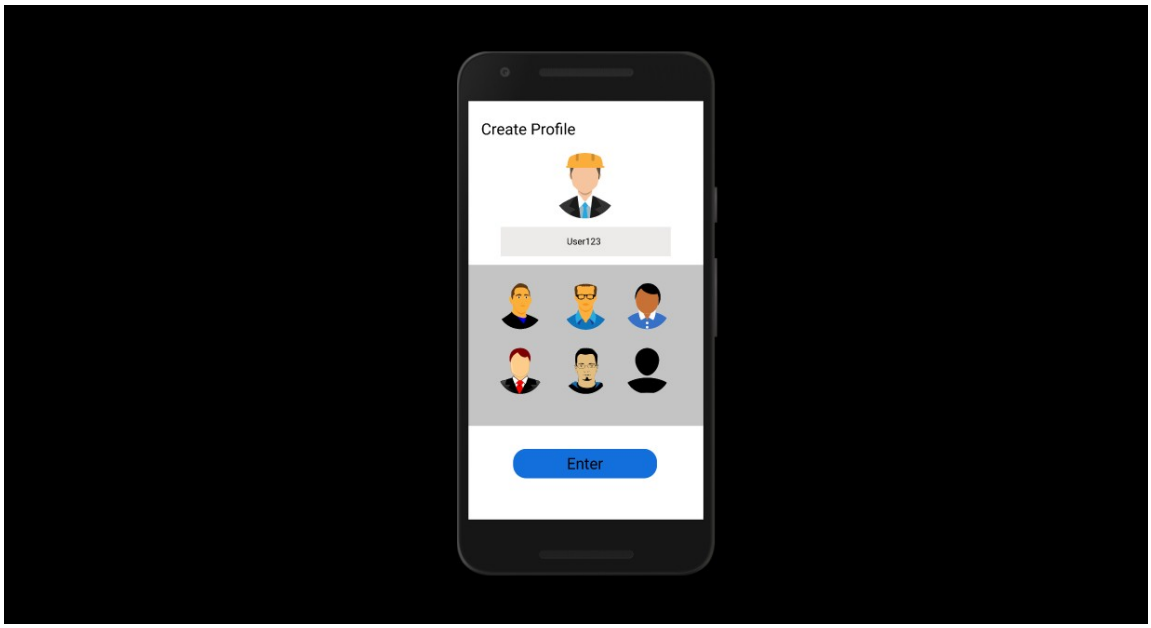
The diagram above shows an overall method to be used for this project. It has started with the selection of topic followed by literature on the topic. The requirement of the project is gathered which follows with the analysis of the requirements.

After the study and analysis of requirements, there is a design work where it includes user interface design, database design and the design of an actual system will be done in parallel with the testing of the system.

