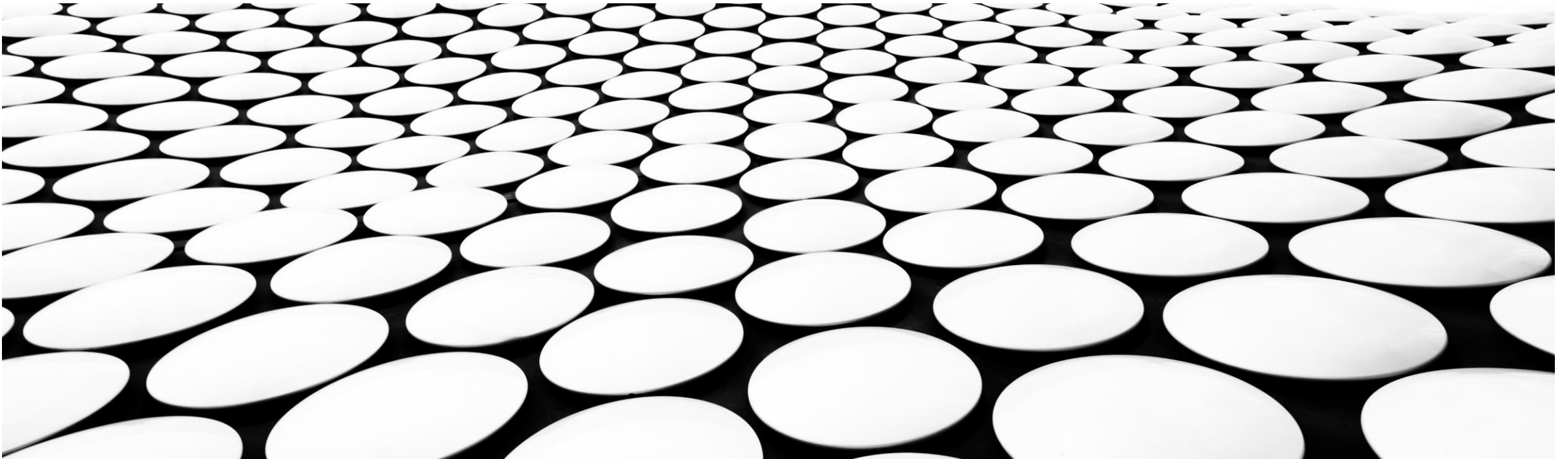

LOCKTALK – 3A04 DELIVERABLE 4

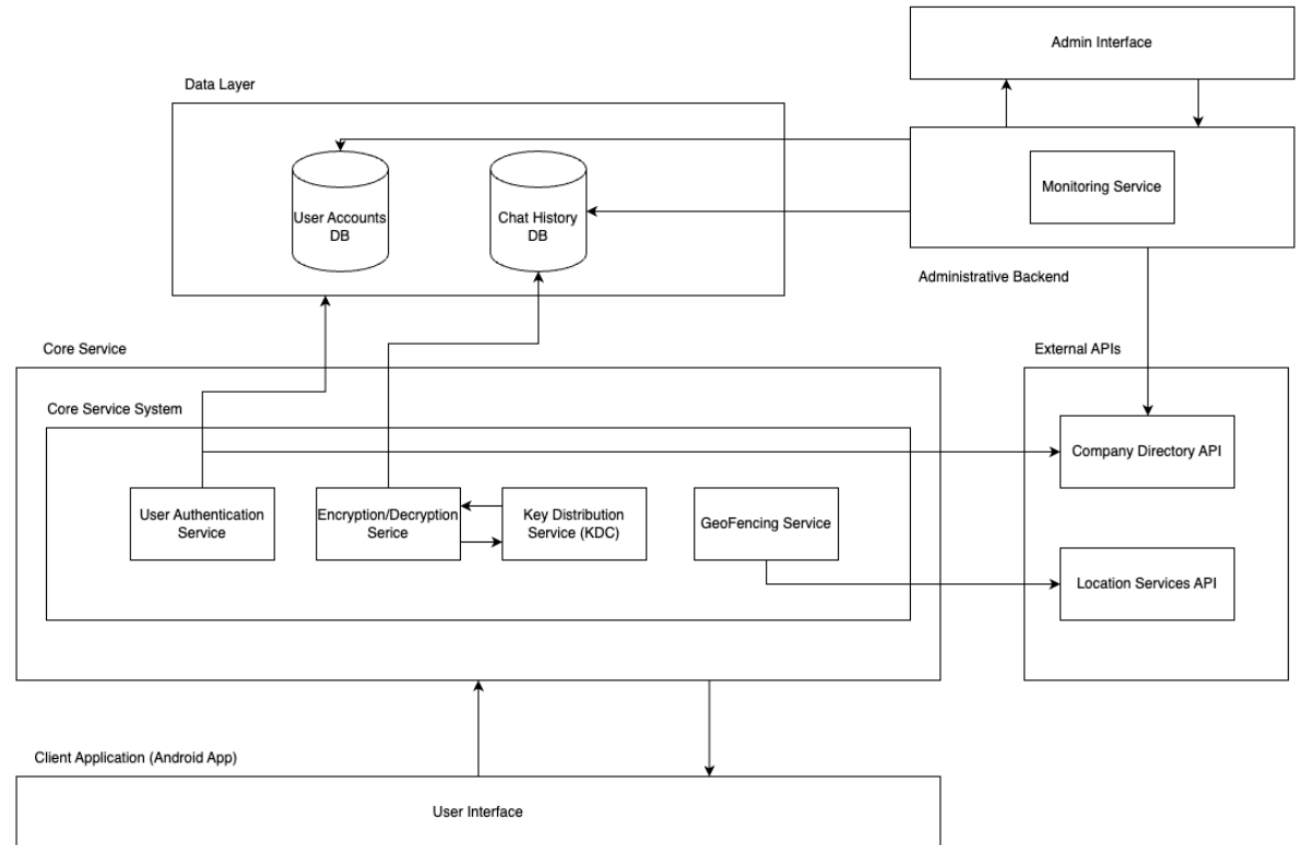
[TARNVEER TAKHTAR, ARYAN PATEL, AKRAM HANNOUFA, MATTHEW BRADBURY, ALEX DAMJANOVSKI](#)



SYSTEM DIAGRAM

Components:

1. Client Application (Android App)
2. Key Distribution Centre (KDC) Server
3. Authentication Server
4. Database/Storage
5. Administrative Backend



KDC SERVER

- Each employee has a kdcKey generated for them
- When keys mismatch between employees, an error is displayed

```
Email: "tarnveer@company.com"
FCMToken: "eQ6XVi1sQr6fhf3E98OqE2:APA91bF
VC2BKthd6ZW5llhFErYlsq8Asm5N68
Zl8o94X8J3-9q"
First_Name: "Tarnveer"
Last_Name: "Takhtar"
Org: "oi5LZt6o1iTGc7DqbQgx"
kdcKey: "182205"
userID: "5gE55QGx1wgHccynYuf1YHE7KWn2"
```

```
