

# Peer to Peer Voice Communication(Wi-Fi Call)



Under the guidance of  
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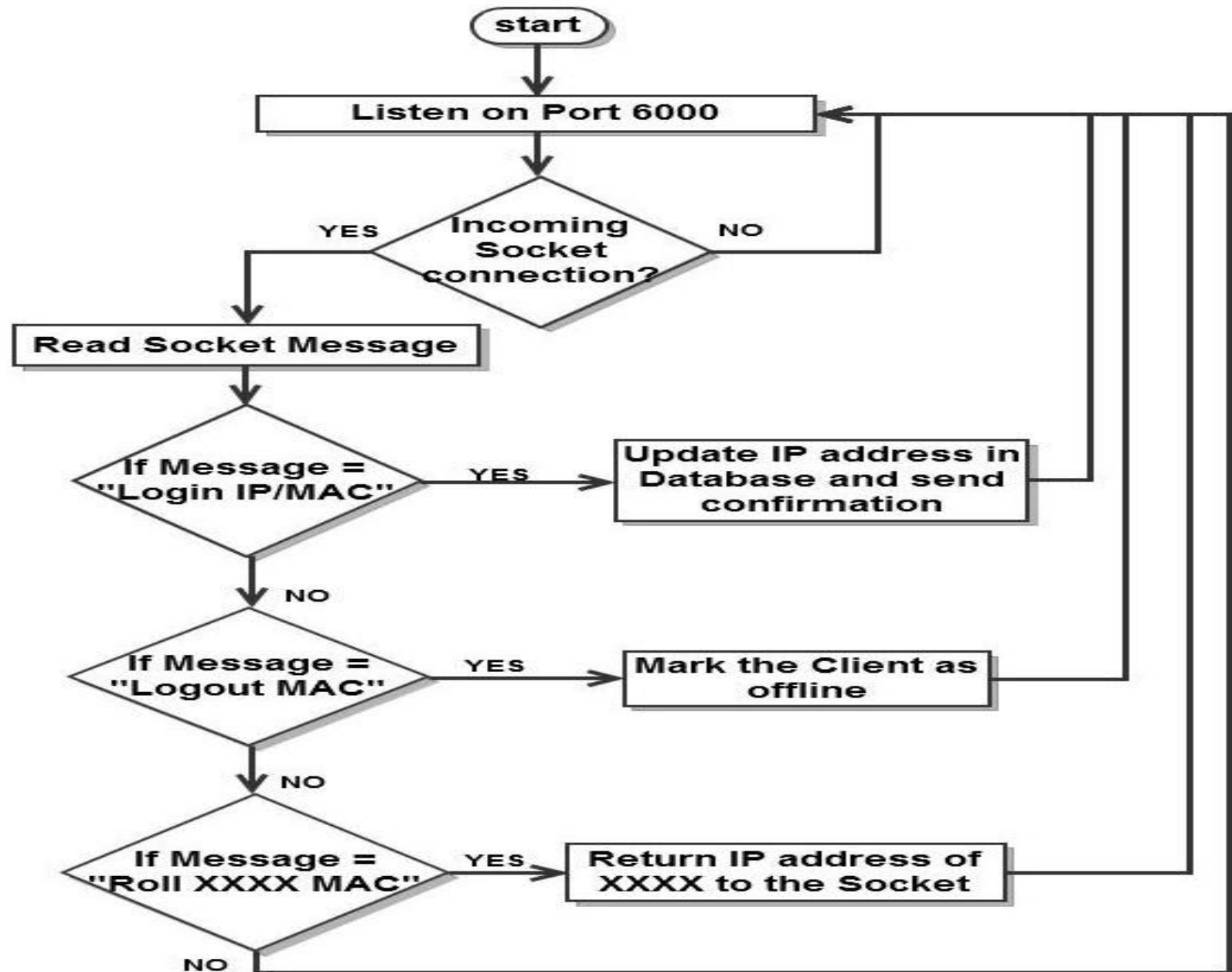
# Introduction

The “**WiFi Call**” is an application that will be used by users to make voice calls to each other using Aakash tablet using WiFi connectivity.

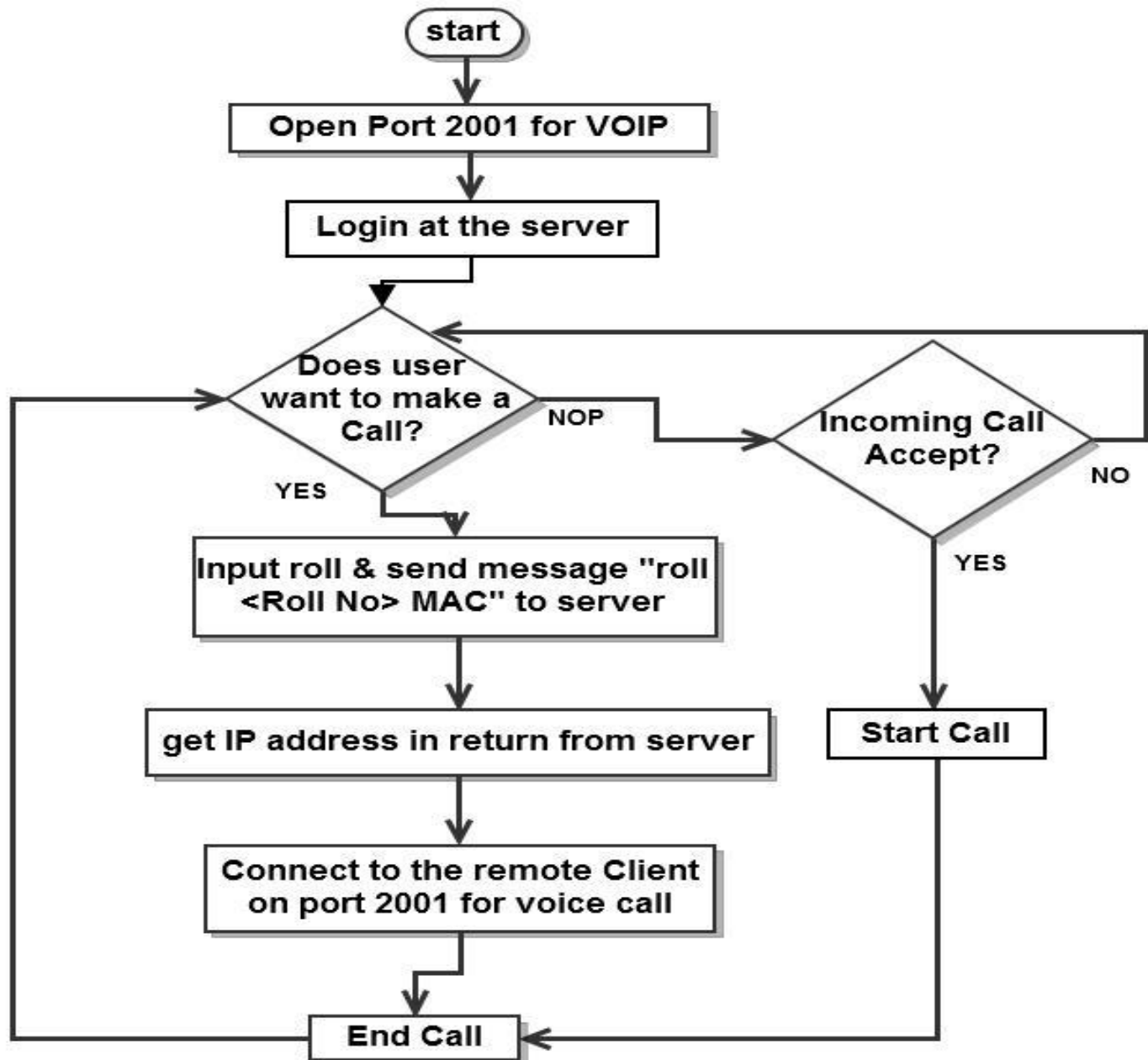
## Features:

- Server(desktop/tablet) and Client(tablet supporting android 2.2 and higher)
- In order to make call user needs to be registered on the Server.
- The Server maintains the MAC and current IP addresses of all the logged-in users.
- The Server and the Clients may be connected to same/different WiFi given both are registered at the server.

# The Server Side Flowchart



# The Client Side Flowchart



# Project Plan

- Establish Connection between Server and Client using WiFi
- Sending messages from Client to Server
- Database Management and Database Connectivity
- Parsing the Messages in the server and updating the Database
- Establishing Peer to Peer Connection
- Recording Audio in Tablet
- Transmitting the live audio
- Setting up of Calling Functionality between Clients
- Audio Call Testing

# Advantages

- This application will work on any Tablet/Phone having Android Version 2.2 and higher.
- This application will incur absolute no expenditure to the end users.
- This application will work on same network which can span across two buildings.