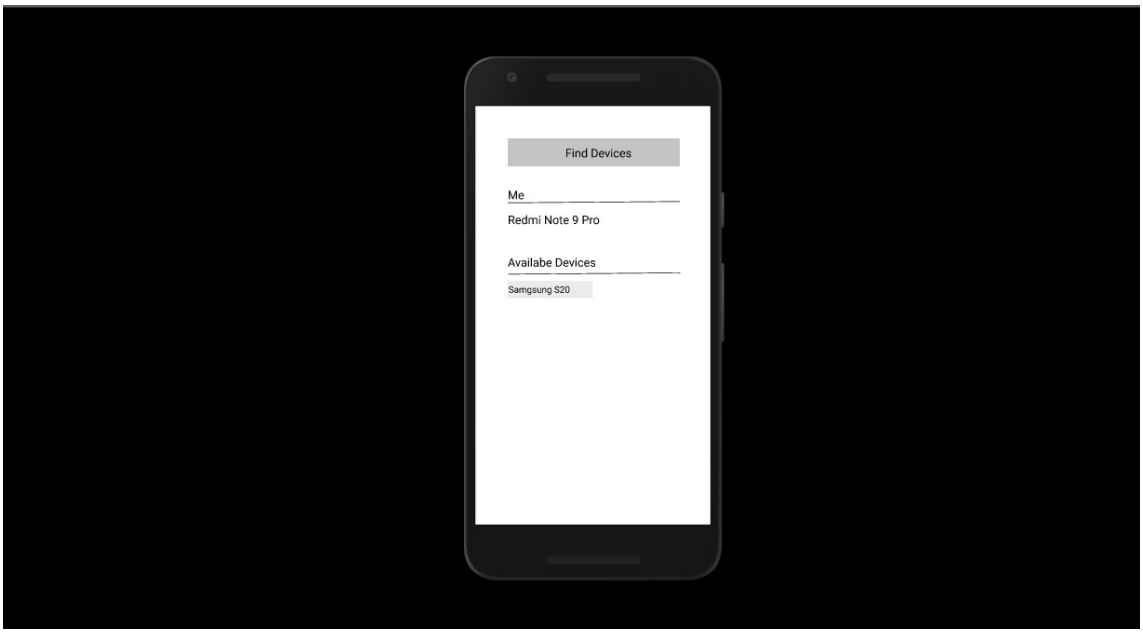
When the first iteration of system design is completed, it will be deployed in the user environment and feedbacks will be provided by the users. According to the user feedback the system design will be starting the next iteration from requirement gathering. The documentation of project will be done during the whole development process.

Project Prototype:

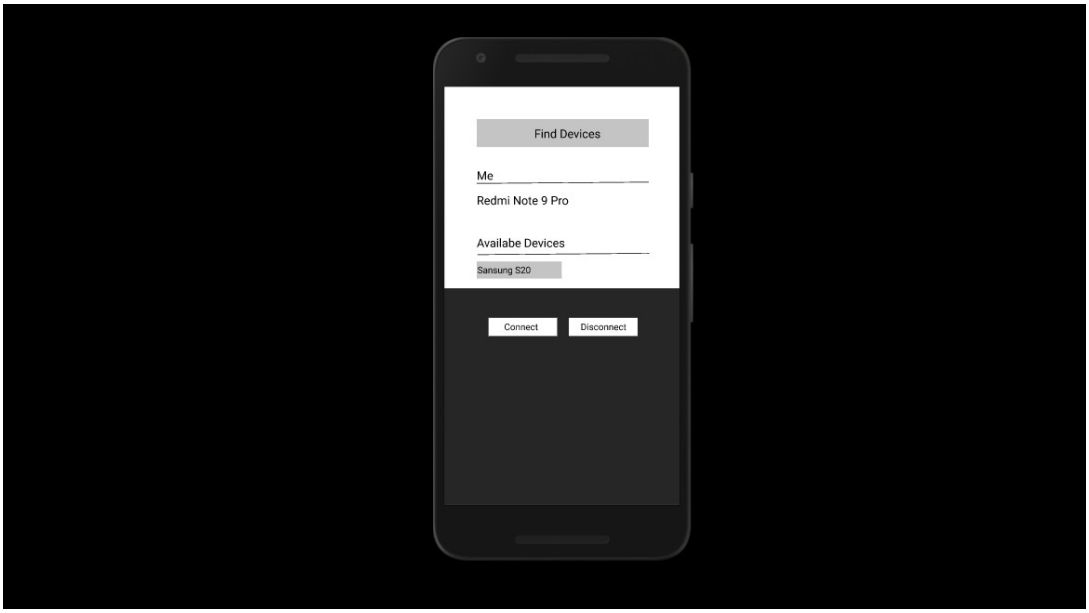
1. **Create Profile**: As soon as the app is first time installed and opened, this interface will appear where user can set up the profile by giving username and selecting an avatar.



