Bluetooth Chat Application

A

Project Report

Submitted In Partial Fulfillment of the Requirements

for the Award Of
Bachelor of Technology

Under Guidance Of

RAHUL SHARMA
MICROSOFT & HPE CERTIFIED TECHNICAL TRAINER

Project
Carried Out At

ARDENT®
"Drives You to Industry"

Ardent Computech Pvt. Ltd.

(An ISO 9001:2015 Certified)

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Submitted By-

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ACKNOWLEDGEMENT

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1. Title of the Project : **Bluetooth Messenger**
2. Name of the Guide : **Mr. Rahul Sharma**

	Ph.D.(Reg)	*M-Tech*	*MCA*	*M.Sc.*	*MBA*	*B-Tech*
3. Educational Qualification of the Guide(s)			Y			

4. Working / Teaching experience of the Guide**: 6 Years**

5. Software used in the Project

- Jdk 17.0.2
- Android Studio
- Ms- Office
- Draw.io
- Android SD

Self Certificate

This is to certify that the dissertation/project proposal entitled **"Bluetooth Chat Application"** is done by **Souhardya Halder** is an authentic work carried out for the partial fulfilment of the requirements for the award of the degree of **Bachelor of Technology** under the guidance of **Mr. Rahul Sharma**. The matter embodied in this project work has not been submitted earlier for award of any degree to the best of my knowledge and belief.

Name of the Students:

1. Name 1 : Souhardya Halder

Certificate by Guide

This is to certify that this project entitled **"Bluetooth Chat Application"** submitted in partial fulfillment of the degree of **Bachelor of Technology (B.Tech)** by **Maulana Abul Kalam Azad University of Technology** through **Government College of Engineering and Textile Technology, Berhampore** done by **Souhardya Halder.**

Is an authentic work carried out under my guidance & best of our knowledge and belief.

Signature of Student

Date:

Signature of the Guide

Date:

Certificate of Approval

This is to certify that this documentation of **Summer Vacation Training Program 2022,** entitled **"Bluetooth Chat Application"** is a record of bona-fide work, carried out by Souhardya Halder under my supervision and guidance.

In my opinion, the report in its present form is in fulfillment of all the requirements, as specified by **Maulana Abul Kalam Azad University of Technology** and as per regulations of the **Ardent Computech Pvt. Ltd.** In fact, it has attained the standard, necessary for submission. To the best of my knowledge, the results embodied in this report, are original in nature and worthy of incorporation in the present version of the report for **Bachelor of Technology**

Mr. Rahul Sharma
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1.ARDENT COMPUTECH PVT.LTD.

Ardent Computech Private Limited is an ISO 9001-2008 certified Software Development Company in India. It has been operating independently since 2003. It was recently merged with ARDENT TECHNOLOGIES.

ARDENT TECHNOLOGIES is a Company successfully providing its services currently in UK, USA, Canada and India. The core line of activity at ARDENT TECHNOLOGIES is to develop customized application software covering the entire responsibility of performing the initial system study, design, development, implementation and training. It also deals with consultancy services and Electronic Security systems. Its primary clientele includes educational institutes, entertainment industries, resorts, theme parks, service industry, telecom operators, media and other business houses working in various capacities.

Ardent Collaborations

ARDENT COLLABORATIONS, the Research Training and Development Department of ARDENT COMPUTECH PVT LTD is a professional training Company offering IT enabled services & industrial trainings for B-Tech, MCA, BCA, MSc and MBA fresher's and experienced developers/programmers in various platforms. Summer Training / Winter Training / Industrial training will be provided for the students of B.TECH, M.TECH, MBA, MCA and BCA only. Deserving candidates may be awarded stipends, scholarships and other benefits, depending on their performance and recommendations of the mentors.

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2. ABSTRACT

With the development of digital technologies in recent decades, there has been drastic change in the mode of communication and usages of digital accessories in our today lives. It is sure that invention of mobile phone/smart phone has enhanced our life standard and made life easier. The main aim of this research paper is to analyze, design, build and test Bluetooth chat software. The software has been developed as an Interactive and collaborative learning aid.

