




Connect without Internet!

NIKHIL BRAMHANKAR [A20358448]

LALIT PATIL [A20345732]

AVINASH SINGH [A20352767]

DIVYA KRISHNAMOORTHY [A20356333]

Table of Contents

1.	Project Name	3
2.	Project Topic	3
3.	Project Phase Manager	3
4.	Project Features	3
5.	Application Requirement	4
6.	Android Features Used	4
7.	Version Compatibility	4
8.	Design / Architecture Diagram	5
9.	User Interface	6
10.	Class Diagrams	7
11.	Database	8
	• User Master:.....	8
	• User List:.....	9
	• User Conversation:	9
12.	Module Details	10
	• Login Screen	10
	• Create User Screen	11
	• Available Devices Screen	13
	• Chat Screen	15
	• Theme Setting Screen.....	16
	• File Transfer Screen	17
13.	Test Cases	18
14.	User Manual	26
	• Login Screen	27
	• Create User Screen	28
	• Chat Screen	28
15.	Revision History.....	37
	• Phase 4.....	37
16.	App comparison.....	37
	• Apps compared.....	37
	• BT Chat+ Advantages over apps compared.....	37

1. Project Name

BT Chat+

2. Project Topic

“**BT Chat+**” is a Bluetooth based Chat App helping users to communicate with each other without any kind of Internet connectivity.

3. Project Phase Manager

Divya Krishnamoorthy (A20356333)

4. Project Features

- Instant message
App can be used to send Instant message to another android device running this app over a Bluetooth connectivity independent of any internet backbone or Wi-Fi network
- User profile
User can create his personal profile and login using credentials. User can customize the App GUI. This will also be helpful to validate the credentials for personalized chatting. However, user can skip login process and start ad hoc messaging to currently available device
- Device Connectivity
App will search Bluetooth devices in nearby vicinity. Facility to pair with other devices will be provided to ensure swift, smooth and personalized usage.
- Saved Chat
App will maintain chat history. It will also provide ways to delete and copy - paste the particular chat
- Image Transfer
App can be used to send Instant message either in text or image format. History for all the chats will be available unless deleted explicitly

5. Application Requirement

- Bluetooth enabled Android Device
- SQLite

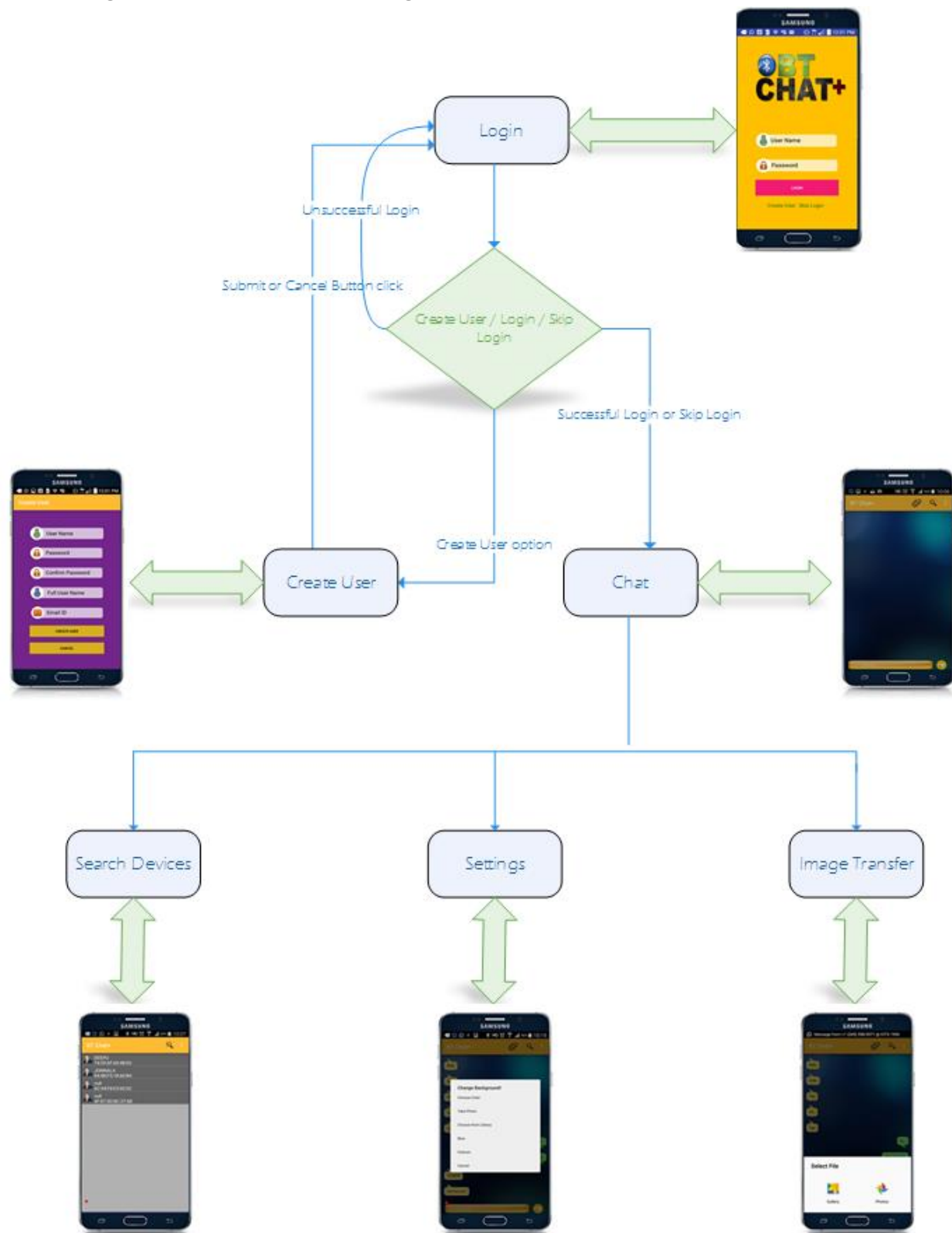
6. Android Features Used

- Bluetooth
- SQLite DB
- Fragment
- Custom Keyboard
- Broadcast Receiver
- Camera
- Bluetooth based File Transfer
- ActivityOnResult Intent
- Menu

