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● Introduction

1.1 Purpose

The goal of this document is to provide support information on WeAllChat. It will attempt to explain the functionality of the product and the features it provides.

Development Team(Developers/Scrum Master: Team 2): Developers who can review project's capabilities and more easily understand where their efforts should be targeted to improve or add more features to it (design and code the application – it sets the guidelines for future development).

Product Owner(Instructors: Prof. Weintraub, Sibendu Dey, Vaibhav Shekhar Dave): Supervisors who can check in with the development team using this guideline to get a good grasp of how the project progresses. To ensure the Dev team sticks to the standard and meet their goals for each sprint.

Stakeholders/Users: End-users of this application who wish to read about what this project can do.

1.2 Scope

Product WeAllChat. WeAllChat is a multi-platform chatting application which allows users to send real-time messages/emojis to each other or groups effectively and securely.

1.3 Definition, acronyms, and abbreviations

Admin – Administrator.

PM – Project Manager.

HTML – HyperText Markup Language.

XHTML – extensible Hypertext Markup Language.

HTTP – Hypertext Transfer Protocol.

Msg – Message.

Doc – document.

Circle: Circle is formed when a user is connected to one or more users. The connected users are called "Friends". The process which a user befriend with other users is called "Follow". The circle of every individual user is different since every individual user has different friends, but circles can have overlaps since two users can have one same friend.

User Account: A user account is a location on a network server used to store a

computer username, password, and other information. A user account allows or does not allow a user to connect to a network, another computer, or other share. Any network that has multiple users requires user accounts.

Mobile Operating System: A mobile operating system, also called a mobile OS, is an operating system that is specifically designed to run on mobile devices such as mobile phones, smartphones, PDAs, tablet computers and other handheld devices.

Database: A database is a collection of information that is organized so that it can easily be accessed, managed, and updated. In one view, the database can be classified according to types of content.

Entity relationship: An entity-relationship model, also called an entity-relationship (ER) diagram, is a graphical representation of entities and their relationships to each other, typically used in computing in regard to the organization of data within databases or information systems.

User case: In software and systems engineering, a use case is a list of actions or event steps, typically defining the interactions between a role (known in the Unified Modeling Language as an actor) and a system, to achieve a goal. The actor can be a human or other external system.

DFD: A data flow diagram (DFD) is a graphical representation of the “flow” of data through an information system, modeling its process aspects. A DFD is often used as a preliminary step to create an overview of the system, which can later be elaborated.

1.4 References

https://www.wechat.com/en/

https://en.wikipedia.org/wiki/WeChat

http://www.uianduxdesign.com/ux-designs/whatsapp-user-interface-and-user-experience-design.html

https://www.whatsapp.com/

https://www.geeksforgeeks.org/a-group-chat-application-in-java/

1.5 Overview

The remaining sections of this document provide a general description, including characteristics of the users of this project, the product's hardware, and the functional and data requirements of the product. The general description of the project is discussed in section 2 of this document. Section 3 gives the functional requirements, data requirements and constraints and assumptions made while designing the WeAllChat. It also gives the user the viewpoint of the product. Section 3 also gives the specific requirements of the product. Section 3 additionally discusses the external interface requirements and outlines a detailed description of functional requirements. Section 4 is supporting information.

● Overall Description

2.1 Product perspective

WeAllChat does not work independently. It works together with the internet and the mobile operating system and its hardware services.

- Communication interface

  WeAllChat communicates with its database systems via a communication network. Software interface: the messages sent via the communication network are specific to the target's same software (WeAllChat) of his or her electronic device. Hardware interface: the software will run on the mobile system with the help of its hardware.

- User

  Once the application is installed, it goes through the user's phone book, and upon consenting, sends a push invitation to connect and chat on WeAllChat. A user enters his or her phone number, and can then change the phone name.