// KDC keys match, proceed to the Chat activity
if (currentUser.getKdcKey().equals(emp2.getKdcKey())) {

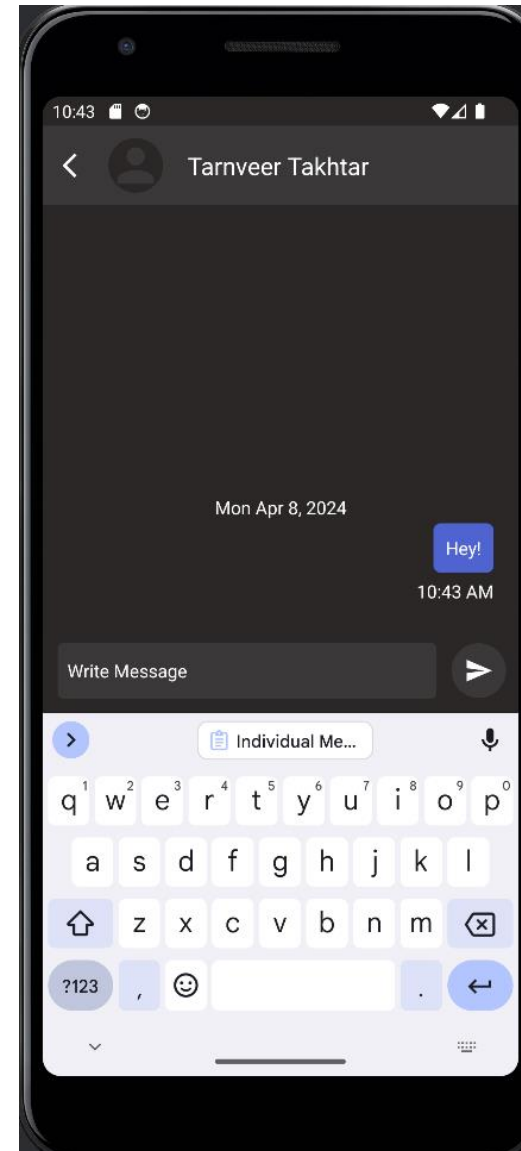
    Intent intent = new Intent(context, Chat.class);
    GeneralFunctions.passuserinfo(intent, emp2);
    intent.setFlags(Intent.FLAG_ACTIVITY_NEW_TASK);
    PeriodicWorkRequest.Builder builder = new PeriodicWorkRequest.Builder(
        KdcCodeWorker.class, repeatInterval: 1, TimeUnit.HOURS)
        .setInitialDelay(duration: 1, TimeUnit.MINUTES); // Start immediately

    PeriodicWorkRequest workRequest = builder.build();
    WorkManager.getInstance().enqueue(workRequest);
    context.startActivity(intent);
} else {
    // KDC keys do not match, handle the case (e.g., show an error or log out)
    handleKdcKeyMismatch();
}
```