# Hardware Requirements

- The Server(Desktop) should have Ethernet or WiFi Connectivity
- The Server(Tablet) should have WiFi Connectivity
- Client(Tablets) should have WiFi connectivity.
- External microphone/internal microphone and speaker



# Software Requirements

## Client

- Any device based on android operating system versions 2.2 and later.
- Support for lightweight Database Management System – SQLite.

## Server

- Any computer with windows or linux based operating system (Database Management System used is MySQL)  
OR
- Any device based on android operating system versions 2.2 and later (Database Management system used is SQLite).

# Challenges

## Resolved:

- Voice lag and distortion
- Frequency of Sampling

## Unresolved:

- Aakash audio jack issue



# Server Side Application on Desktop

[Server-Desktop Video Clip](#)



# Server Side Application on Tablet

# Server on Tablet

P2P Server

Registered Users

Roll No.

Name

Mac Address

Register User Delete User

Start Server

Server Log

# Registering User

P2P Server

Registered Users

Roll No.

Name

Mac Address

Server Log

# After Registering

The screenshot shows a mobile application interface for a P2P Server. At the top, a status bar displays various icons (Wi-Fi, battery, etc.) and the time 06:04. The app's title bar reads "P2P Server".

The main interface is divided into two primary sections. On the left, a "Registered Users" list shows two entries: "24 offline" and "45 offline". On the right, there are input fields for "Roll No.", "Name", and "Mac Address", each with a corresponding text box. The "Mac Address" field is highlighted with an orange border. Below these fields are three buttons: "Register User", "Delete User", and "Exit Server". At the bottom right, there is a "Server Log" section with a large, empty white box for displaying logs.

Registered Users	
24	offline
45	offline

Roll No.

Name

Mac Address

Register User Delete User

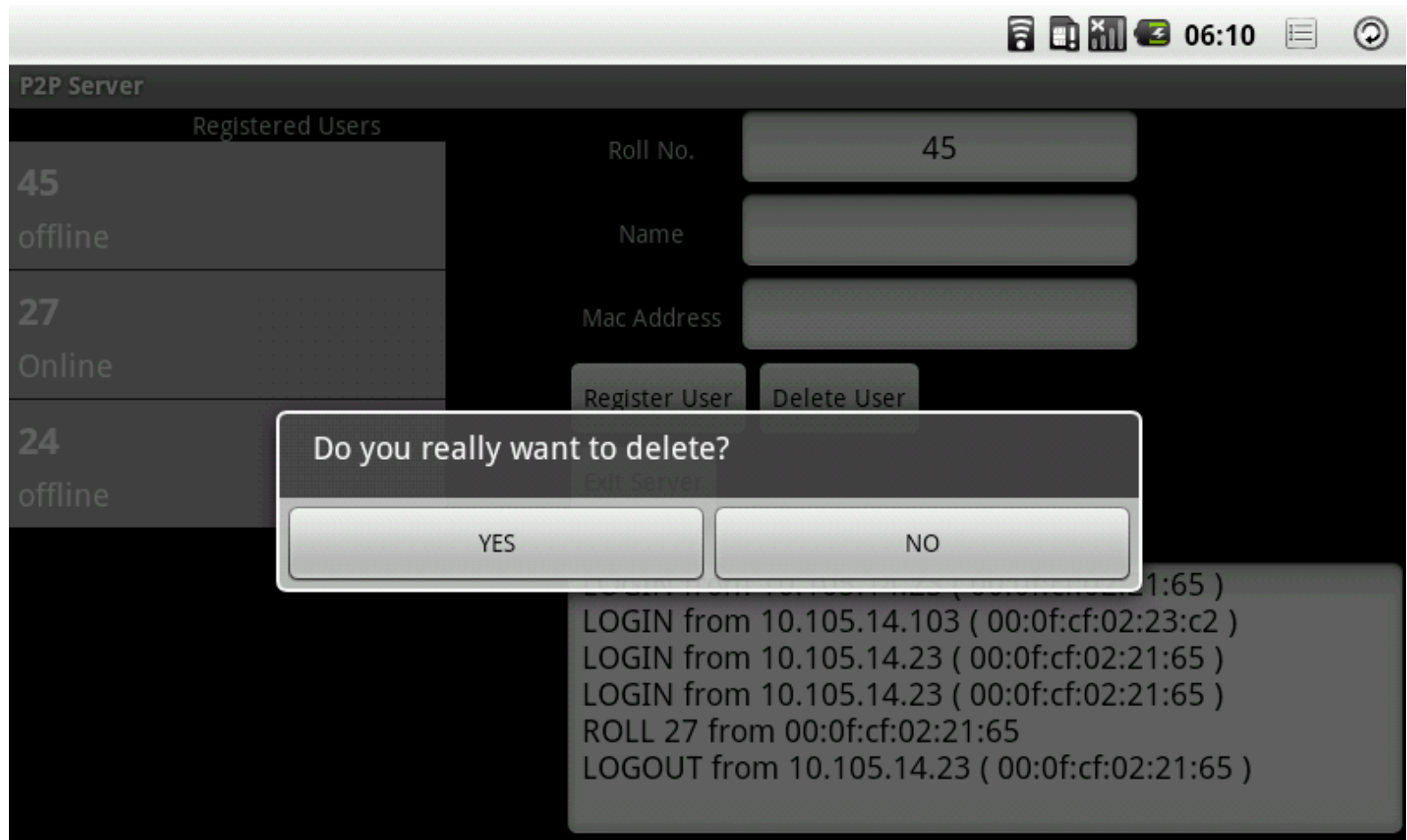
Exit Server

Server Log





# Deleting User



# After Deleting

06:10

P2P Server

Registered Users

27	Online
24	offline

Roll No.

Name

Mac Address

Register User Delete User

Exit Server

Server Log

LOGIN from 10.105.14.23 ( 00:0f:cf:02:21:65 )  
LOGIN from 10.105.14.103 ( 00:0f:cf:02:23:c2 )  
LOGIN from 10.105.14.23 ( 00:0f:cf:02:21:65 )  
LOGIN from 10.105.14.23 ( 00:0f:cf:02:21:65 )  
ROLL 27 from 00:0f:cf:02:21:65  
LOGOUT from 10.105.14.23 ( 00:0f:cf:02:21:65 )

# Exiting Server

The screenshot shows a mobile application interface for a P2P Server. At the top, a status bar displays various icons (Wi-Fi, battery, etc.) and the time 06:11. The app's title bar reads 'P2P Server'. The main interface is divided into several sections:

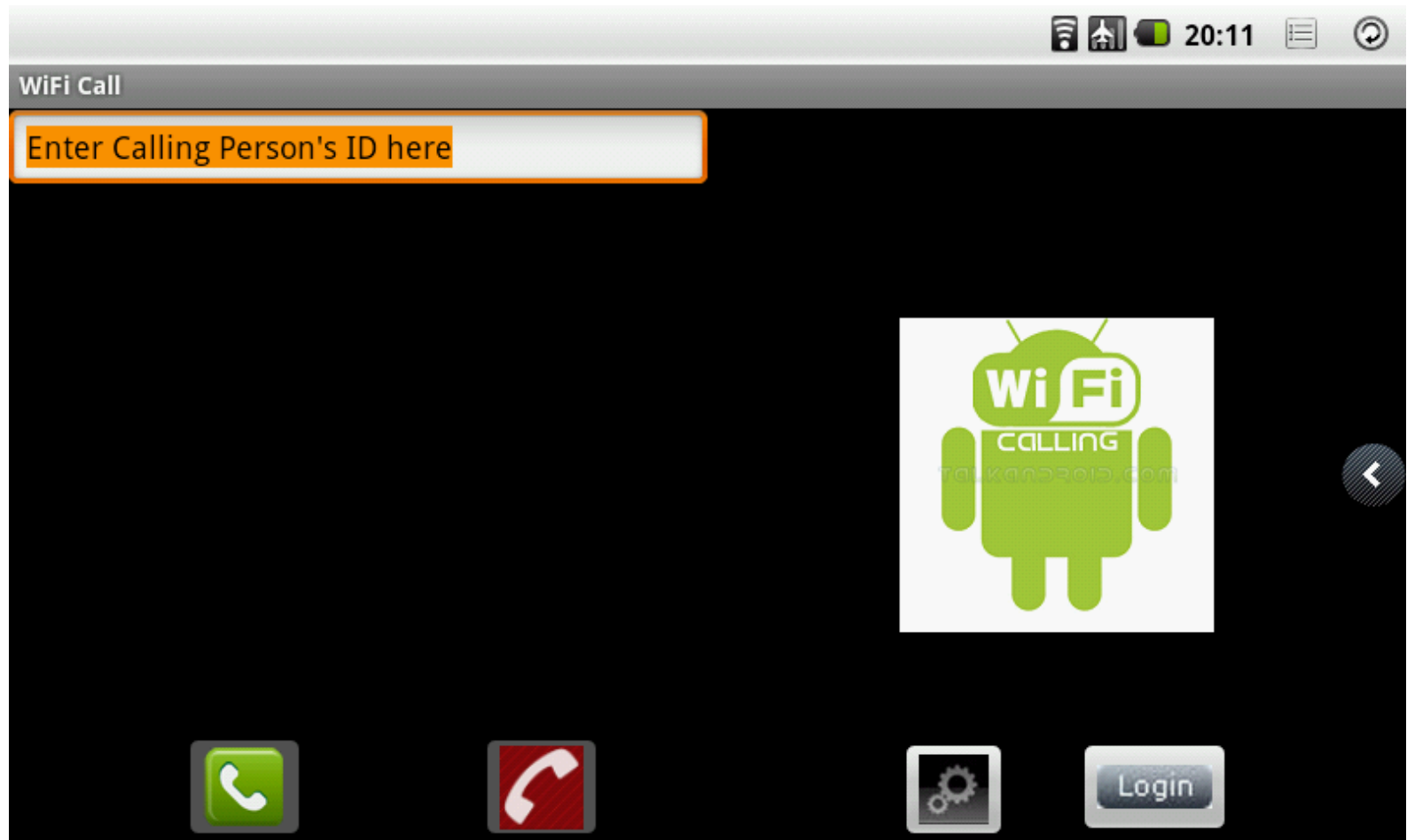
- Registered Users:** A list on the left showing two users, both with status 'offline'. The first user has the number '27' and the second has '24'.
- User Registration Form:** On the right, there are three input fields labeled 'Roll No.', 'Name', and 'Mac Address'. Below these fields are three buttons: 'Register User', 'Delete User', and 'Exit Server'.
- Server Log:** A large text area at the bottom right, currently empty.