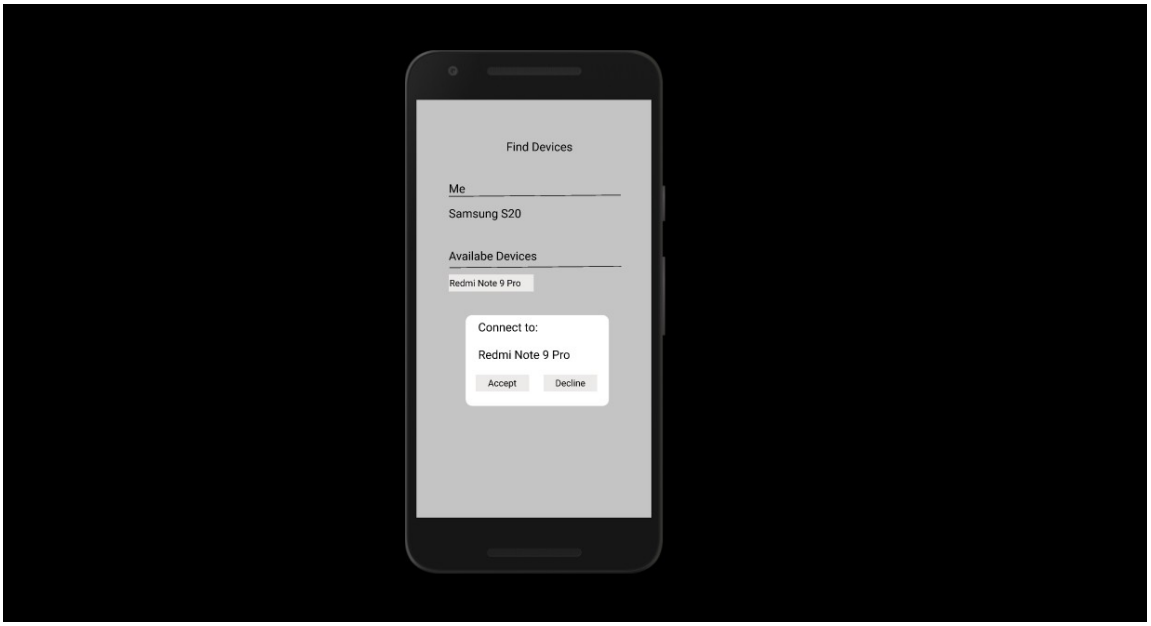
2. **Discover WiFi**: When the user enter the app after account setup, this interface will be shown where user will be able to search for the avaialable devices.



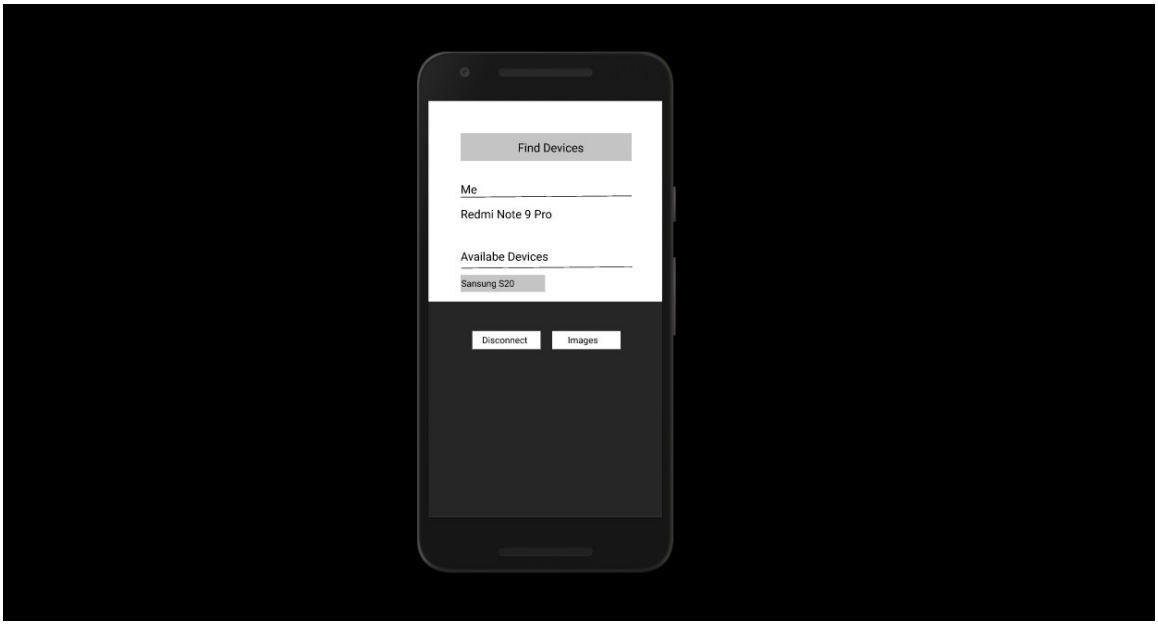
3. **Connect to device**: This interface is when the user selects the avaialable device and tries to connect with it.