PRODUCT FUNCTIONS

User Messaging Service

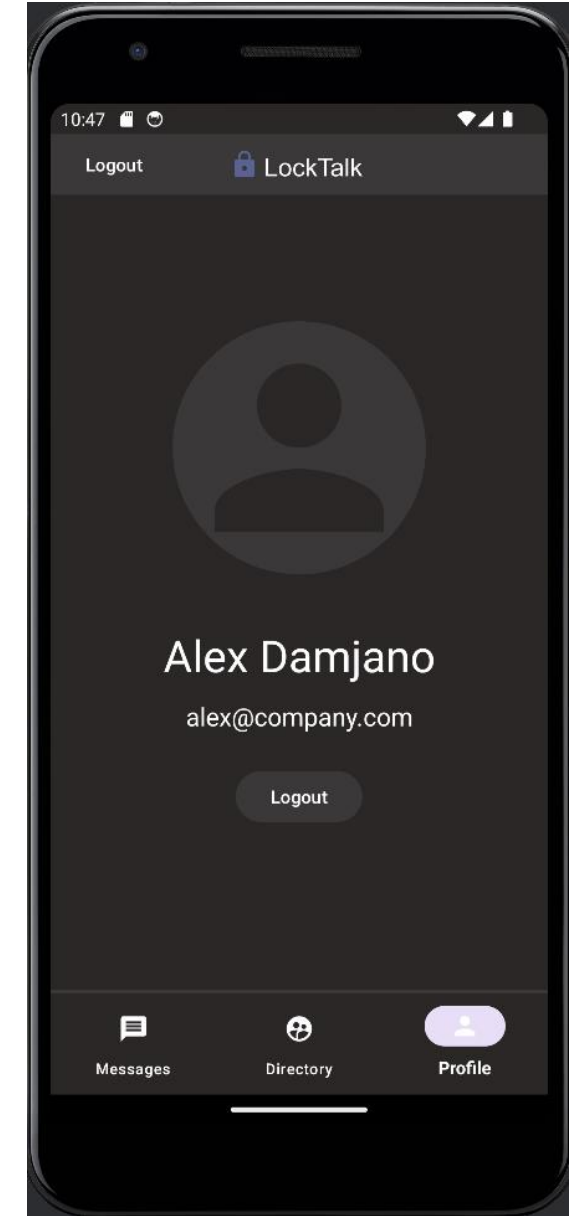
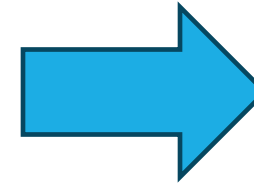
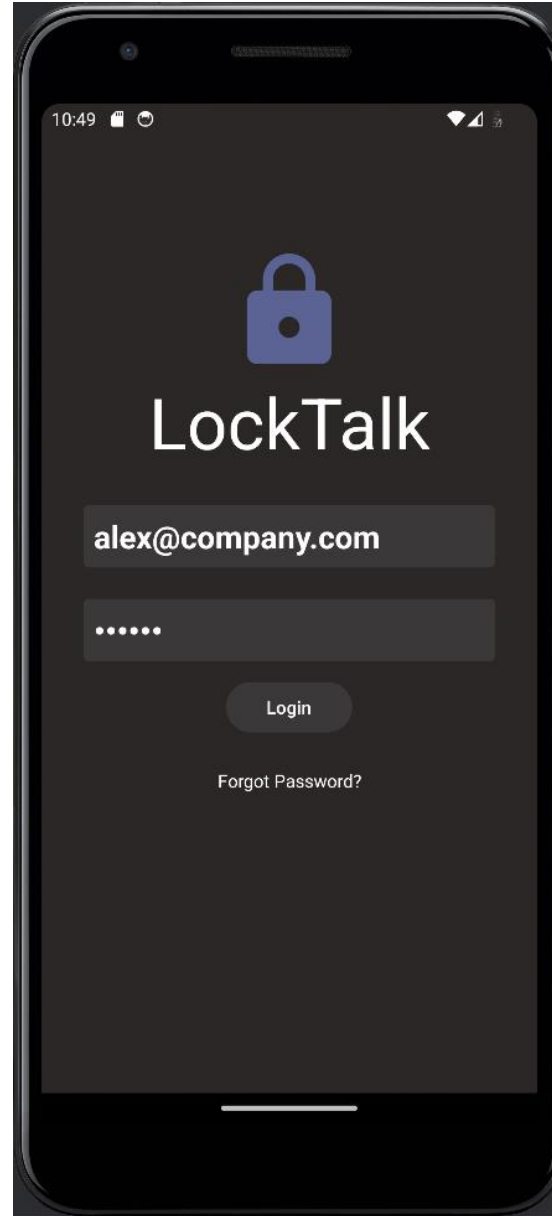
- Individual Messaging
 - Allow users to send private messages to each other
- Secure Chat Logs
 - Maintains a record of all communications within the platform
 - Encrypted and stored on Firestore DB