A semi-transparent grey dialog box is centered over the 'Exit Server' button, containing the text 'Server will now exit'.

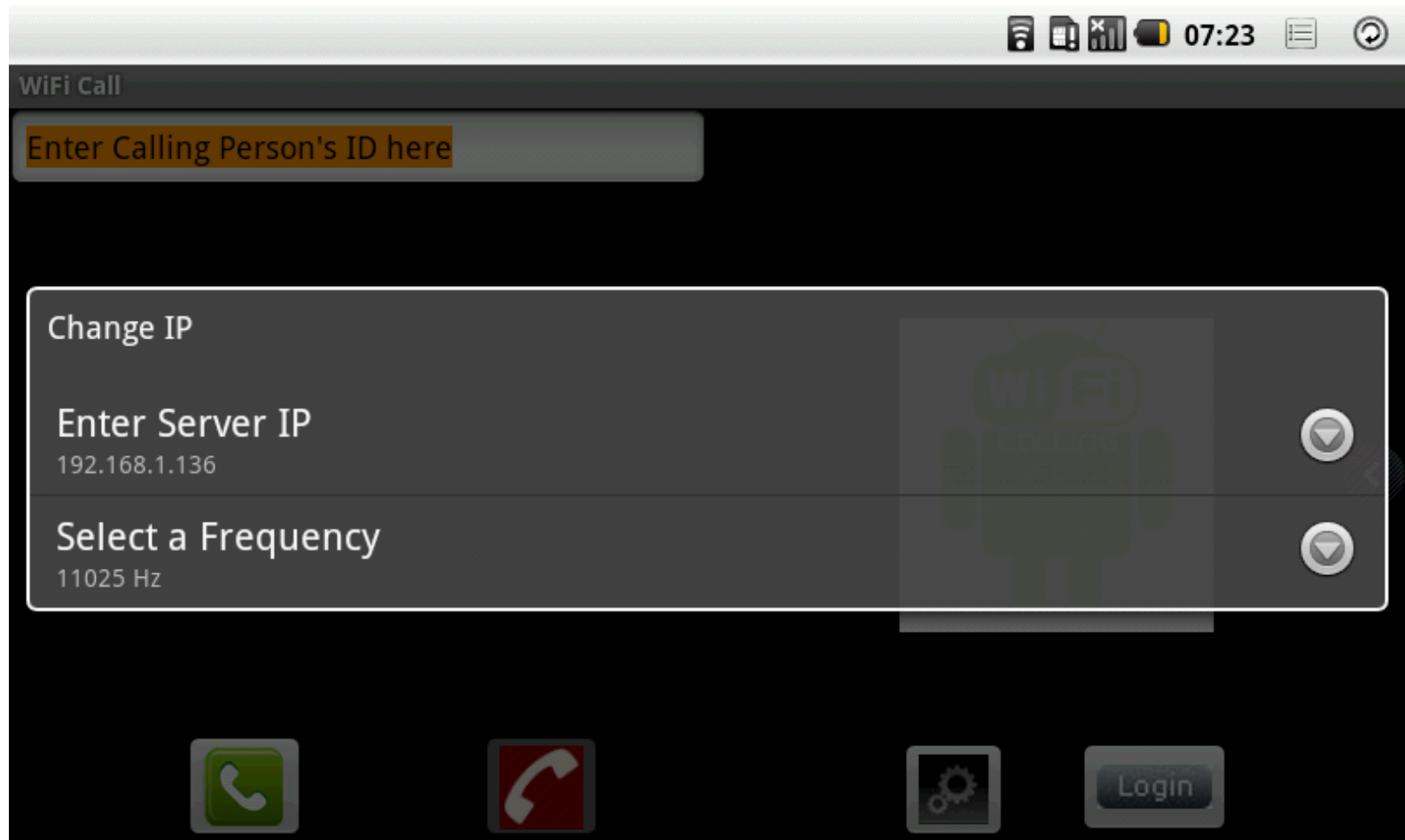


# The Client Side Application

# The Home Screen



# The Settings Panel



The screenshot displays the 'WiFi Call' settings panel. At the top, a status bar shows icons for Wi-Fi, cellular signal, battery, and the time 07:23. Below the title 'WiFi Call', there is a text input field with the placeholder 'Enter Calling Person's ID here'. A semi-transparent settings menu is open, showing options to 'Change IP'. Under this menu, there are two settings: 'Enter Server IP' with the value '192.168.1.136' and a dropdown arrow, and 'Select a Frequency' with the value '11025 Hz' and a dropdown arrow. The background of the app shows a green 'WiFi Calling' button and a red 'End Call' button. At the bottom, there is a dock with icons for a green call button, a red end call button, a settings gear, and a 'Login' button.