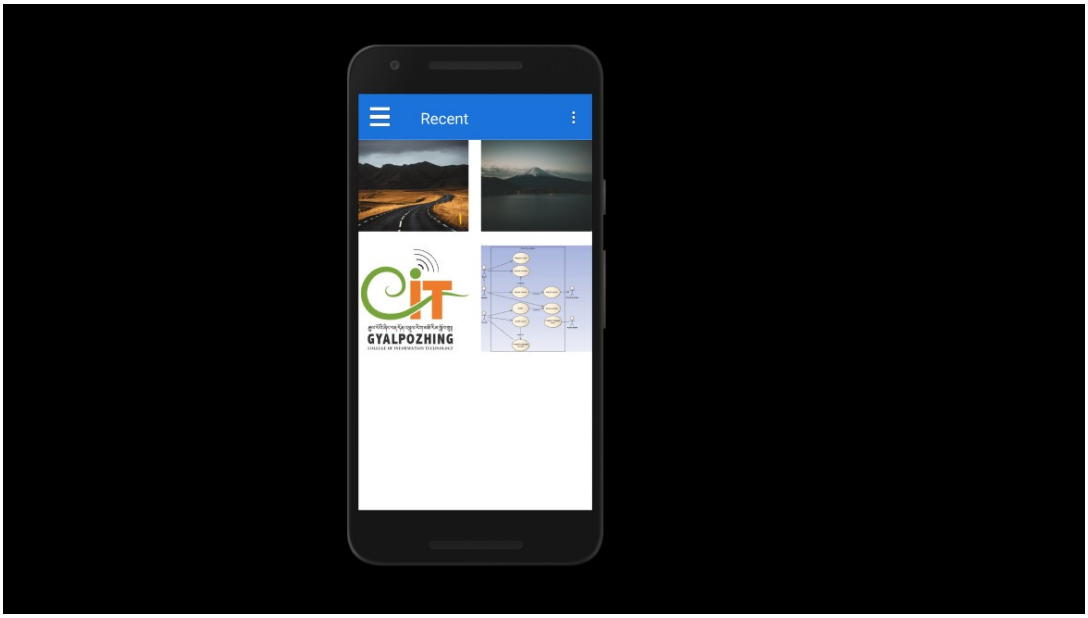
4. **Accept to connect**: When the sender device tries to connect with the other device, this interface is what how it will appears in receivers' device.