7. Version Compatibility

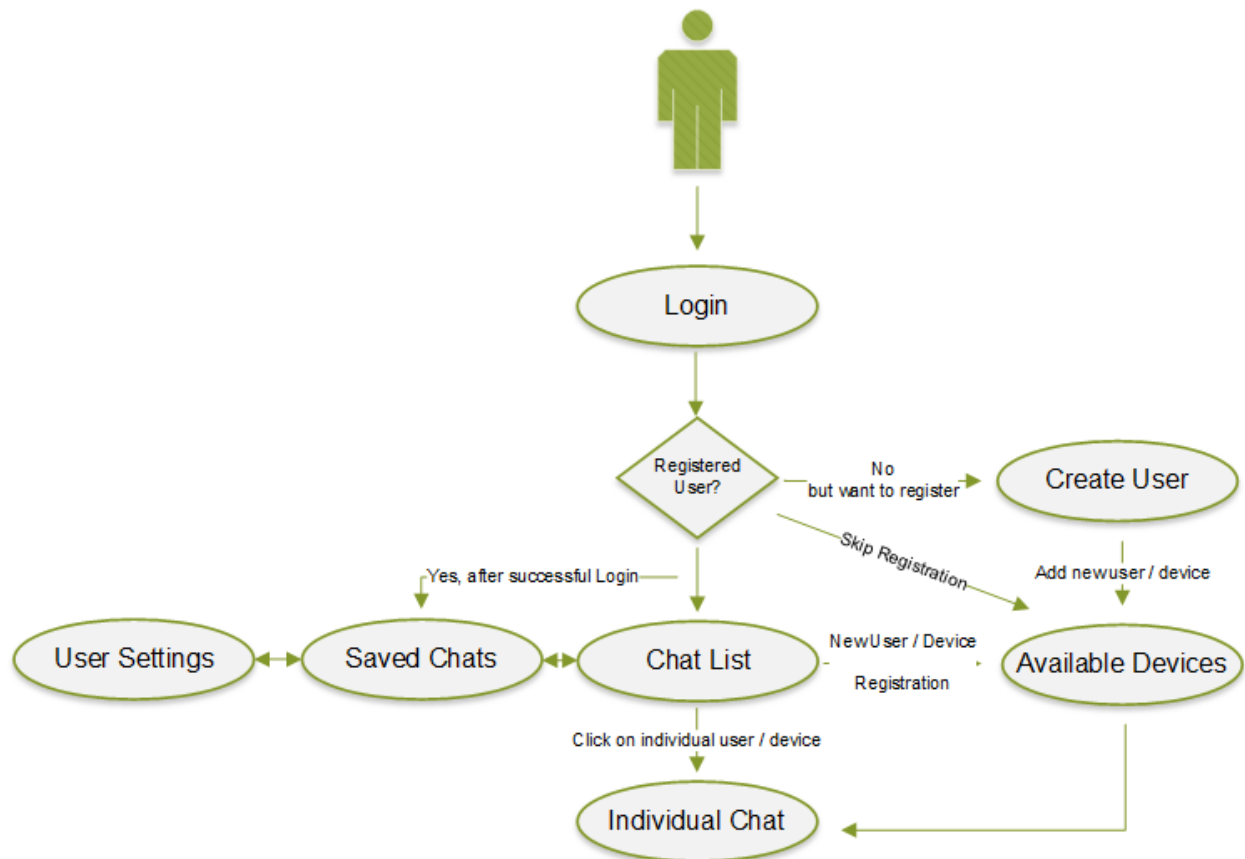
Bluetooth enabled Android Device with Android SDK 11+

8. Design / Architecture Diagram



9. User Interface

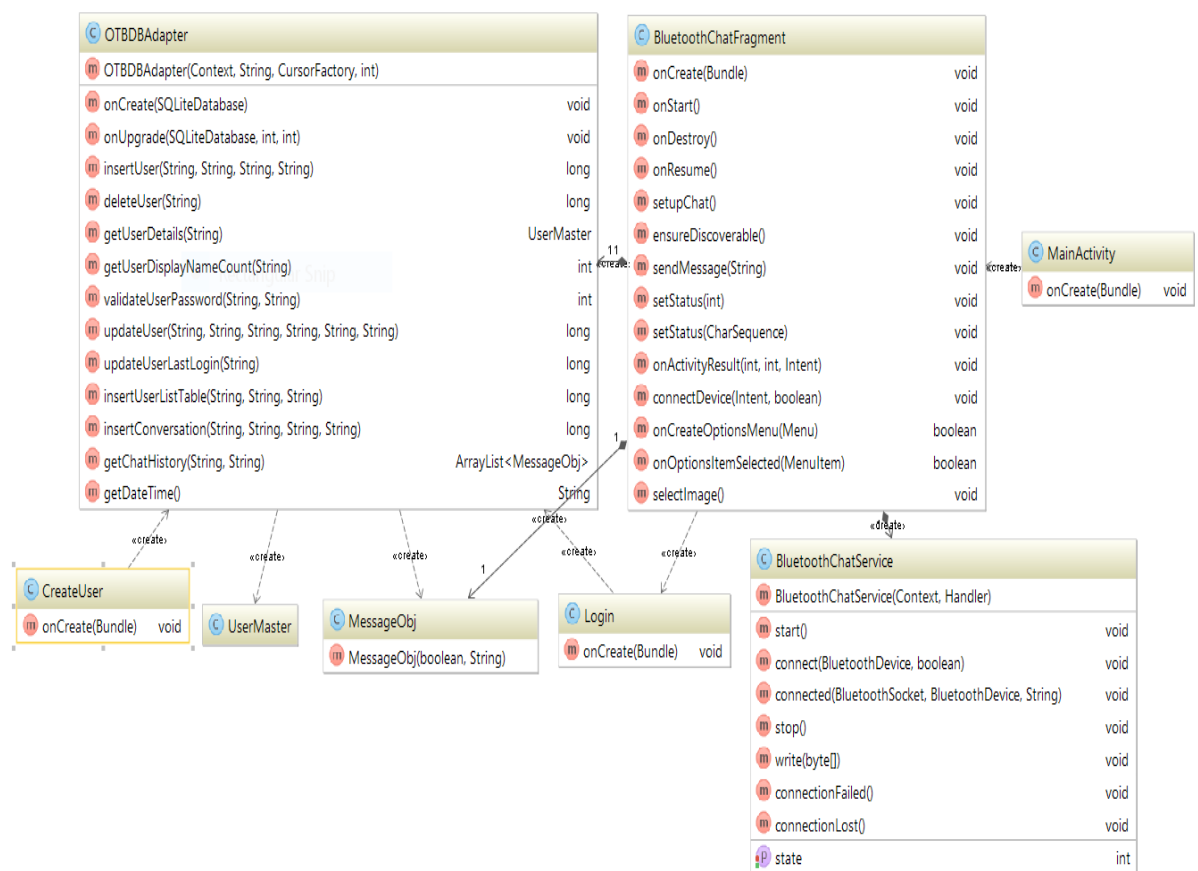
The below given diagram explains the transition between various activities