WiFi Call

Enter Calling Person's ID here

Change IP

Enter Server IP  
192.168.1.136

Select a Frequency  
11025 Hz

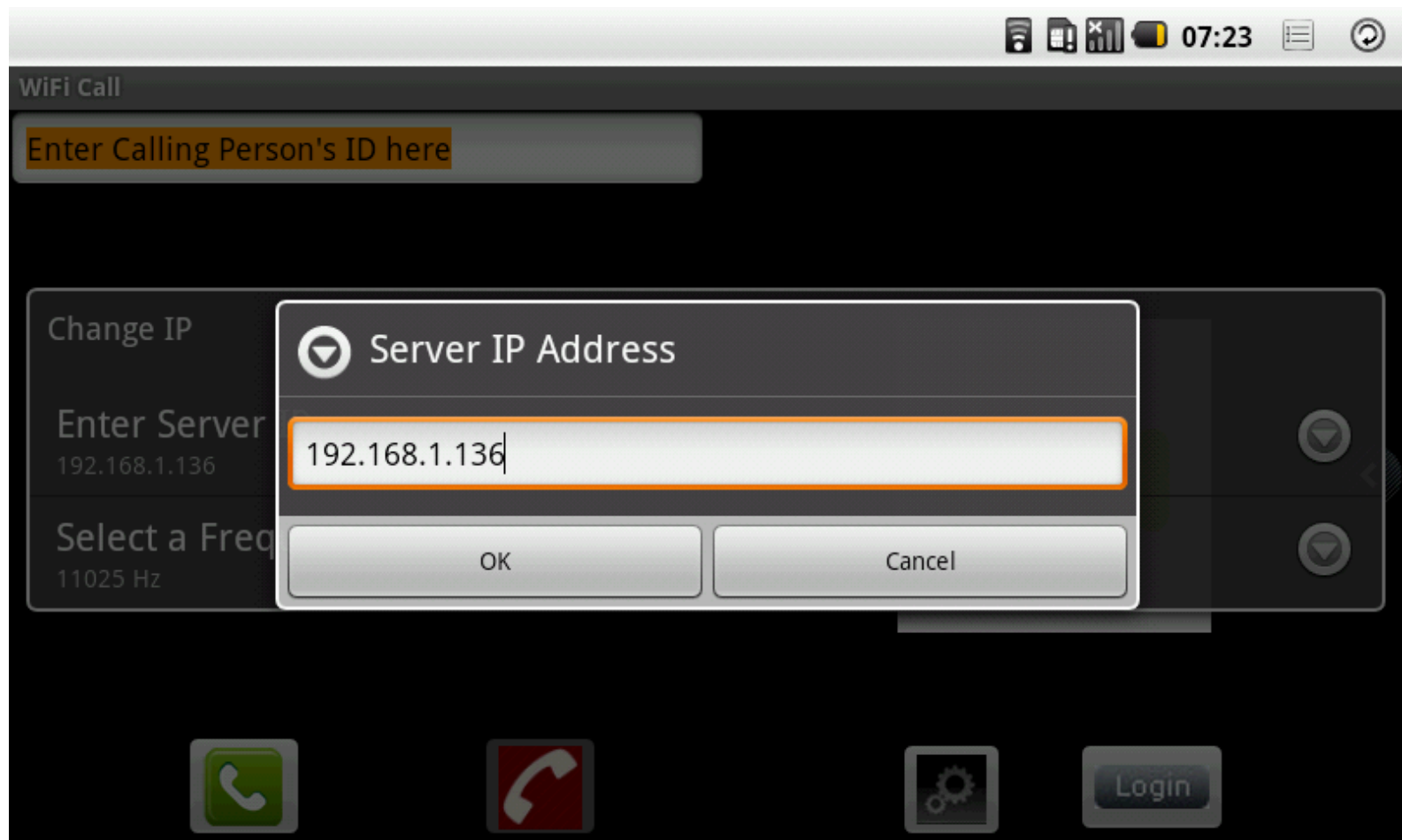
WiFi Calling

End Call