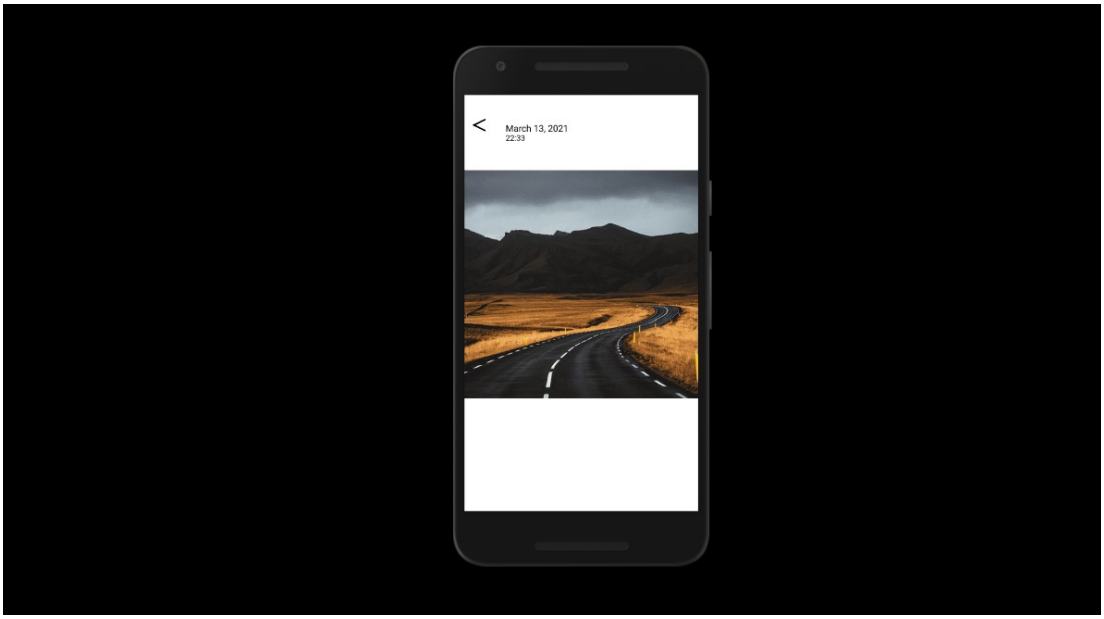
5. **Choose images**: After user accepts to connect, sender can access choose to access the gallery to view images.



6. **Image gallery:** The images will appear when user clicks to launch gallery in previous frame.



7. **Received**: The image sent can be accessed and viewed from the receivers' device.



B Project Team:	
Title / Position	***Number***
Project Internal Guide	Ms.Sonam Wangmo
Project External Guide	
Student Team Members	Ugyen Wangdi
Others (please specify)	
Add more rows if required	

C Project Activities:

(Please list and describe the main project activities, including those associated with the transfer of the research results to customers/beneficiaries. The timing and duration of research activities are to be shown in the Gantt chart in Section 8.)

The main activities for the project are:

1. Literature Review.
2. Requirement gathering and analysis.
3. Design.
4. Develop user profile feature and testing.
5. Develop searching devices feature and testing.
6. Develop connect feature and testing.
7. Develop share feature and testing.
8. Deployment and feedback.
9. Documentation will be done from start till end.
10. Report Writing.

D Key Milestones and Deliverables:

(Please list and describe the principal milestones and associated deliverables of the project. A key milestone is reached when a significant phase in the project is concluded, e.g. selection and simulation of algorithms, completion of architectural design and design documents, commissioning of equipment, completion of test, etc.) The timing of milestones is also to be shown in the Gantt chart in Section 8.

No.	*Elapsed time from start (in months) of the project*	*Milestone*	*Deliverables*
1	*21/2/21-1/3/21*	*Literature Review*	Literature review
2	2/3/21-9/3/21	Requirement gathering	Requirements
3	10/3/21-19/3/21	Design	UI design
4	20/3/21-30/3/21	Develop user profile	Profile feature
5	31/3/21-10/4/21	Develop search feature	Search feature
6	11/4/21-21/4/21	Develop connect feature	Connect feature
7	22/4/21-2/5/21	Develop sharing feature	Share feature
8	3/5/21-11/5/21	Deployment and feedback	Final product and feedback
9	21/2/21-22/5/21	Documentation	Documents
10	12/5/21-22/5/21	Report Writing	Report

(Please add more rows if required.)			

5. Benefits of the Project (Expected output/outcomes):

Benefits of the project

Expected outcomes:

- To learn Android application development
- Let users share an image file using WLAN which is faster.
- Since it is scoped for images, those who want to share specifically an image can use the applicatication.

Outputs:

- Share-i app
- Project Report

6. Risk Analysis/Feasibility

A Risks of the Project:

(Please describe the factors that may cause delays in, or prevent implementation of, the project as proposed above; estimate the degree of risk.)