The application does not require any Internet connection, the application works just with Bluetooth connectivity, users can send free message to their friends sitting over classroom, school playgrounds and festivals, when nearby, without a cellular connection or Wi-Fi. Moreover, the application is very easy to use.

3. INTRODUCTION

The project Bluetooth Messenger is a system developed on android that will enable the users to chat with server with the help of device's Bluetooth. The system requires both the device to be connected via Bluetooth. Every user can chat with this profile and can even transfer text file from one node to another. The communication process that the system exhibits is one-to-many that means users can only chat with the server and not with other users. Another useful feature of the system is that it maintains all the chat history so one can view it whenever required.

The proposed Bluetooth Chat Application has advantages over existing applications. It works as a client and a server at the same time speaking from network wise or perspective of view. The application creates a server then waits for another client to connect to it (i.e. Server situation); or ask another device to chat with it (i.e. Client situation). It has a friendly graphical user interface (GUI) using well-proportioned and harmonious color within its interface. It is easy to use.

4. OBJECTIVE

The main objective of this research paper is to analyze and design Bluetooth Chat Application software by the name of Bluetooth chat in order to be used as an interactive and collaborative learning aid. This section will describe and illustrate the paper's scope and objectives.

1. The application should allow a user to search for other available blue chat users; weather they chat before (prepared) or not.

2. The application should allow users to chat with each other if they are in range of the user's device's Bluetooth adapter.

3. The application should allow the users to share and send files among each other.

The objectives of the paper are to deliver an Android application that should be easy to use, enjoyable and could be applied to learning purposes.

5. LITERATURE REVIEW

The Android operating system is an open source and free platform; it is not bound to one hardware provider or manufacturer. This openness of Android is allowing a quick gain of the market share; but this would be covered later in market analysis. Android also can run on many devices with various screen resolutions and sizes. For an Android device to be certified as compatible; it has to follow certain hardware rules including but not limited to a compass, a Global Positioning System (GPS) trait, a camera and a Bluetooth transceiver which is needed for the Blue Chat application.

Android was made on top of the open-source Linux 2.6 kernel. The developing team chose this kernel because it delivered confirmed core features to develop the Android operating system on which includes:

1. Process management: as the kernel allocates resources to processes as they need managing processes well.
2. Memory management: where the kernel handles memory management by itself.
3. Network stack: the kernel handles network communication.
4. Driver model: ensuring that anything or everything works and enabling hardware manufacturers to build their drivers into the Linux build.
5. Security model: where the kernel handles security among the system and the applications.

The Linux kernel is basically used in core system services as memory management, network stack, security, process management, and driver model. The kernel works as an abstraction layer between the hardware of an android device and the remainder of the software stack.

6. METHODOLOGY

6.1 Android Studio

Android Studio is the official integrated development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. Android Studio was announced on May 16, 2013, at the Google I/O conference. It was in early access preview stage starting from version 0.1 in May 2013, then entered beta stage starting from version 0.8 which was released in June 2014.[1] The first stable build was released in December 2014, starting from version 1.0. On May 7, 2019, Kotlin replaced Java as Google's preferred language for Android app development. Java is still supported, as is C++.

6.2 Android Software Development Kit (SDK)

The android software development kit offers the libraries and tools needed for starting to develop Android applications that run on Android-powered devices. This Developing an Android Mobile Bluetooth Chat Messenger 5 development kit may be used with mane Integrated Development Environment (IDE). Nowadays, Android Studio (based on IntelliJ IDEA) is the official IDE recommended by Google. Even though, the authors prefer to use Eclipse integrated development environment, because it is the integrated development environment that was greatly used with the Android software development kit, it is officially supported.