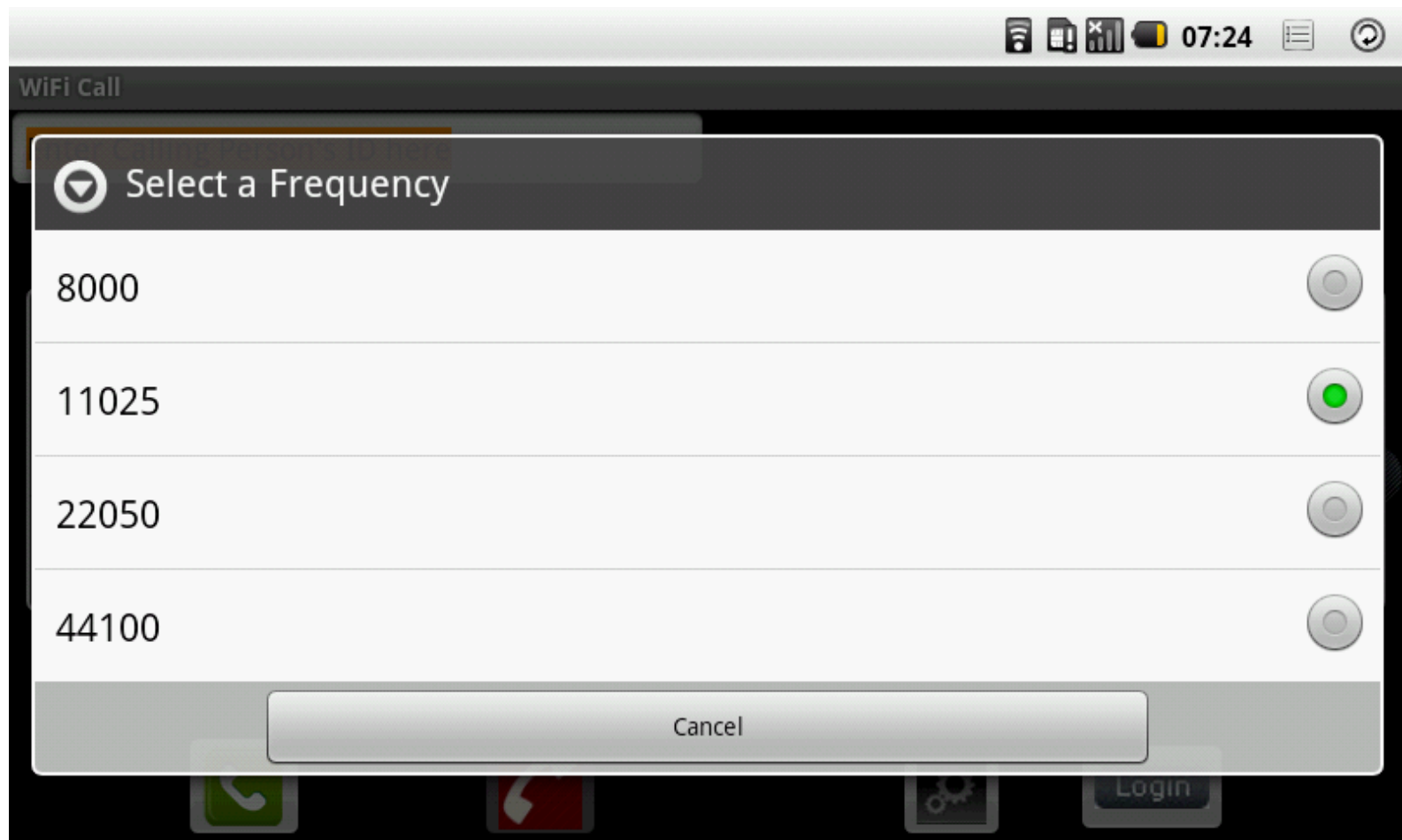
Settings

Login

# Setting Server IP



# Setting the Frequency

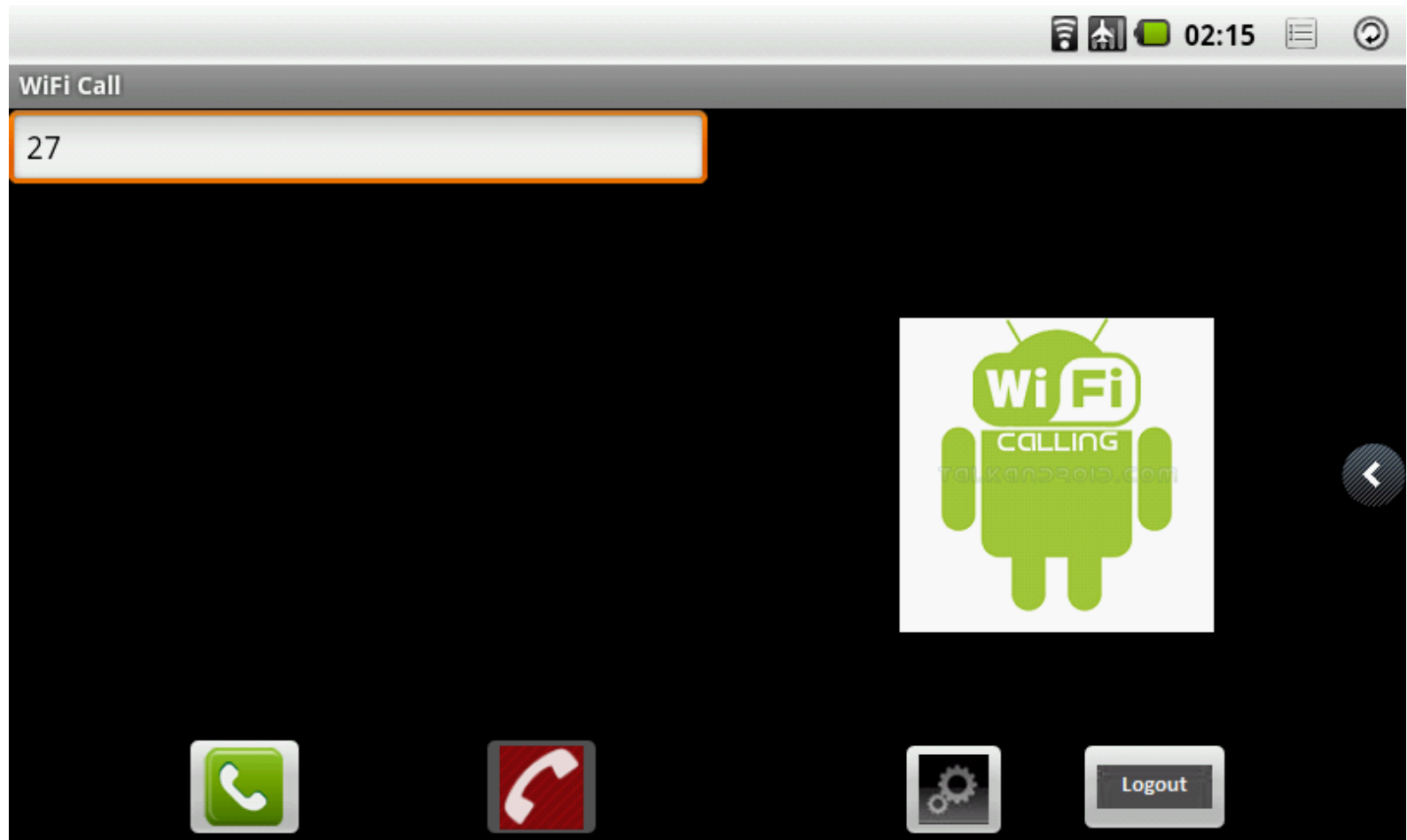




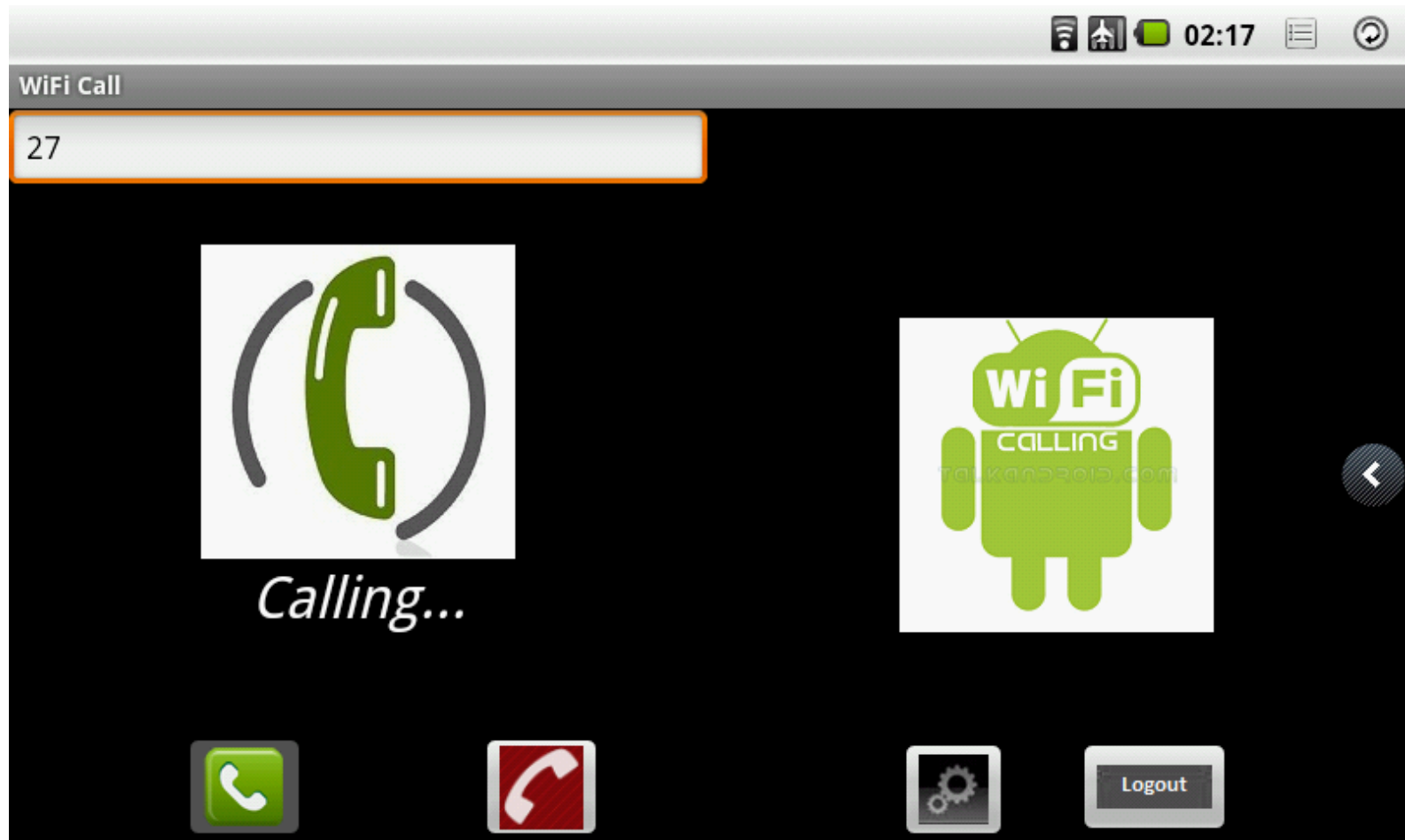