PRODUCT FUNCTIONS

Account Management

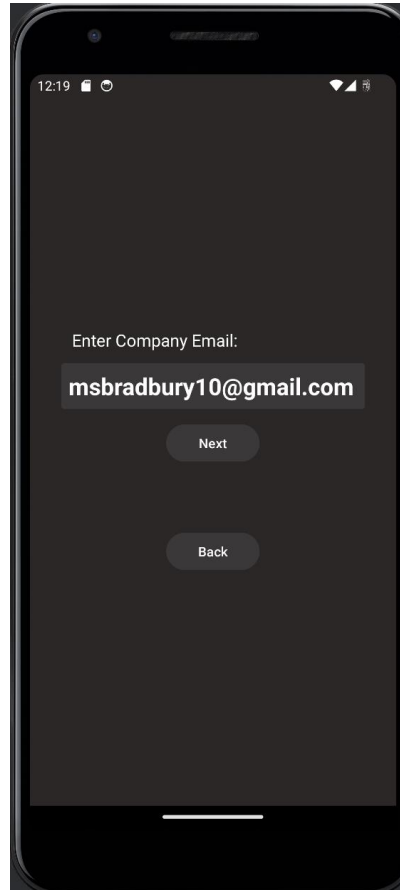
- Create Account
 - Enables new users to register for the service
- Authentication
 - Manages user login and ensures that access is restricted to authorized users only



PRODUCT FUNCTIONS

Forgot Password

- Password Reset
 - Enables users to reset password through registered email account



Hello,

Follow this link to reset your locktalk-e2422 password for your msbradbury10@gmail.com account.