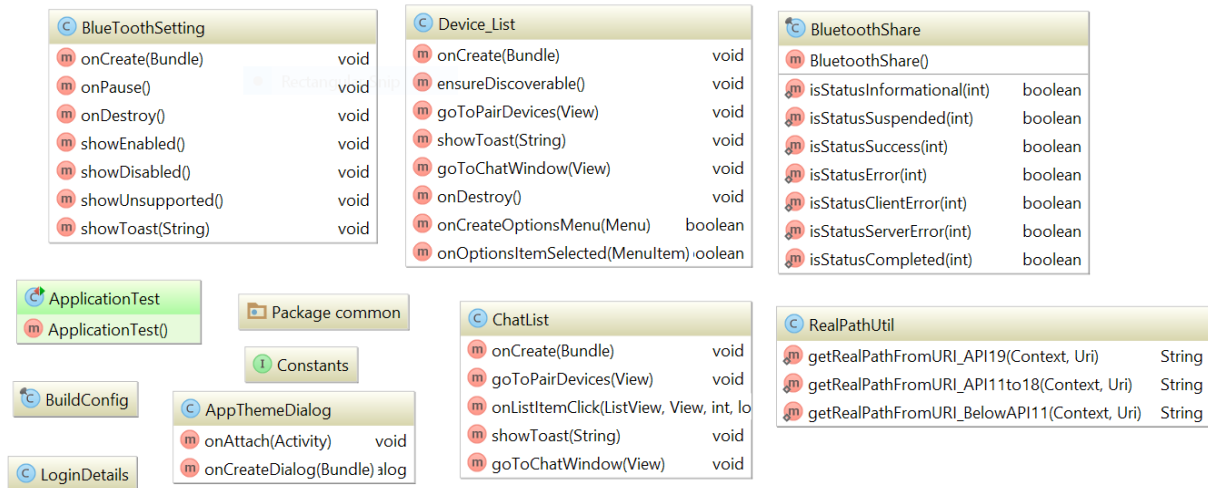


- After the app is launched, user will see the “**Login**” screen as startup / launcher screen
- In case if user is not already logged in then
 - “**Login**” screen will be displayed
 - User can either register with app using “**Create User**” screen
 - In case if user opts for “**Create User**” screen then various inputs like User Name, Password, Confirm Password, User Full Name, and Email ID will be prompted and validated.
 - If all the mandatory inputs are validated, user registration will be confirmed and user will be taken to “**Available Devices**” screen to connect with either already paired or available device
 - After the connection is made with either already paired or available device, user can start chatting using main “**Chat**” screen
 - Or
 - User can skip Login process and proceed ahead with Instant Chat by connecting to a device using “**Available Devices**”

- After the connection is made with either already paired or available device, user can start chatting using main “**Chat**” screen
- If user is already logged in or the credentials are saved, then “**Chat**” screen will be displayed listing all the previous chats done by user
 - In case if the selected user’s device is unavailable within the range, then the user will be notified with an alert message indicating the unavailability of the selected device. Similar kind of alert will be displayed if connection is broken during chatting.

10. Class Diagrams





11. Database

- User Master:

The table (USER_MASTER_GOLDEN) is used to store the User Master related data is used to store the profiles of various users created on the same device

Record Name	Data Type	Constraints	Description	Examples
USER_PASSWORD	Text	Mandatory	Login Password	
USER_NAME	Text	Mandatory	User's Full Name	
USER_DISPLAY_NAME	Text	Primary Key	User's Login Name	
USER_EMAIL_ID	Text	Mandatory	User's Email ID	E.g. of Valid USER_EMAIL_ID abc@def.com E.g. of Invalid USER_EMAIL_ID abc abc@ abc@def"
USER_LAST_LOGIN	Datetime		User's Last Login Date Time	

Record Name	Data Type	Constraints	Description	Examples
USER_PROFILE_STATUS	Text		User's Profile Status Message	
USER_PHOTO	Text		User's Profile Photo	

- User List:

This table (USER_LIST) is used to store the profile details of participants, User is chatting with

Record Name	Data Type	Constraints	Description	Examples
DEVICE_ID	Text	Mandatory Primary Key	Bluetooth Device ID of Participant	
USER_DISPLAY_NAME	Text	Mandatory Primary Key	Login User ID	Refer: USER_MASTER_GOLDEN.USER_DISPLAY_NAME
CHAT_USER_DISPLAY_NAME	Text	Mandatory	Participant's Chat Display Name	
CHAT_USER_STATUS	Text	Mandatory	Participant's Bluetooth Status	
CHAT_USER_PHOTO	Text		Participant's Photo URL	
CHAT_LAST_MESSAGE_TIMESTAMP	Datetime		Chat's Last Message Timestamp	

- User Conversation:

This table (USER_CONVERSATION) is used to store the Chat History

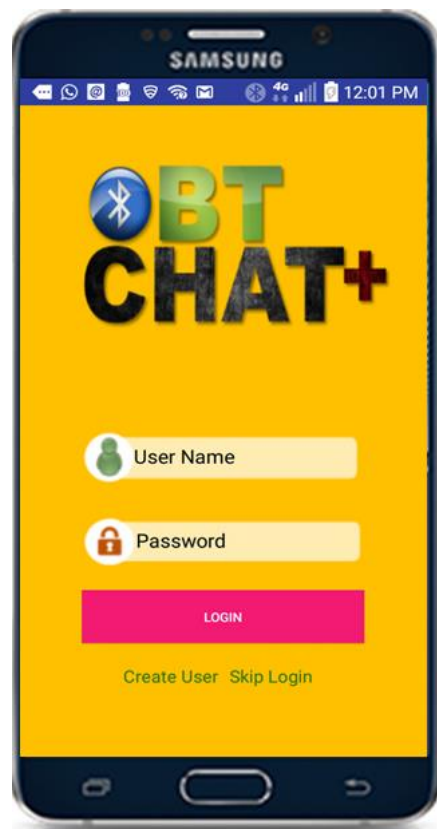
Record Name	Data Type	Constraints	Description	Examples
USER_DISPLAY_NAME	Text	Mandatory	Login User ID	Refer: USER_MASTER_GOLDEN.USER_DISPLAY_NAME