# Logging In



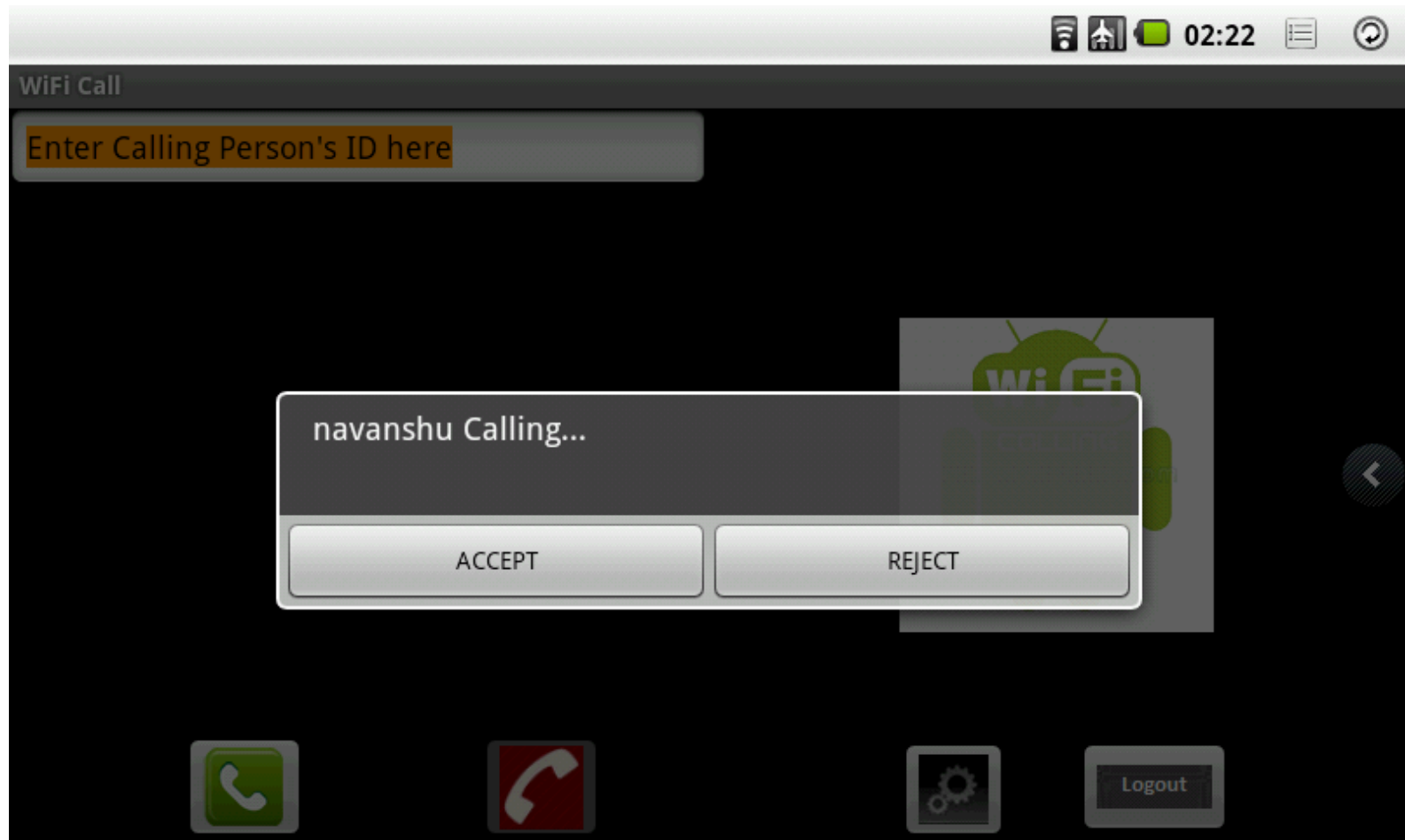
# Making A Call



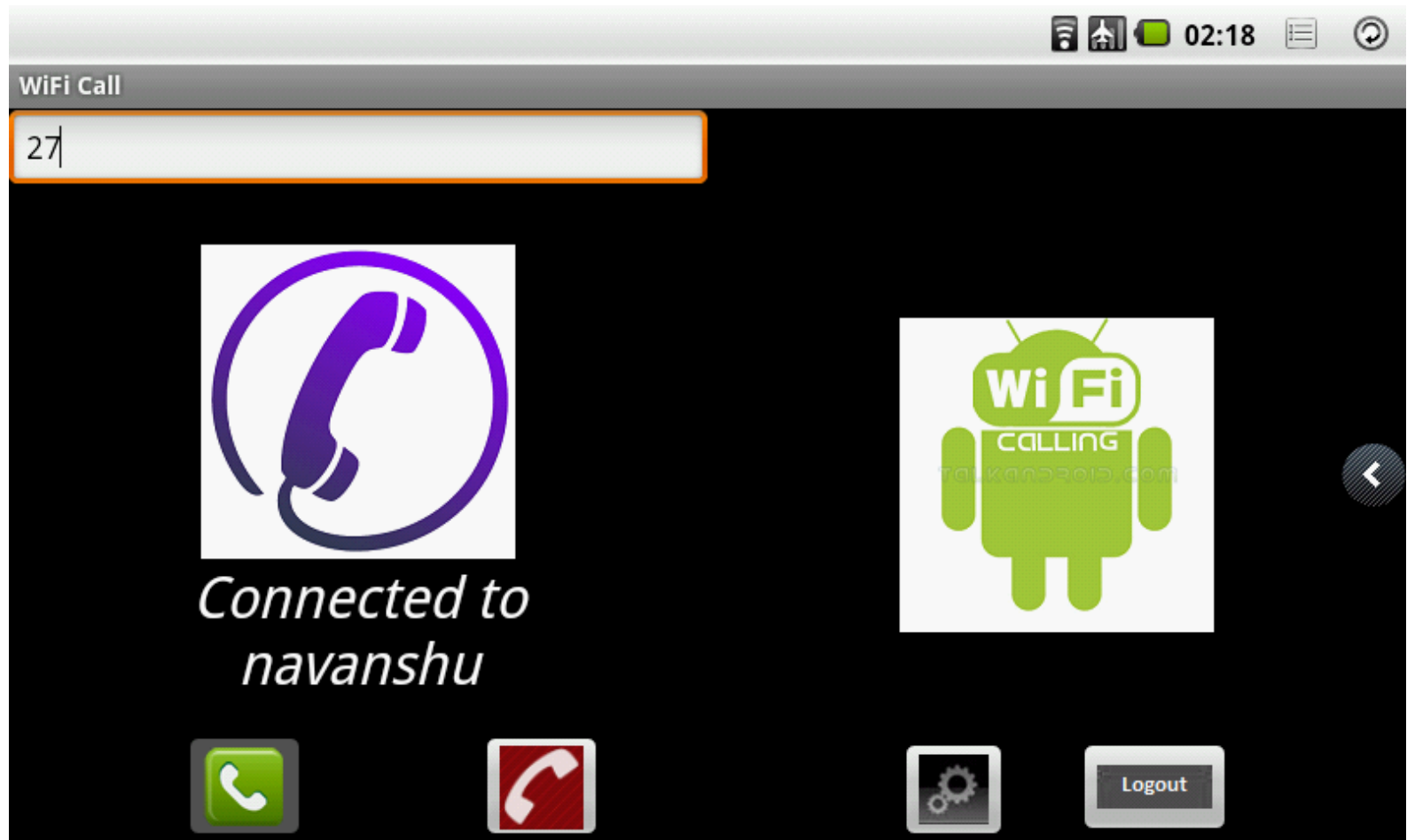
# Calling Screen at Dialler End



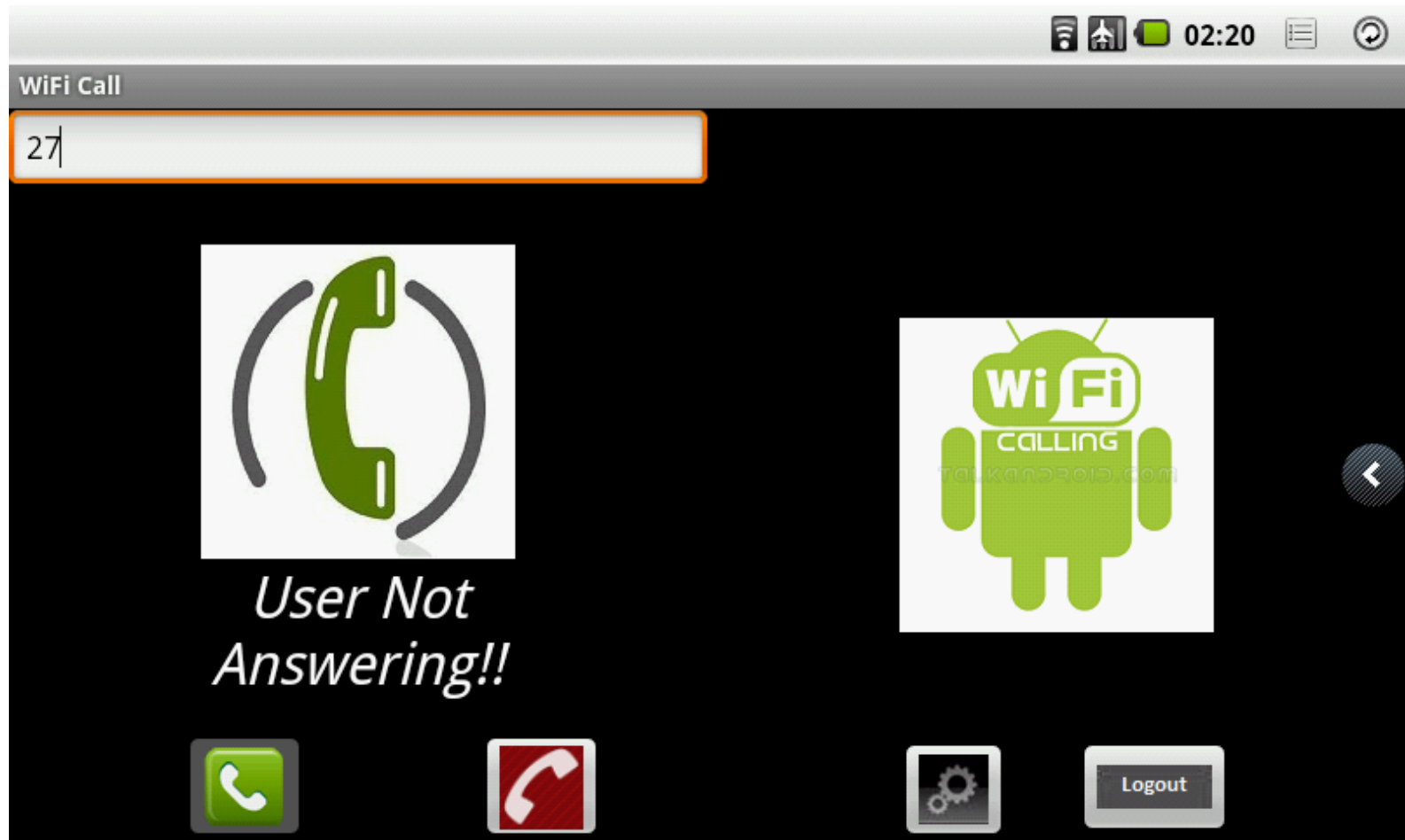