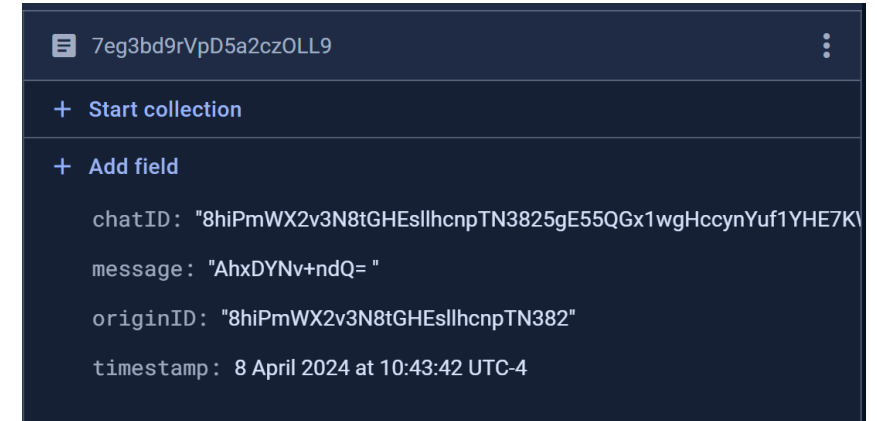
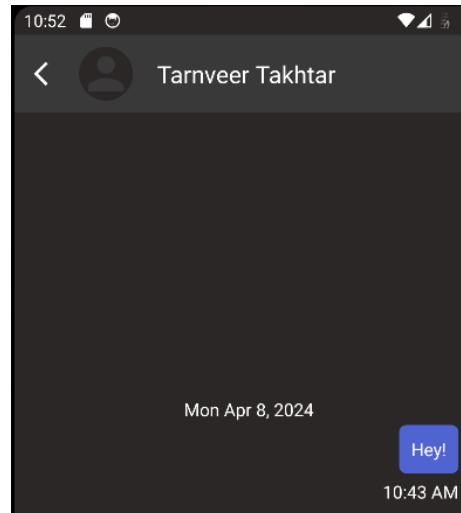
https://locktalk-e2422.firebaseio.com/__/auth/action?mode=resetPassword&oobCode=uN3SS7LQmxgMcNJFp338uwkAAAGOvoGFkg&apiKey=AlzaSyDGO3WldM029CdgfKL62R5TpF3kv-kTtZ4&la

PRODUCT FUNCTIONS

Encryption Service

- Symmetric-Key Crypto-System (SKCS)
 - Secures messages with a symmetric encryption algorithm to ensure confidentiality and integrity
- Blowfish Algorithm

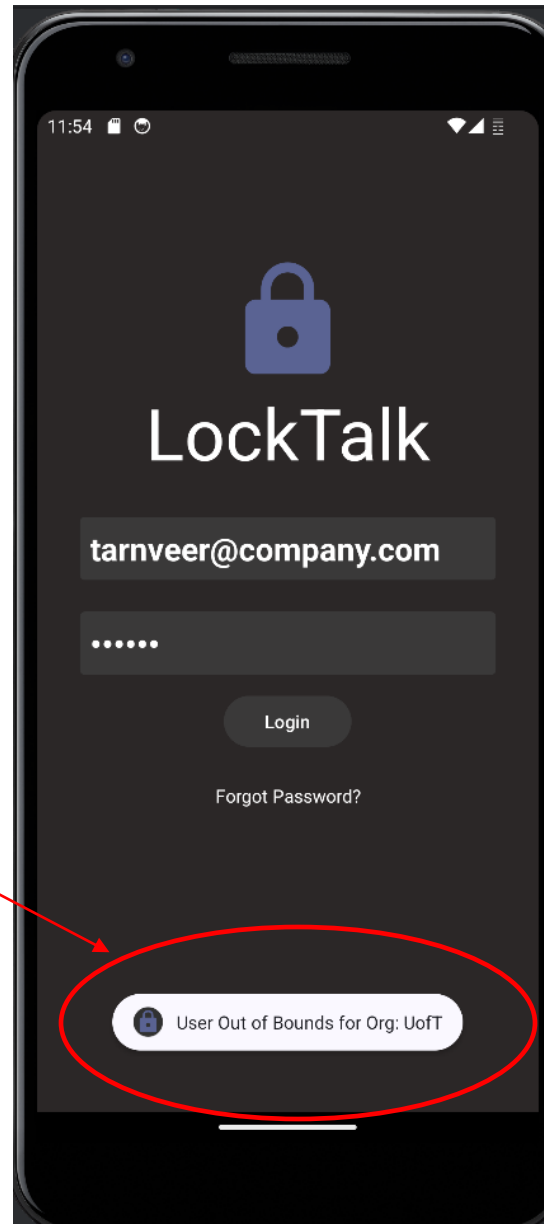
```
public class EncryptionManager {  
  
    // Encrypts message content using Blowfish algo and chatID as shared key  
    1 usage  👤 alexdamjano  
    public static String encrypt(String message, String chatID) throws Exception {...}  
  
    // Decrypts message content using Blowfish algo and chatID as shared key  
    4 usages  👤 alexdamjano  
    public static String decrypt(String message, String chatID) throws Exception {...}  
}
```