Record Name	Data Type	Constraints	Description	Examples
CHAT_USER_DISPLAY_NAME	Text	Mandatory	Participant's Chat Display Name	Refer: USER_LIST.CHAT_USER_DISPLAY_NAME
MESSAGE ID	Integer	Mandatory Primary Key	A unique Message ID for every Chat Message	
MESSAGE	Text	Mandatory	Chat Message content	
SENT_RECEIVED	Text		A flag indicating if the message was sent or received This flag will be also used to identify the messages which are not sent (SENT_RECEIVED will have null value)	
TIME_STAMP	Integer	Mandatory	Date Time details of Message sent / received	
DEVICE_ID	Text		Bluetooth Device ID of Participant	

12. Module Details

- Login Screen
 - Input
 - User ID
 - Password
 - Prerequisites
 - User ID must be existing in local or central database (already registered)
 - Constraints
 - User ID cannot be blank
 - Password cannot be blank
 - Use Case Scenarios

- If User ID is empty, then an alert displaying relevant error message will be displayed to user
- If Password is empty, then an alert displaying relevant error message will be displayed to user
- User should be asked to login with a login screen. On successful login the app can give access to **“Chat”** screen
- In case if User is new and clicks on Create User button, control must be passed to **“Create User”** screen and activity must be displayed accordingly
- In case if user is not logged in and doesn't want to register then user can click on **“Skip Login”** button to proceed ahead to connect to already paired or available devices. In this unauthenticated mode access, user will not be able to access historical chat

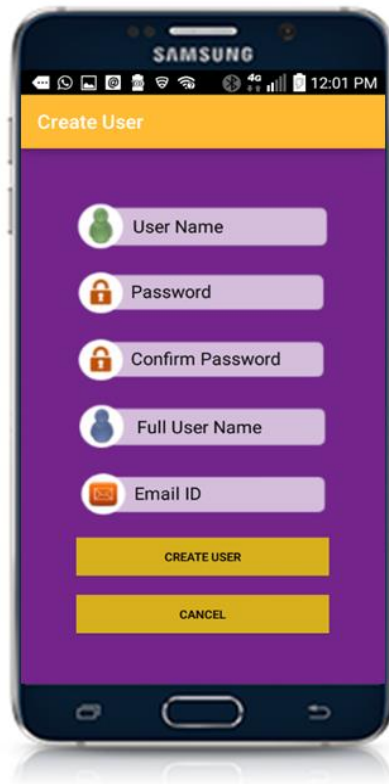


- Create User Screen

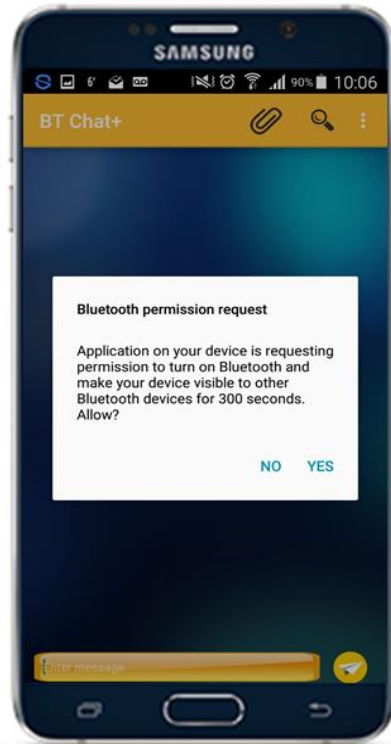
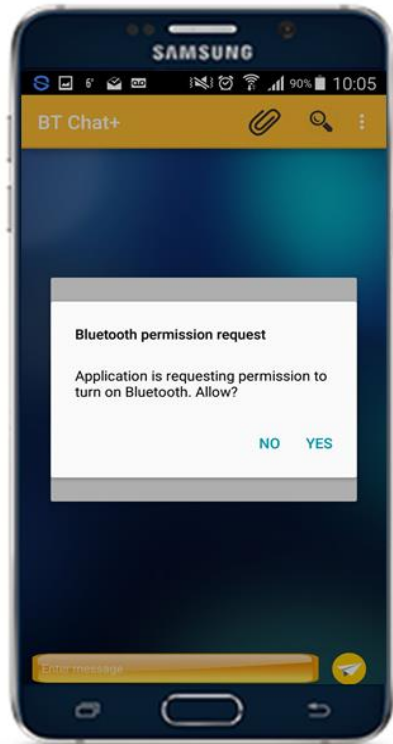
- Input

- User ID
 - Password
 - Confirm Password
 - User Full Name
 - Email ID

- Prerequisites
 - User ID must not be existing in local or central database (should not be already registered)
- Constraints
 - User ID cannot be blank
 - Password cannot be blank
 - Confirm Password cannot be blank
 - Password and Confirm Password must be same
 - User Full Name cannot be blank
 - Email ID cannot be blank
 - Email ID must be in proper format
- Use Case Scenarios
 - User should be prompted to input User ID, Password, Confirm Password, User Full Name and Email ID details
 - If User ID is empty, then an alert displaying relevant error message will be displayed to user
 - If Password is empty, then an alert displaying relevant error message will be displayed to user
 - If Confirm Password is empty, then an alert displaying relevant error message will be displayed to user
 - If Password and Confirm Password are not matching, then an alert displaying relevant error message will be displayed to user
 - If User Full Name is empty, then an alert displaying relevant error message will be displayed to user
 - If Email ID is empty, then an alert displaying relevant error message will be displayed to user
 - If Email ID is in incorrect format, then an alert displaying relevant error message will be displayed to user
 - On successful user creation, user will be directed back to “**Login**” screen for further operations
- Output



- Available Devices Screen
 - Input
 - Prerequisites
 - Constraints
 - Bluetooth functionality must be switched on
 - Use Case Scenarios
 - Available devices will be shown with different legends
 - User can click on row corresponding to any available device to start individual chat with the selected User
 - User can click on link to pair or disconnect selected device
 - Output



- Chat Screen

- Input

- Chat Text Box
 - Image Selection
 - Emoji Selection

- Prerequisites

- User must be connected to the selected Bluetooth device

- Constraints

- User must either type some text or select image or select Emoji before sending the message

- Use Case Scenarios

- User will be alerted in case if the selected device is unavailable or the connection to device is lost due to any reason
 - Text typed by user will be sent to the selected device. It will be also added to the Chat window of the user
 - Image sent by user will be sent to the selected device
 - User can read and reply to the messages received from other devices / user
 - User will receive notifications in case of new message arrivals