# Calling Screen at Receiver End



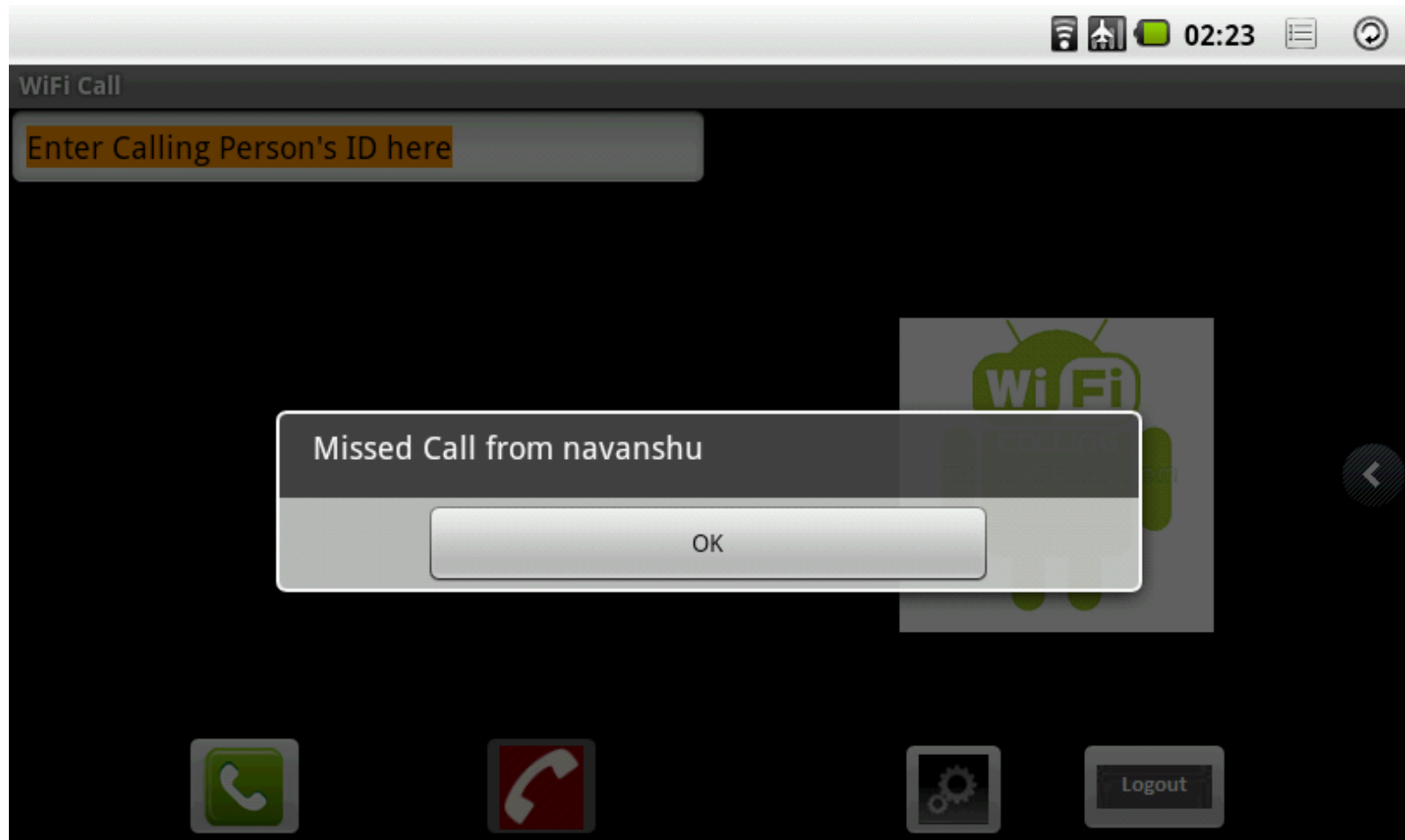
# Screen at both ends once call is connected



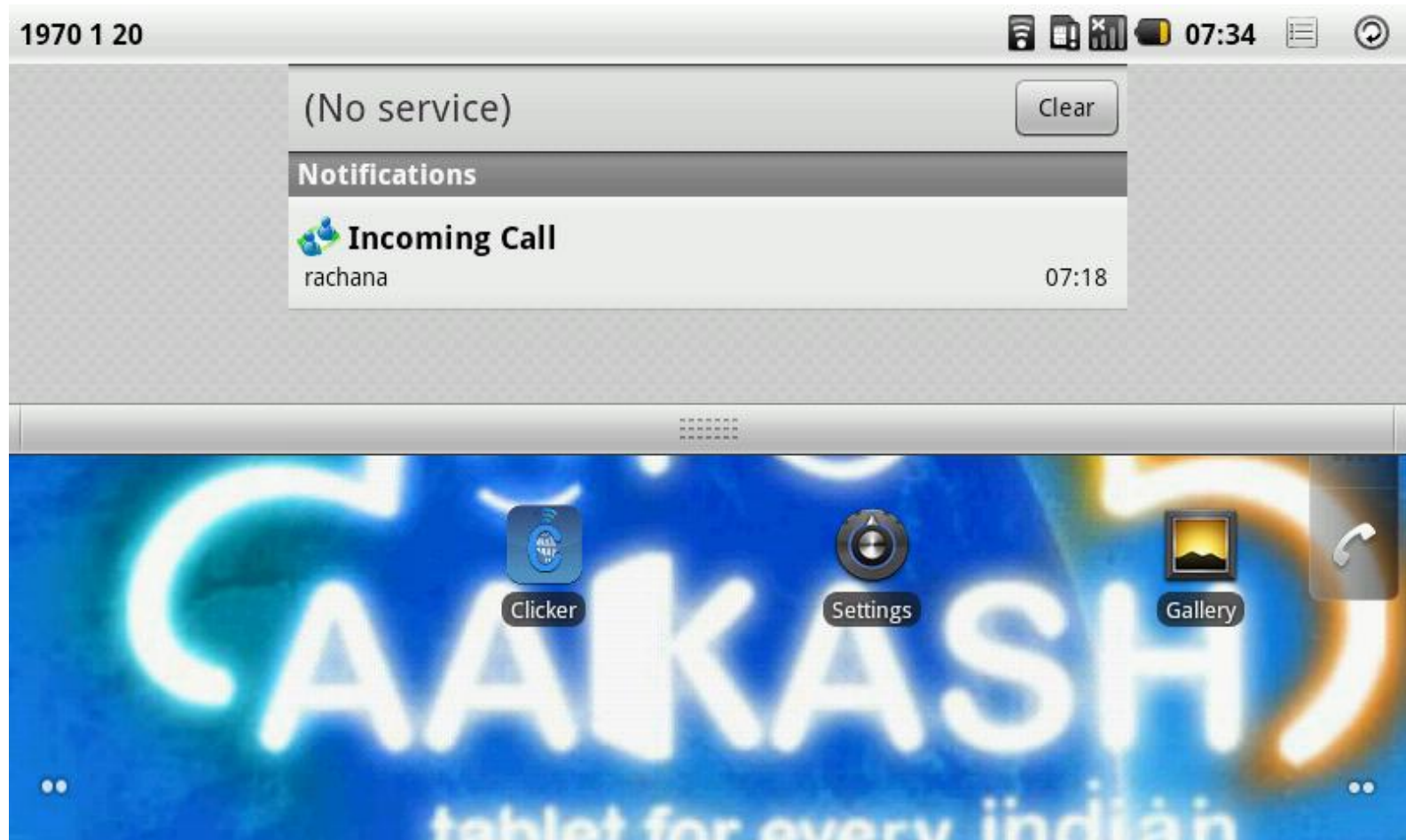
# The Screen when call is not answered at Dialler End