(Please mark ☑ where applicable)	Low	Medium	High
Technical risk			
Timing risk			
Budget risk			

A1. Comments(Describe the risk):

Technical Risk:

- The continuous release of the newer android version may affect compatibility for older versions.
- There is a chances that data on the project might lose due to hardware or software failures.
- The app might fail during the testing.

Schedule Risk:

- Planned activities might not be achieved due to some programs and personal reasons.

Budget Risk:

- Low budget risk since it will need only a laptop and an internet connection to develop the app.

7. Project Approval Certificate

(Approval of Project Proposal by the Competent Authority (Department Chairman) and Project Review Team is mandatory before the start of project execution.)

Project Review Team:

Sl #	Name	Signature

(Please add more rows if required.)

Project Coordinator

Name:

Designation:

Email:

Date: Signature:

Competent Authority – Head of Department

Name:

Designation:

Email:

Date: Signature

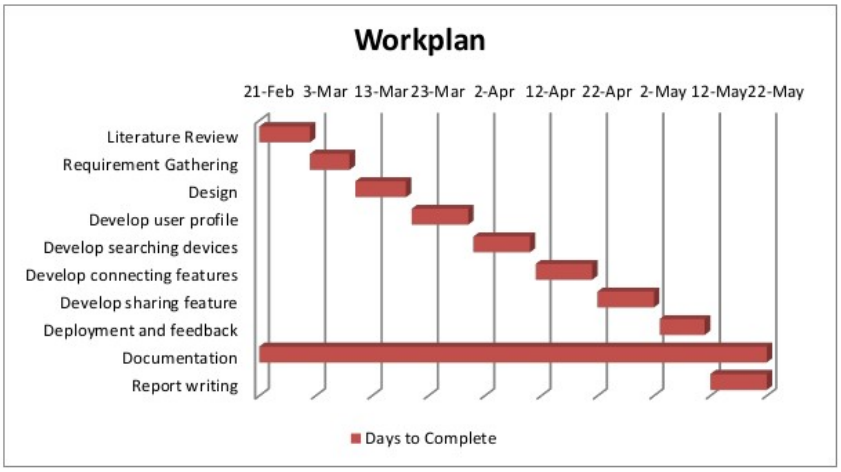
& stamp:

8. Reviewers Panel Comments

10. Project Schedule / Milestone Chart /Work plan

(Project schedule using MS-Project (or similar tools) with all tasks, deliverables, milestones, clearly indicated are preferred. Task should be measured in terms of hours)

Activities	Start-Date	Days to Complete	End Date
Literature Review	21-Feb	9	1-Mar
Requirement Gathering	2-Mar	7	9-Mar
Design	10-Mar	9	19-Mar
Develop user profile	20-Mar	10	30-Mar
Develop searching devices	31-Mar	10	10-Apr
Develop connecting features	11-Apr	10	21-Apr
Develop sharing feature	22-Apr	10	2-May
Deployment and feedback	3-May	8	11-May
Documentation	21-Feb	90	22-May
Report writing	12-May	10	22-May



13. Report Writing Guidelines

(Project report will be written under the specified guidelines.)

Bibliography

Al-Alawi, A. I. (2006). "Wi-Fi technology: Future market challenges and opportunities", *Journal of Computer Science, 2*(1), 13-18

Irfan, A., Khalique, A., A Comparative Demonstration and Analysis of File Sharing Applications on Android Mobile Devices, *International Journal of Computer Applications (0975 – 8887) 156 – 12*, 2016

Lewis, M., 2003. Living the WiFi High Life. MSNBC News. 16 Oct.

R. Shah and Z. Narmawala, "Mobile torrent: Peer-to-peer file sharing in Android devices," *International Journal of Computer Science and Communication, Vol. 7*, 2016, pp. 20-34.

Technopedia, *Peer-To-Peer Network (P2P Network),* retrieved from https://www.techopedia.com/definition/25777/peer-to-peer-network-p2p-network