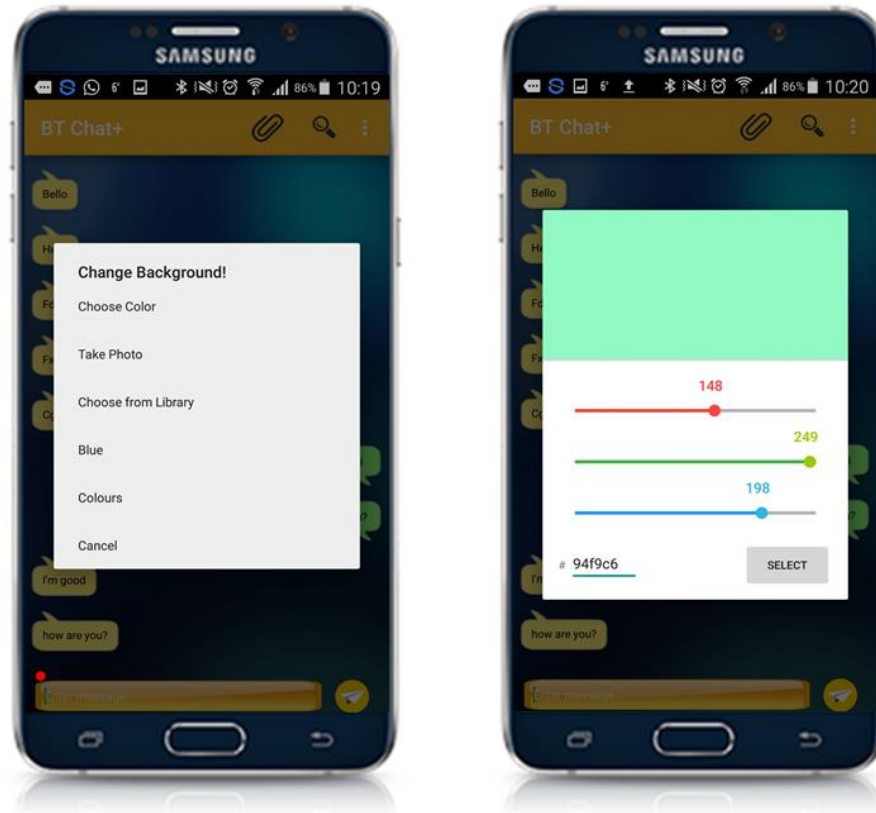
- Output



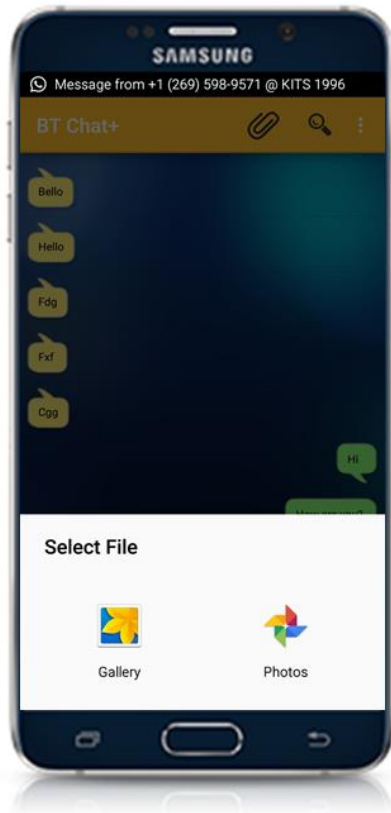
- Chat Screen If user already had chat history.



- Theme Setting Screen
 - Input
 - Instant image captured by Camera
 - RGB color palette
 - Predefined Themes
 - Prerequisites
 - Constraints
 - Use Case Scenarios
 - Output



- File Transfer Screen
 - Input
 - File to be transferred
 - Device to which file to be sent
 - Prerequisites
 - Constraints
 - Use Case Scenarios
 - Output



13. Test Cases

Sr. No.	Module	Test Case Id	Test Condition	Test Data	Expected Result	Actual Result / Description
1.	Login	Login 1	Check if User Name is blank	User Name=""	Toast Message will be displayed with text "User Name cannot be blank"	Toast Message gets displayed with text "User Name cannot be blank"
2.	Login	Login 2	Check if Password is blank	Password=""	Toast Message will be displayed with text	Toast Message gets displayed with text

Sr. No.	Module	Test Case Id	Test Condition	Test Data	Expected Result	Actual Result / Description
					"Password cannot be blank"	"Password cannot be blank"
3.	Login	Login 3	Check the Database unavailability (due to any reason like App is installed for the first time, database is corrupt, etc.)	Database unavailable	Database will be created automatically	Database gets created automatically
4.	Login	Login 4	Check if User Name exists in database	Unavailable user name	Toast Message will be displayed with text "User does not exist"	Toast Message gets displayed with text "User does not exist"
5.	Login	Login 5	Verify the Password	User ID Password	Toast Message will be displayed with text "Invalid Password"	Toast Message gets displayed with text "Invalid Password"
6.	Login	Login 6	Check the availability of paired Bluetooth devices	Bluetooth devices	Toast Message will be displayed with text "No Paired Devices Found"	Toast Message gets displayed with text "No Paired Devices Found"
7.	Create User	Create User 1	Check if User	User Name=""	Toast Message will be	Toast Message gets

Sr. No.	Module	Test Case Id	Test Condition	Test Data	Expected Result	Actual Result / Description
			Name is blank		displayed with text "User Name cannot be blank"	displayed with text "User Name cannot be blank"
8.	Create User	Create User 2	Check if Password is blank	Password =""	Toast Message will be displayed with text "Password cannot be blank"	Toast Message gets displayed with text "Password cannot be blank"
9.	Create User	Create User 3	Check if Confirm Password is blank	Confirm Password =""	Toast Message will be displayed with text "Confirm Password cannot be blank"	Toast Message gets displayed with text "Confirm Password cannot be blank"
10.	Create User	Create User 4	Check if Password and Confirm Password are same	Password ="abc" Confirm Password ="def"	Toast Message will be displayed with text "Confirm Password and Password are not same"	Toast Message gets displayed with text "Confirm Password and Password are not same"
11.	Create User	Create User 5	Check if User Full Name is blank	User Full Name=""	Toast Message will be displayed with text "User Full Name"	Toast Message gets displayed with text "User Full Name"