PRODUCT FUNCTIONS

Geofencing Control

- Location-Based Access
 - Restricts access to certain conversations unless the user is within a predefined geographical area
- Enforce Geofencing Policies
 - Applies the company's geofencing policies to control the flow of information based on location



Org: "gECuB93hpMp2cOmWN7l4"



latitude: 37.4
longitude: -122
name: "McMaster"

Org: "oi5LZt6o1iTGc7DqbQgx"

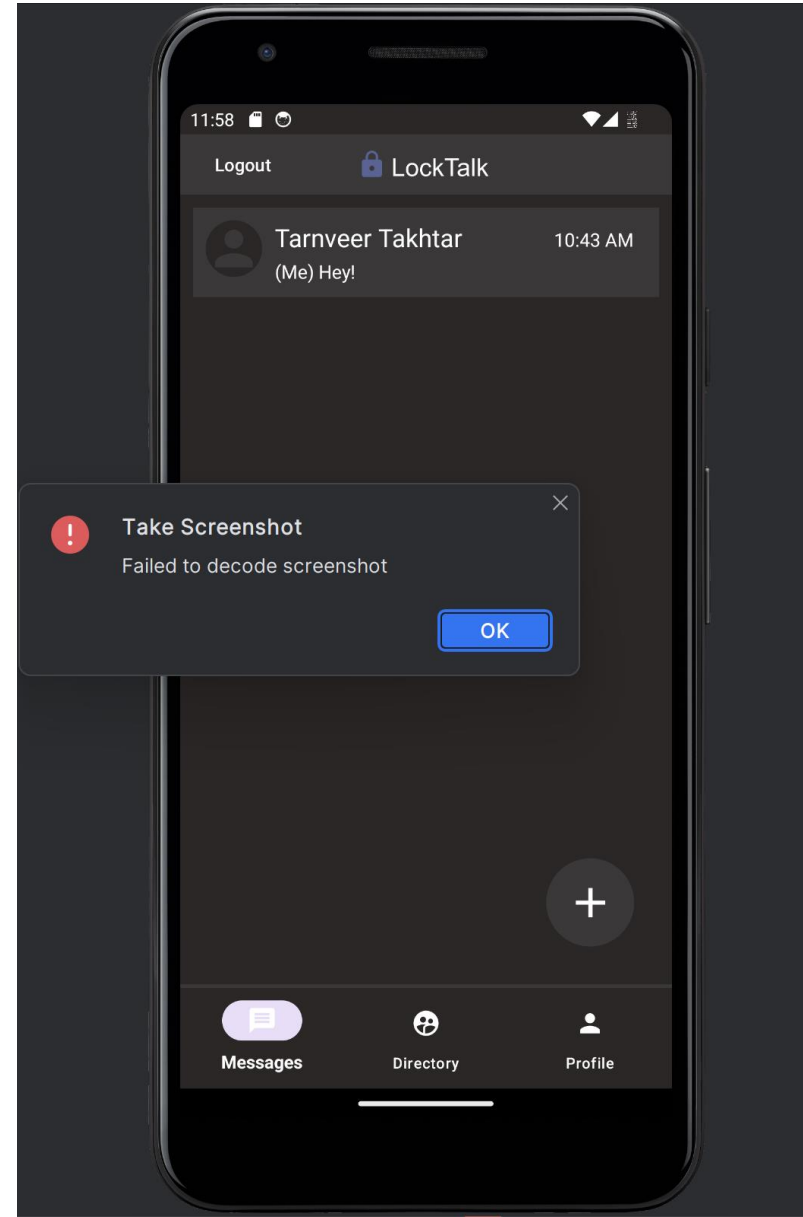


latitude: -69.69
longitude: 69.69
name: "UofT"

PRODUCT FUNCTIONS

No Screenshots Permitted

- While in the app, no screenshots can be taken for security purposes
- A notification is provided to the user that screenshots are not permitted in the app



SYSTEM ARCHITECTURE

MVC + 4 Repository Subsystems:

- MVC
 - Extensive user input
 - Display appropriate information to different users
- Subsystems
 - Chat Management
 - Account Management
 - Geofencing Management
 - Encryption Management