# The Screen when call is not answered at Receiver End

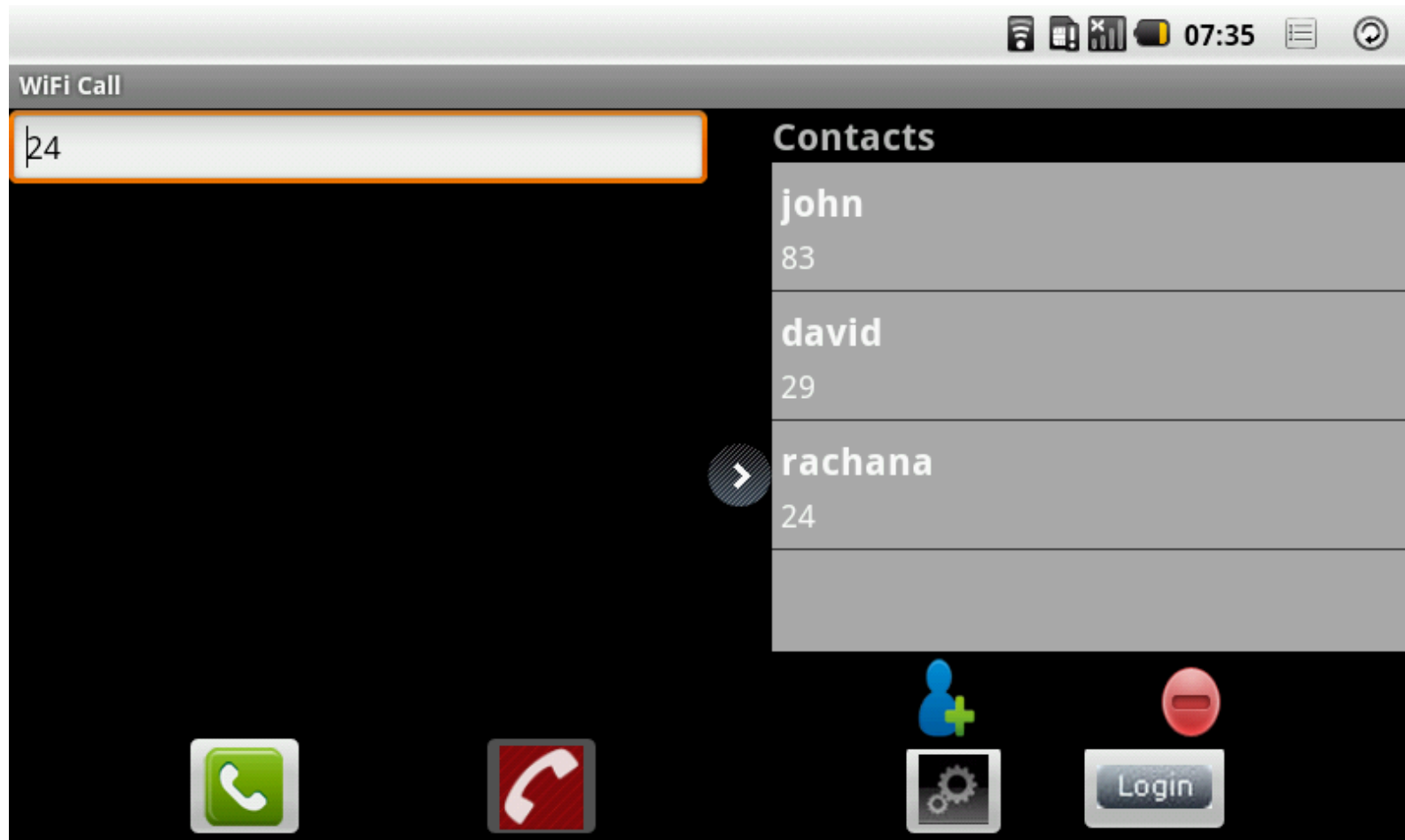


# Notification of Incoming Call





# Contact Book



# Adding Contact

WiFi Call

24

Contacts

john  
83

david

▼ Add Contact

Roll

Name

Add

Cancel

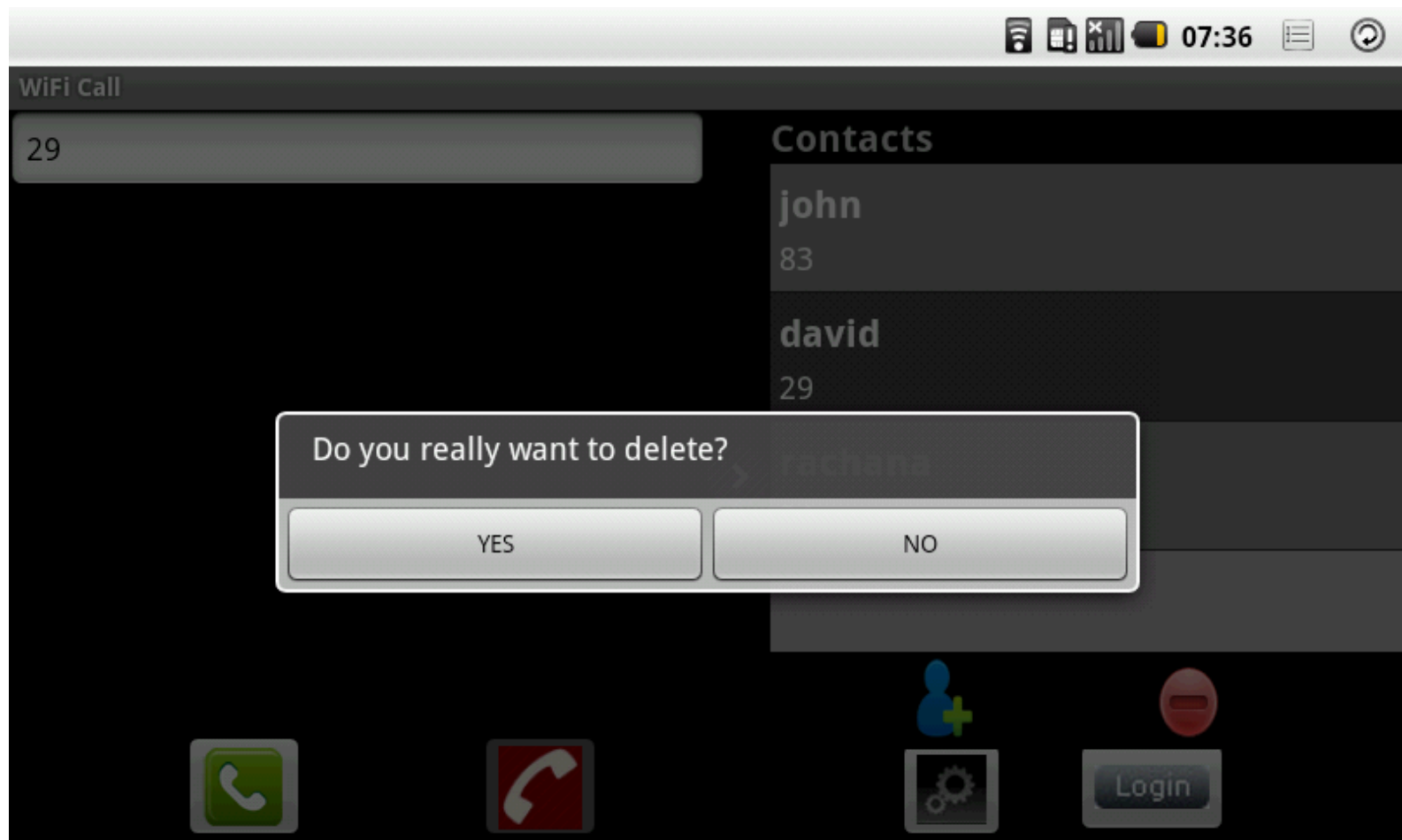
Phone

Call

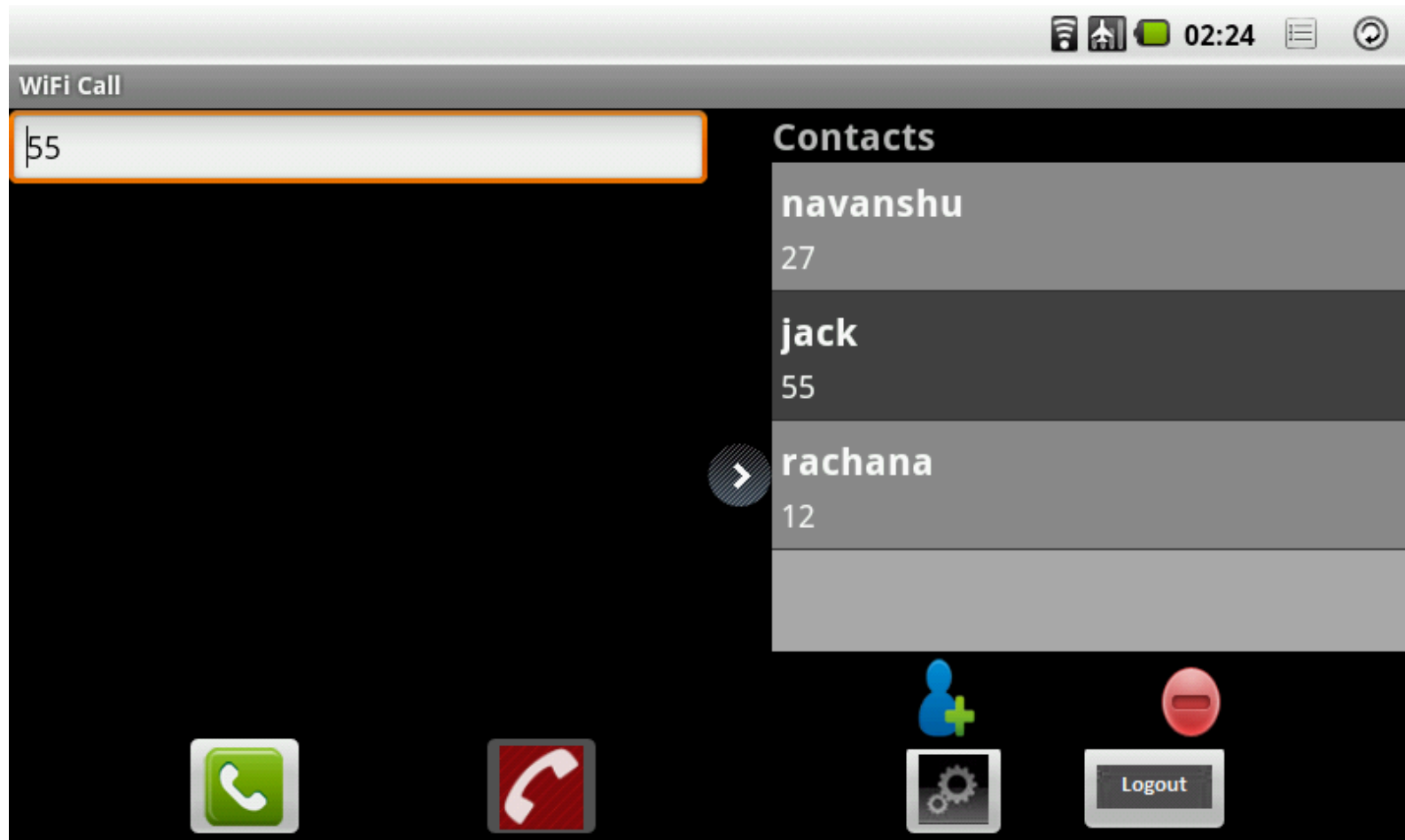
Settings

Login

# Deleting Contact



# Making Call from the Contact Book



# Future Enhancements

- Integrating video with audio
- Encoding Audio Packets before transmission
- Audio Conferencing

# References

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**Thank You**