Sr. No.	Module	Test Case Id	Test Condition	Test Data	Expected Result	Actual Result / Description
					cannot be blank"	cannot be blank"
12.	Create User	Create User 6	Check if Email ID is blank	Email ID=""	Toast Message will be displayed with text "Email ID cannot be blank"	Toast Message gets displayed with text "Email ID cannot be blank"
13.	Create User	Create User 7	Check if Email ID is in correct format	Email ID="abc" or Email ID="abc@" or Email ID="abc@def"	Toast Message will be displayed with text "Email ID is in incorrect format"	Toast Message gets displayed with text "Email ID is in incorrect format"
14.	Create User	Create User 8	Check if User Name already exists	User Name="abc"	Toast Message will be displayed with text "Duplicate User Display Name already exists"	Toast Message gets displayed with text "Duplicate User Display Name already exists"
15.	Create User	Create User 9	Confirm if User is created successfully	User Name="abc" Password="def" Confirm Password="def" Email ID="abc@xyz.com"	Toast Message will be displayed with text "User created successfully"	Toast Message gets displayed with text "User created successfully"

Sr. No.	Module	Test Case Id	Test Condition	Test Data	Expected Result	Actual Result / Description
16.	Bluetooth Device Discovery	Bluetooth Device Discovery 1	Check if Bluetooth functionality is enabled or not	Bluetooth devices	A default dialog box requesting permission to switch on the "Bluetooth functionality" will be displayed	A default dialog box requesting permission to switch on the "Bluetooth functionality" is getting displayed
17.	Bluetooth Device Discovery	Bluetooth Device Discovery 2	Check the availability of paired Bluetooth devices	Bluetooth devices	Toast Message will be displayed with text "No Paired Devices Found"	Toast Message gets displayed with text "No Paired Devices Found"
18.	Bluetooth Device Discovery	Bluetooth Device Discovery 3	Check if "Paired Devices" and "Scan Devices" buttons are enabled	Bluetooth functionality Status	Buttons "Paired Devices" and "Scan Devices" must be enabled only if Bluetooth service is enabled	Buttons "Paired Devices" and "Scan Devices" are enabled only if Bluetooth service is enabled
19.	Bluetooth Device Discovery	Bluetooth Device Discovery 4	Check if Bluetooth functionality status is displayed	Bluetooth functionality Status	A TextView will display the Bluetooth functionality status Off (with "Bluetooth is off" in Red color) or On (with "Bluetooth	A TextView displays the Bluetooth functionality status Off (with "Bluetooth is off" in Red color) or On (with "Bluetooth is on" in Green

Sr. No.	Module	Test Case Id	Test Condition	Test Data	Expected Result	Actual Result / Description
					is on" in Green color)	color). The message is toggled depending upon the Bluetooth functionality status
20.	Chat Screen (without Login)	Chat Screen 1	Check if Bluetooth functionality is enabled or not	Bluetooth devices	A default dialog box requesting permission to switch on the "Bluetooth functionality" will be displayed	A default dialog box requesting permission to switch on the "Bluetooth functionality" is getting displayed
21.	Chat Screen (without Login)	Chat Screen 2	Searching available Bluetooth devices		A new screen displaying a list of Bluetooth devices will be displayed by clicking on Scan button	A new screen displaying a list of Bluetooth devices is displayed by clicking on Scan button
22.	Chat Screen (without Login)	Chat Screen 3	Check the availability of paired Bluetooth devices	Bluetooth devices	Toast Message will be displayed with text "No Paired Devices Found"	Toast Message gets displayed with text "No Paired Devices Found"
23.	Chat Screen (without Login)	Chat Screen 4	Pairing the device and initiating the		Selected Bluetooth device can be paired (if	Selected Bluetooth device is paired (if

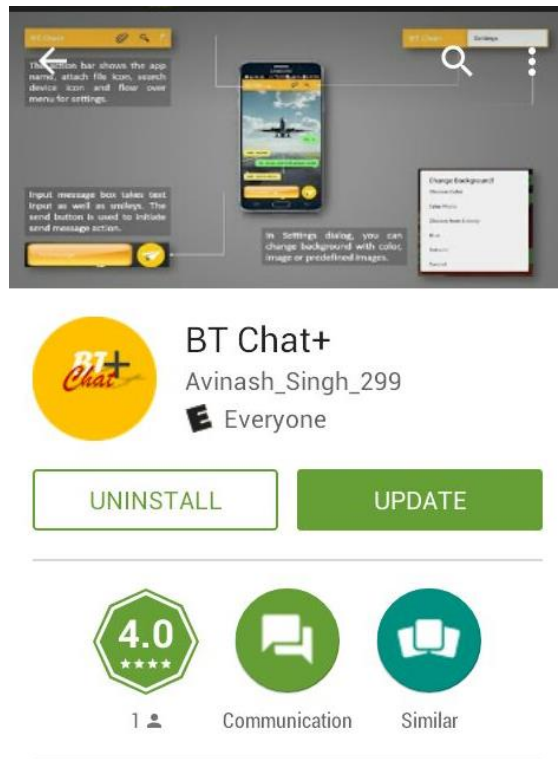
Sr. No.	Module	Test Case Id	Test Condition	Test Data	Expected Result	Actual Result / Description
			communication		available) and chat can be started	available) and chat is started
24.	Chat Screen (Setting)	Chat Screen 5	Changing the background of the chat window		Select the menu from the screen. Dialog opens with options to Change Background Options <ul style="list-style-type: none"> • Choose Color • Take Photo • Choose from library • Blue • Colours • Cancel present 	Select the menu from the screen Dialog opens with options to Change Background Options <ul style="list-style-type: none"> • Choose Color • Take Photo • Choose from library • Blue • Colours • Cancel present
25.	Chat Screen (Settings)	Chat Screen 6	Changing the background of the chat window to chosen color from dialog		On click of choose color, dialog opens with Colors to pick (HTML). Background color changes to the selected color	On click of choose color, dialog opens with Colors to pick (HTML). Background color changes to the selected color

Sr. No.	Module	Test Case Id	Test Condition	Test Data	Expected Result	Actual Result / Description
26.	Chat Screen (Settings)	Chat Screen 7	Changing the background of the chat window to the photo taken using application		On click of Take Photo gives options to complete action using camera. The photo is set as the background image.	On click of choose color, dialog opens with Colors to pick (HTML). Background color changes to the selected color
27.	Chat Screen (Settings)	Chat Screen 8	Changing the background of the chat window to the photo chosen from library	Images in Gallery	On click of Choose from Library, Select File Option is given. The user can browse through gallery and set the background image.	On click of Choose from Library, Select File Option is given. The user can browse through gallery and set the background
28.	Chat Screen (Settings)	Chat Screen 9	Changing the background of the chat window to Blue and colors option		On click of Blue, Colors options the background is set to the corresponding images	On click of Blue, Colors options the background is set to the corresponding images
29.	Chat Screen (Settings)	Chat Screen 10	Changing the background of the chat		On click of cancel button , no change to the	On click of cancel button , no change to the