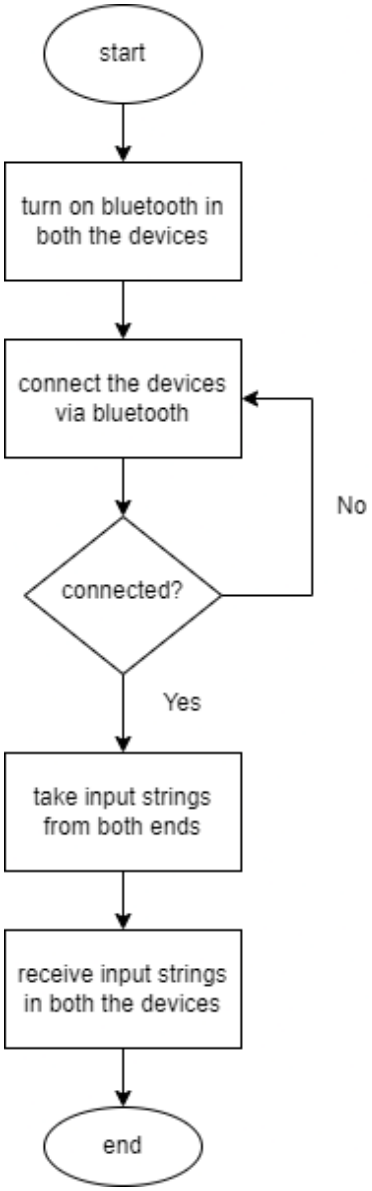
6.3 Bluetooth Technology

Bluetooth is a widespread wireless technology paradigm low power consumption characteristic for exchanging data over short distances via short wavelength radio transmissions from immobile or mobile Bluetooth powered devices to create a Personal Area Network (PAN) with high security level. William Stallings says Bluetooth offers wide range of protocols that are helpful in variety of fields.

7.PROPOSED SYSTEM

The proposed system consists of stages for searching nearby devices of the host and on the other side the client side device sets itself visible for 300 seconds by turning on the Bluetooth. Once both the devices are connected, each side is ready to send and receive texts.

The flowchart of the system is following :



8. JAVA

Java is a high-level, class-based, object-oriented programming language that is designed to have as few implementation dependencies as possible. It is a general-purpose programming language intended to let programmers write once, run anywhere , meaning that compiled Java code can run on all platforms that support Java without the need to recompile. Java applications are typically compiled to bytecode that can run on any Java virtual machine (JVM) regardless of the underlying computer architecture.

The Java language is a key pillar in Android, an open source mobile operating system. Although Android, built on the Linux kernel, is written largely in C, the Android SDK uses the Java language as the basis for Android applications but does not use any of its standard GUI, SE, ME or other established Java standards. The bytecode language supported by the Android SDK is incompatible with Java bytecode and runs on its own virtual machine, optimized for low-memory devices such as smartphones and tablet computers. Depending on the Android version, the bytecode is either interpreted by the Dalvik virtual machine or compiled into native code by the Android Runtime.

9. OOP CONCEPTS IN JAVA

- **Abstraction.** Using simple things to represent complexity. We all know how to turn the TV on, but we don't need to know how it works in order to enjoy it. In Java, abstraction means simple things like **objects**, **classes** and **variables** represent more complex underlying code and data. This is important because it lets you avoid repeating the same work multiple times.

- **Encapsulation.** The practice of keeping fields within a class private, then providing access to those fields via public methods. Encapsulation is a protective barrier that keeps the data and code safe within the class itself. We can then reuse objects like code components or variables without allowing open access to the data system wide.

- **Inheritance.** A special feature of Object-Oriented Programming in Java, Inheritance lets programmers create new classes that share some of the attributes of existing classes. Using Inheritance lets us build on previous work without reinventing the wheel.

- **Polymorphism.** Allows programmers to use the same word in Java to mean different things in different contexts. One form of polymorphism is **method overloading**. That's when the code itself implies different meanings. The other form is **method overriding**. That's when the values of the supplied variables imply different meanings. Let's delve a little further.

10. SYSTEM ANALYSIS

Identification of Need

System analysis is a process of gathering and interpreting facts, diagnosing problems and the information to recommend improvements on the system. It is a problem-solving activity that requires intensive communication between the system users and system developers. System analysis or study is an important phase of any system development process. The system is studies to the mini test detail and analyzed. The system analyst plays the role of the interrogator and dwells deep into the working of the present system. The System is viewed as a whole and the input to the system are identified. The outputs from the organization are traced to the various processes. System analysis is concerned with becoming aware of the problem, identifying the relevant and Decisional variables, analysis and synthesizing the various factors and determining an optimal or at least a satisfactory solution or program of action.

