IT314 - Software Engineering

Secure Chat Platform

Project Management Document(PMD) - 03

Assigned TA: Kavan Sir

Group - 62

Group Members:

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1. Activity List

(a) Problem Formulation

i) Reading relevant background information

- As we are living in the modern era, the use of technology and especially the use of the data sharing system, the chat platforms are most used/popular amongst the people, though the most of the chat platforms are not that much secured, at least for some of the existing systems out there.

- In China, the biggest complaint from messaging app users **(40%)** is the lack of security, which may reflect worries about Internet surveillance, as well as in-app transactions that are more common in China compared to the U.S. **15%** of U.S. respondents were also worried about there being enough security.

- The acceptability of any such systems heavily based on the faith of the user in the system.

- Now the problem is most of the User don't trust on any new such systems, the Users are worried about the personal data which may be leaked.

- So comparing all the chat platforms, it shows that users may doubt the security of their data which is being stored by these chat platforms.

- **There are several other concerns from the users;**

  - **Discontinuous Security Checking**
  - **Manually encryption of user's data**
  - **Comprehensive analysis of the codebase is not public**

ii) Understanding and documentation the requirements

- Making the encryption and decryption of the messages more efficient
- Verified user login details and other account related activities
- Protected user data and verification passwords

(b) Designing the solution, documentation

- Users need a secure chat system which can be used to share information, and make queries among others.

- Chat is to participate in asynchronous text, video, audio or multicast exchange of remarks with one or more people over a computer network.

- So, there is a need to ensure confidentiality of communication to breed honest and frank chatting free from fear of data security and breach of privacy.

- So, we will be using RSA encryption and decryption method to provide end to end encryption of user's messages.

  - **The user data and messages would be stored in a database in an encrypted format.**
  - **automatic key updating for end-users using encryption algorithms (integration of algorithms).**

(c) Relevant learning

- Other chat systems uses two-step verification, to verify user accounts and activity and to maintain the integrity of their services and to improve data security.

- WhatsApp uses end-to-end encryption to protect all communication on its platform.
- These encryption keys not only make it impossible to decrypt messages, but they also prevent third parties and even WhatsApp from accessing messages or calls.

- We learned about RSA public key system whose security is based on, the difficulty of the large number prime factorization, which is a well-known mathematical problem that has no effective solution.

- RSA public key cryptosystem is one of the most typical ways that most widely used for public key cryptography in encryption and digital signature standards.

(d) Coding and Testing

- Implemented basic UI and homepage and tested.

- All the codes and documentation will be on GitHub so in order to access the codes you can access it through git.

- All the details for the testing of a function or a unit will be available in the code and it will also describe how we will test it. The Unit tests will be performed by the testing team. Make sure that the code written by a programmer is testable.

(e) Documentation

- The Documentation should be maintained by the person that writes the code and a User, guide will also be maintained which will help with the functionalities provided by the platform.

- The Documentation is available on the GitHub and if someone creates a part of the code than he should create the documentation for that part of the system.

(f) Testing

- In this section developer team need to check or testing of all functionalities in given system.
- This is all responsibilities of developer team that how to take input from user and give valid output for input.

(g) Reviews

- For the bug and error free optimized web application reviews are very helpful.
- For review, some online application like google classroom and moodle can help so that we achieve optimized application. The reviews should have taken from other academic authority

2. Project Plan

For each activity, your estimated start date, end date, responsible person(s).

Activity	Start Date	End date	Responsible persons
Reviews and feedbacks	**29/04/22**	**02/05/22**	**All members**
Debugging and improving functionalities	**12/05/22**	**15/05/22**	**Nilesh, Yash M, Yash V**

3. Testing Strategy

a. For each requirement, test transactions, expected results

- **User Registration / login**

  Register new user

  Date: 02/04/22
  Responsible Person: Nilesh, Yash V, Yash M

  Input: email, password
  Output: successful

  Login / Authentication

  Date: 04/04/22
  Responsible Person: Nilesh, Yash V, Yash M

  Input: email, password
  Output: chats / history

❖ **Profile**

Edit Profile

Date: 06/04/2022
Responsible Person: Bhavya Shah, Harsh Kacha, Shubham Chudasama

Input: Name, id, phone number
Output: Showing profile with updated data

❖ **Group Features**

Making Groups / Adding Members

Date: 10/04/22
Responsible Person: All members

Input: photos, group name, group members
Output: showing Group created

Removing Members

Date: 11 / 04 / 2022
Responsible Person: All members

Input: Members info
Output: showing members after removed members

❖ **Calling Features**

Audio / Video calling

Date: 20/04/22

Responsible Person: Nilesh, Yash M

Input: info. Of a member to be called to
Output: Called successfully

b. Test cases for the design

- All buttons are working fine
- All the Audio / video files are being sent successfully
- All the chats are being stored into the database successfully

c. Test cases & expected results for integration

i. Module Integration
ii. User interface Integration

d. Test data, expected results for unit testing

4. Any other special activities and an appropriate breakup with estimation, as recommended by the standard fixed.