2.2 Product functions

Users can:

- Be individuals or join one or more groups
- Invite other users to join their groups
- Log into the system by creating a username and password, or using a husky account
- Have personalized icons and change icons at any time
- Know if their friends are in the same group
- Set their status as online, invisible, or do not disturb
- Search for other users/groups
- Follow other users/groups
- Send messages/emojis to other users and reply to messages
- Send messages/emojis in a group and reply to messages
- Purchase services where someone who is the originator of a message could find out where it goes
- Search message history for a particular piece of message/emoji.
- In a group, choose to reply to the message-sender or to a subset of the group

- Keep their messages stored for a given period of time
- Purchase services for keeping their messages stay longer
- Type English as the default language, more languages such as Spanish, French and Chinese will be added in the future
- Attach video, image, and music links to messages
- Pay for one-time pad service, meaning that all messages sent and received on this particular pad will be self-destructed after a given period of time
- Recall/delete the message
- See messages with time-stamps queued up in the correct order that other users send them

Groups can:

- Have one or more users to become moderators
    - Moderators can evict someone or block someone from sending messages. Moderators have the right to approve or disapprove the invitation group members send to other users/groups. Only moderators can accept the invitation to merge their own group with another.
- Set password for users to join
- See replies from all their members

2.3 User characteristics

Users with a middle-school education level should be able to handle most of WeAllChat's functionalities after reading the user's guide.

2.4 Constraints

- User privacy constraint
    - Developers should abide U.S. government rules on communications, which means any message(including encrypted and recalled ones) appearing on the application goes into the message database. Senders can be tracked down by IP addresses. Messages on a one-time pad should be imported into the database as well. Most of the time the privacy will not be violated unless the government asks for cooperation on people of their interest. The people of interest cannot be able to tell someone is watching them.
- Internet and hardware constraint

    - Create WeAllChat account by entering and verifying the mobile number. In case of the network not available/If not able to exchange data over network, prompt error message “Connection not available”.
    - In case of not able to access the services of mobile hardware, for example, camera is not working, prompt error message, “Can’t access camera”.
    - Lock Account: If users violate WeAllChat policies/In case of spamming wrong passwords: For every consecutive spam after the first wrong password, increase spam counter by 1. Lock account when counter reaches 5.

2.5 Assumptions and dependencies

- Network and data availability
- Power supply
- Better connection for exchanging data over network
- Availability of mobile services

2.6 Apportioning of requirements

- The system should implement a parental control feature, watching and flagging messages for inappropriate content. For example, this could be vulgarities, phrases that suggest violence, sexual imposition, bigotries of many sorts. Users would pick the type of filter they prefer and developers will filter this at our server. The user should be able to pick whether any content failing to pass this filter is blocked, delivered with the offensive material marked out, or if it's simply flagged. Developers want to be able to respect any preferences their customers have.
- The system should allow users to create private messages. Private messages may not be forwarded or cut and pasted. They must be encrypted during transport and storage.
- The system should allow keywords (aka hashtags) in messages so users may categorize them.
- The system should have an option to schedule meetings/events and ask for RSVPs.

● Specific requirements

3.1 External interfaces

3.1.1 User Interfaces

1) The User interface of this WeAllChat will be the Command line. Users are expected to have input arguments in the command line in order to properly use the system.

3.1.2 Communication interface

2) Users must have an internet connection to be able to download and use the application.
3) The system shall be deployed at the AWS cloud server.
4) The service shall be implemented on Tomcat 9.0.

3.2 Functional Requirements

3.2.1 Sending message

1) The user must be able to send text messages to other users
2) The user shall be able to send messages to offline users in their contact list.
3) The service shall add a timestamp to the sent message based on the sender's local time.
4) The users may have the option to send a message that will be deleted in five seconds after it has been read.
5)

3.2.2 Receiving message

1) The system must provide service for the user to receive text messages in their devices.
2) The system shall record all the received message when the user is offline.
3) Stored offline messages shall be delivered to the destination user at the moment that the user logs into the service.
4) Stored offline messages shall be delivered to the destination user in the order they were sent. Stored offline messages that have earlier sent time shall be delivered to the destination user first.

3.2.3 Delete/recall message

1) The system user shall be able to recall/delete a sent message.
2) The system shall call back the delivery of the recalled message if it has not been read.
3) The system may delete the recalled message from the receiver(s) side if it has been read.