A detailed study of the process must be made by various techniques like interviews, questionnaires etc. The data collected by these sources must be scrutinized to arrive to a conclusion. The conclusion is an understanding of how the system functions. This system is called the existing system. Now the existing system is subjected to close study and problem area are identified. The designer now functions as a problem solver and tries to sort out the difficulties that the enterprise faces. The solutions are given as proposals. The proposal is then weighed with the existing system analytically and the best one is selected. The proposal is presented to the user for an endorsement by the user. The proposal is reviewed on user request and suitable changes are made. This is loop that ends as soon as the user is satisfied with proposal.

Feasibility Study

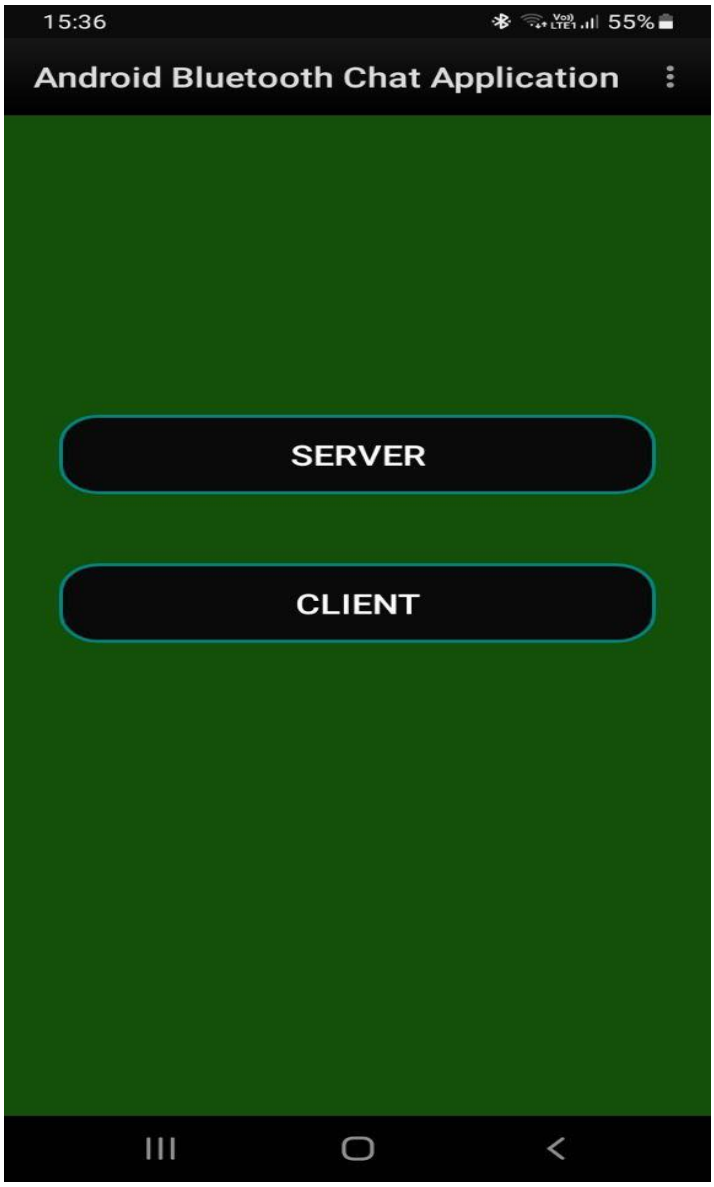
Feasibility study is made to see if the project on completion will serve the purpose the organization for the amount of work Effort and time spent on it Feasibility study lets the developer foresee the future of the project and the usefulness. A feasibility study of a system proposal is according to its workability, which is the impact on the organization, ability to meet their user needs and effective use of resources. Thus, when a new application is proposed it normally goes through a feasibility study before it is approved for development. The document provides the feasibility of the project that is being designed and lists various area that were considered very carefully during the feasibility study of this project such as Economic and operational feasibilities.

- Economic Feasibility: - This project work is economically feasible as it does not take into account any additional costs. Whatever data is sent and received, it is done without any charges. Bluetooth Chat Application provides free use of this data that is encrypted and later available for analysis purpose. Hence, this work is economically feasible as well.