Sr. No.	Module	Test Case Id	Test Condition	Test Data	Expected Result	Actual Result / Description
			window cancel option		background and focus to the chat window	background and focus to the chat window

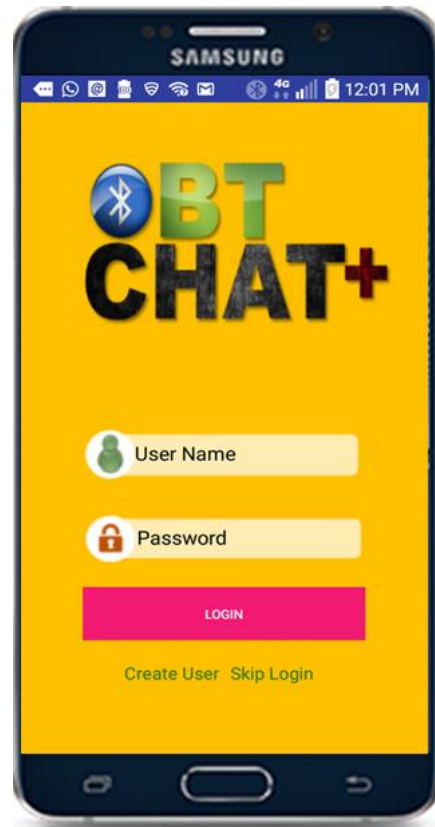
14. User Manual

- Download BT Chat+ from Google Playstore
<https://play.google.com/store/apps/details?id=spring16.cs442.com.obtchat> 10



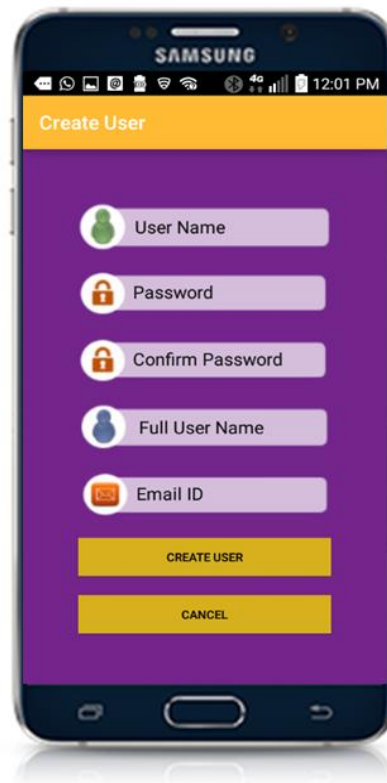
BT Chat+ is a Bluetooth Chat App
helps users to communicate without
Internet.

- Login Screen



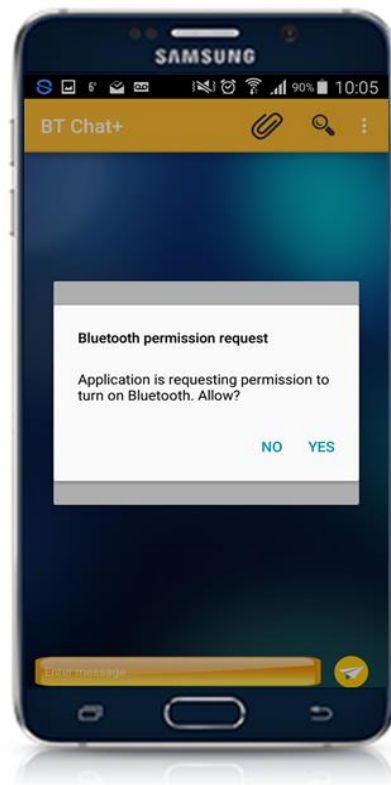
- Login Screen can be used for 3 different purposes
 - Logging and using the application
 - Creating New User
 - Chat on ad-hoc basis (without logging into application)
- Logging and using the application
 - Input the “**User name**”
 - Input the “**Password**”
 - Click on “**Login**” button
 - If the User Name and Password matches the with the credentials of a registered user; Login will be successful, else credentials can be entered and try logging again
 - If the login is successful, user will be taken to “Chat” screen to start the chat
 - Please refer to “[Chat](#)” Screen for further details
- Creating New User
 - User can click on “**Create User**” link to go to “**Create User**” screen and create a new user in database
 - Please refer to “[Create User](#)” Screen for further details
- Chat on ad-hoc basis (without logging into application)
 - User can click on “**Skip Login**” link to go to “**Chat**” screen directly to start a chat on ad-hoc basis
 - Please refer to “[Chat](#)” Screen for further details

- Create User Screen

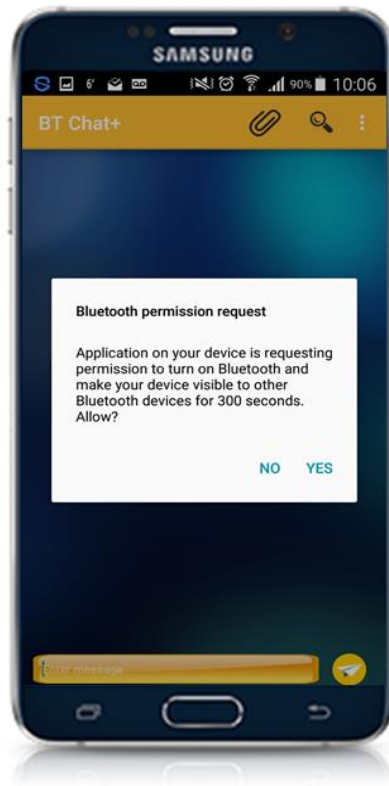


- User can click on **“Create User”** link on **“Login”** screen to come to **“Create User”** screen
 - Input the **“User name”**
 - Input the **“Password”**
 - Input the **“Confirm password”**
 - Input the **“Full User Name”**
 - Input the **“Email ID”**
 - Please note that all the above fields are mandatory. If any of the fields is missing, user would be alerted appropriately
 - Email ID must be entered in proper format
 - Once the user is created successfully, is redirected to **“Login”** Screen with the entered credentials in Create user screen
- Chat Screen
 - User can either click on **“Skip Login”** link on **“Login”** screen or login to the application to come to **“Chat”** screen
 - Permissions for accessing the Bluetooth
 - If Bluetooth is off; user is asked for permission to turn on the Bluetooth
 - If user selects Yes, Bluetooth is turned on.