3.2.4 Reply group message

1) The system shall display a drop-down menu providing options of “reply to all” or “reply to the sender” or “reply to a subset of the group”.
2) The system shall allow the user to select among the three reply method: “reply to all”, “reply to the sender” or “reply to a subset of the group”.
3) If the user chooses “reply to all”, the system shall display the reply to all members in this group.
4) If the user chooses “reply to the sender”, the system shall only display the reply to the sender of this group message.
5) If the user chooses “reply to a subset of the group”, the system shall display all the subgroups within this group. And the system shall allow the user to select which subgroups to reply to. The system shall only display the reply to members of the selected subgroups.
6) If the user does not specify the way to reply, the system by default shall display the reply to all the members in the group.
7) The system may provide service for the user to filter out-group message replies.
8) The system may provide service to delete the reply upon being read by a receiver. The system may provide this service as an option before the user sends out replies to the group message.

3.2.5 Support media in message

1) The system must support the display of graphical representations of emoticons and emojis.
2) The text representation for the emoticons and Emojis shall be standardized in order to enable interoperability between different clients.
3) Users must be able to send audio and video as attachments of the message.
4) The system must support these formats of audio: mp3, wav.
5) The system must support these formats of video: mp4, avi, gif.

3.2.6 Message Storage

1) The system must store all the messages in the database.
2) The system must not permanently delete any message.

3.2.7 Expose message to the user

1) As default, messages sent to a user may be available to view for only 180 days, or for a total of 50 times.
2) The system may provide service for the user to extend the viewing period/times of their received messages.

3.2.8 Support different character sets

1) The system must support character sets for English, Spanish and Franch.
2) The system shall support character sets of other known languages(e.g. Chinese, Japanese, Korean, Russian, etc) to allow chatting in the user's native languages.

3.2.9 Translate message

1) The system may be able to translate messages between different languages.
2) The system may be able to allow the user to choose a default language of their own, and translate all the incoming messages into this default language and display the translated result to the user when the user is viewing this message.

3.2.10 Security

1) The system shall provide the user with service to encrypt their messages using standard encrypted channels.
2) The system may provide service to encrypt users' messages using one-time pad technique.
3) The system shall not need to decrypt anything that is encrypted.

3.2.11 Find people connected within circle

1) The system shall find the groups admin is in
2) The system shall display all users in the groups to a list, except the users choose not to be found.
3) Each user only appears once in the list.

3.2.12 Find other people or groups

1) The system shall verify if the username or group name entered exists in the system
2) If the user or group does not exist, tell the admin to input a correct username or group name

3) If the user or group name is correct, check if the setting of the user or group is not to be found
4) If the setting is not to be found, then tell the admin the user or group does not want to be disturbed
5) If the setting is to choose to be found, then admin can check info of user or group and start a conversation with username

3.2.13 Follow other users or groups

1) The system shall verify if the username or group name entered exists in the system
2) If the user or group does not exist, tell admin to input a correct username or group name
3) If the user or group name is correct, check if the setting of the user or group is not to be found
4) If the setting is not to be found, then tell admin the user or group does not want to be disturbed
5) If the setting is not not to be found, then admin can send a request to the user or group
6) If the user or group accept the request, then admin can follow the user or group

3.2.14 Forward a media message

1) A media message like a picture or gif could be forwarded to another user
2) admin need to select the users to be forwarded

3.2.15 Find the originator a media message

1) Select a message in a conversation
2) Track the media message with the earliest timestamp

3.3 Performance requirements

1) The system shall support at least 500 simultaneous users using the services.
2) The system shall send messages within 5 seconds.

3.4 Constraints

1) The project shall use Java 8 and Junit 4
2) The project shall be built based on the existing Prattle system.
3) The first release should be available by 12/10/2019

4) The team shall use Jira, Jenkins/Sonarqube and the Github server for quality control.

3.5 Software system attributes

3.5. 1Reliability

1) The system shall store a backup of the messages on remote database servers to enable recoverability.
2) The system shall be able to all the old communication logs out of message database.go

3.6 Other requirements

3.6.1: compliance requirement:

1) System service shall subject to US rules and complies with US regulations.
2) the System must provide support for CALEA.
3) The system must be able to send copies of communication traffic between specific parties, specifically, the IP address and communication logs to the government agency

3.6.2: other requirements:

1) The SRS shall adhere to IEEE std. 830-1998

1. Users should not be able to send messages be logging**(edge case, focus on quality**)
2. Achieve end-to-end messaging(first achieve basic functionality)
3. Design pattern
4. diagram(class diagram)
5. User should know if they using our app correctly
6. Deploy the system on the web