- Operational Feasibility: - This is operationally feasible as well. As already mentioned, Bluetooth technology is inbuilt in every modern day smartphones. Therefore, it is operationally feasible as well. The system won't hang when getting the results.

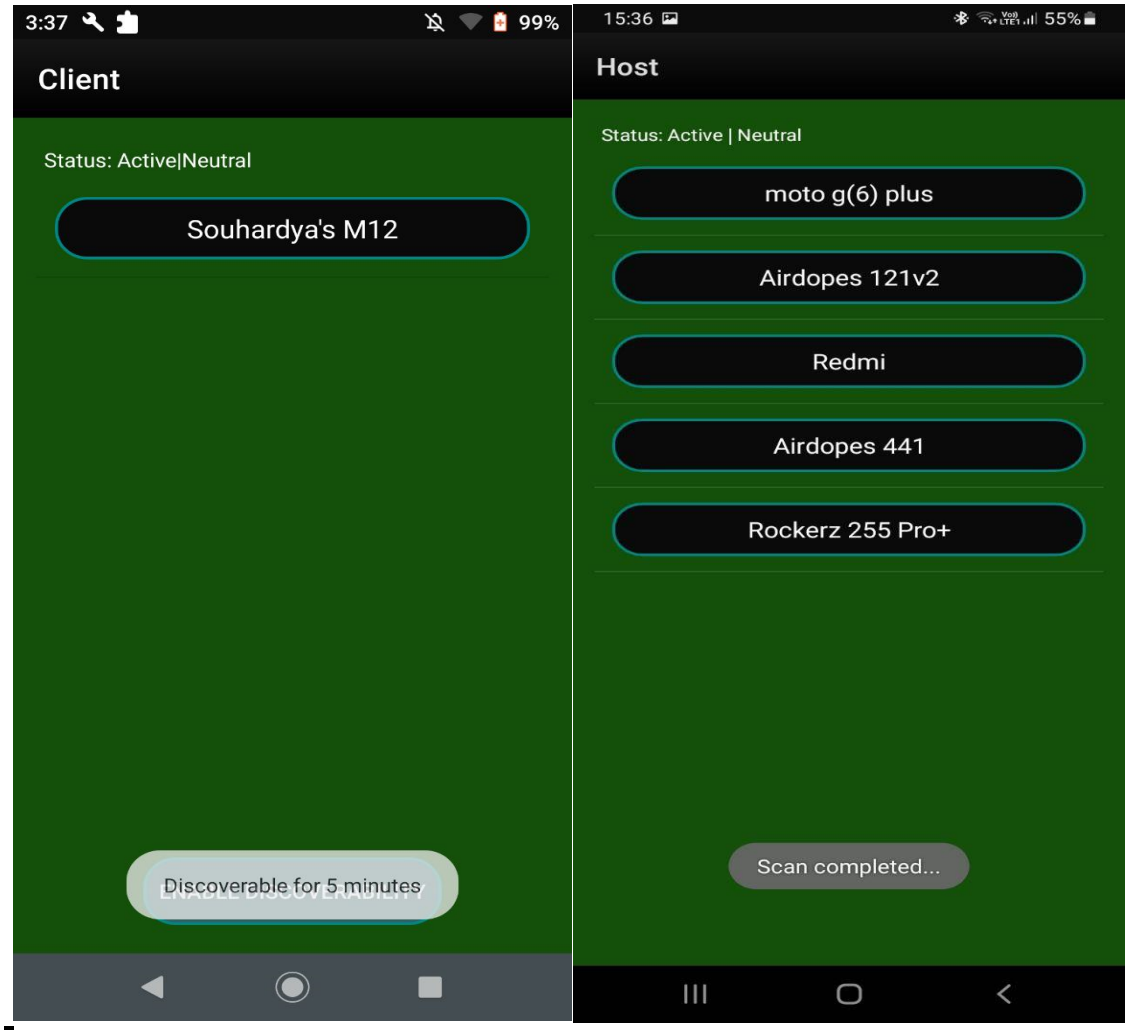
11. EXPERIMENTAL RESULTS

The device which is hosting must be the server where the application scans for previously paired devices and nearby available devices , once scanning is completed the host must select which device to get connected with.