- If user selects No, user is returned to the “Chat” screen; however, User cannot chat with anyone



- If Bluetooth is switched On, user is asked for permission to make device visible for other users for 3000 seconds



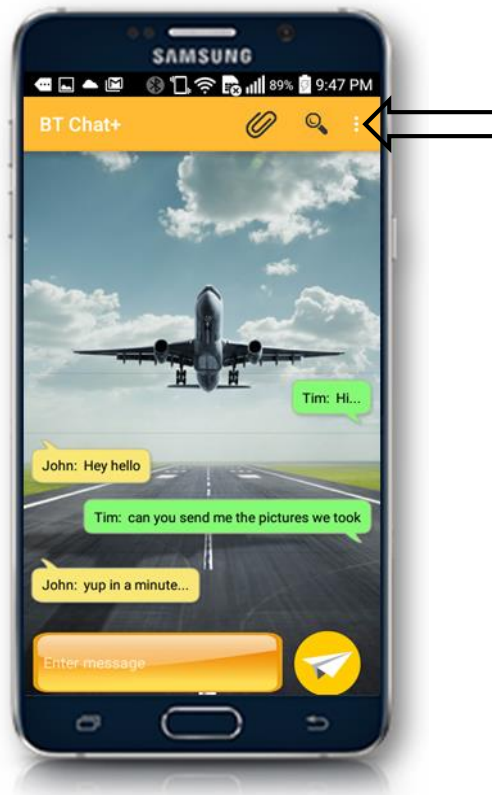
- Scan and pair devices
 - Click on the highlighted search device icon on the action bar
 - All the available and paired device will be shown



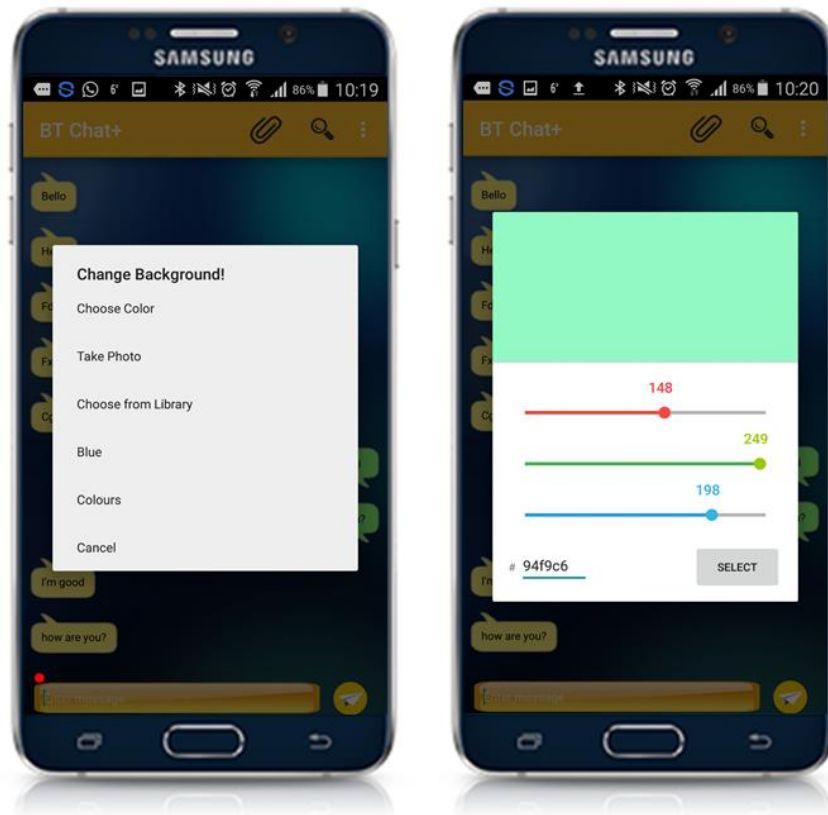
- On successful pairing user can start chatting with the other user



- Settings



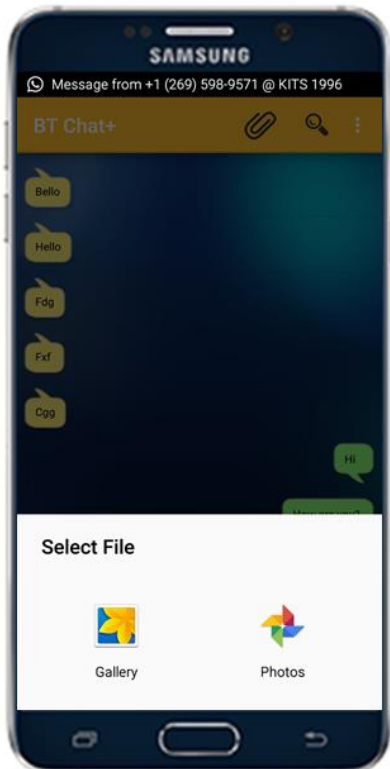
- Click on the overflow menu for settings, the below pop up opens.
- User can set the “**Chat**” screen background with below options
 - RGB Palette
 - Instant Photo using the camera phone
 - Image from Gallery
 - Preset Images
- Click on “Cancel” button to close the pop up screen; if cancelled no changes are made to the background of the “Chat” screen



- Send Messages and smileys
 - Click on “**Send**” button to send messages and smileys via Bluetooth to the participant
 - User can view both (sent and received) messages in the chat window
 - Chat history is stored if the user has logged into the chat screen with his user credentials



- Transfer Image Files



- Click on “**Attachment**” button, it opens various options for selecting a file to be transferred
- User can select any image file for transferring
- Select the Bluetooth device name to which the selected file is to be sent
- Participant will receive a confirmation to receive image from user. Once the participant confirms, the image transfer will start

15. Revision History

- Phase 4
 - Optimizing screens look and feel
 - Login Screen
 - Create User
 - Chat Window

16. App comparison

- Apps compared
 - Bluetooth Chat
 - Smart Bluetooth Chat
 - Bluetooth Messenger
 - BT Talk
- BT Chat+ Advantages over apps compared
 - User Friendly
 - Data Persistence
 - User Profiling
 - Image Transfer