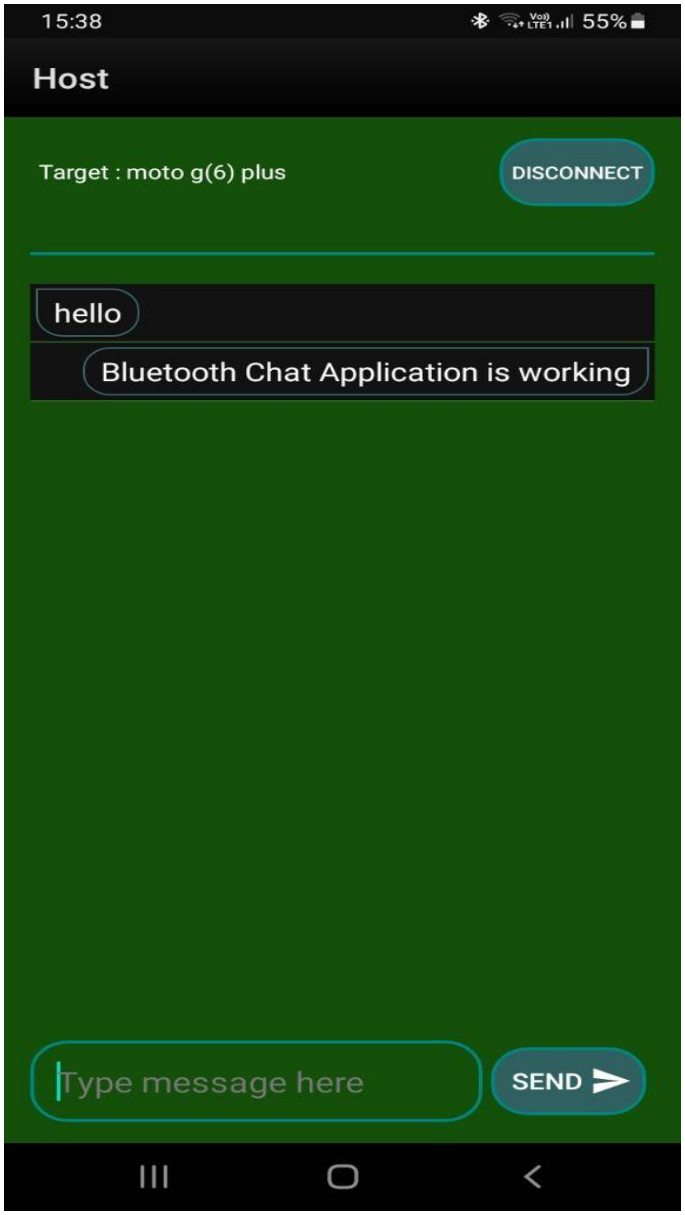
The above screenshot from host device shows the initial interface of the application.

The client side or the receiver side must make the device visible by going in the client option which will look as the following :



And the server side or the host will see the discoverable devices in the server options after scanning.

In the example moto g6 plus device is chosen from the host side a the receiver side and the Host device is souhardya's M12 which is visible in the receiver device.
The exchange of messages between the two devices are show below,



12. CONCLUSION

We presented a literature review on Bluetooth chat application using java programming language ,object oriented programming concepts as well as a comparative study and analysis of these techniques in this paper. As a result, in the proposed scheme anyone can send and receive text messages via Bluetooth technology.

13. FUTURE SCOPE

1. Imagine a scenario in a school playgrounds or crowded places where the wireless or wired local area network (LAN) failed for any reason. How would users communicate among each other or exchange files of great importance?

2. Think of a presentation going on and two or more students maybe not sitting beside each other. How they can communicate or exchange information silently without interrupting the presentation?

3. Picture a scene of a person sitting alone and bored with nothing to do, in a club or in a plane. He needs some company or someone to talk to or have an “on the go” social conversation.

4. Can children with disabilities be integrated in their society? Can we decrease the isolation of disable children from the digital age? Can technology facilitate communication for children with intellectual disabilities? Can technology help disabilities students to learn effectively?