**Project Overview**

This project is a secure messaging application built using **Android Studio (2021.1.1 - Lollipop version)**, **Java**, and **XML**. It uses **Firebase Realtime Database** for storing and retrieving data securely.

**Current Status**

1. **Environment Setup:**
   * **Android Studio Version**: 2021.1.1 (Lollipop version).
   * **Gradle Version**: 7.2 (default wrapper used).
   * **SDK Version:**
     + compileSdk = 31.
     + minSdk = 31.
     + targetSdk = 31.
2. **Dependencies in Use:**

implementation 'androidx.appcompat:appcompat:1.3.0'

implementation 'com.google.android.material:material:1.4.0'

implementation 'androidx.constraintlayout:constraintlayout:2.0.4'

testImplementation 'junit:junit:4.13.2'

androidTestImplementation 'androidx.test.ext:junit:1.1.3'

androidTestImplementation 'androidx.test.espresso:espresso-core:3.4.0'

implementation platform('com.google.firebase:firebase-bom:33.6.0')

implementation 'com.google.firebase:firebase-analytics'

implementation 'com.google.firebase:firebase-database'

**Gradle Files:**

* **Project-level (build.gradle):**

plugins {

id 'com.android.application' version '7.1.2' apply false

id 'com.android.library' version '7.1.2' apply false

id 'com.google.gms.google-services' version '4.3.13' apply false

}

task clean(type: Delete) {

delete rootProject.buildDir

}

App-level (build.gradle):

plugins {

id 'com.android.application'

id 'com.google.gms.google-services'

}

android {

compileSdk 31

defaultConfig {

applicationId "com.example.securemessengerapp2"

minSdk 31

targetSdk 31

versionCode 1

versionName "1.0"

testInstrumentationRunner "androidx.test.runner.AndroidJUnitRunner"

}

buildTypes {

release {

minifyEnabled false

proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'), 'proguard-rules.pro'

}

}

compileOptions {

sourceCompatibility JavaVersion.VERSION\_1\_8

targetCompatibility JavaVersion.VERSION\_1\_8

}

}

dependencies {

implementation 'androidx.appcompat:appcompat:1.3.0'

implementation 'com.google.android.material:material:1.4.0'

implementation 'androidx.constraintlayout:constraintlayout:2.0.4'

testImplementation 'junit:junit:4.13.2'

androidTestImplementation 'androidx.test.ext:junit:1.1.3'

androidTestImplementation 'androidx.test.espresso:espresso-core:3.4.0'

implementation platform('com.google.firebase:firebase-bom:33.6.0')

implementation 'com.google.firebase:firebase-analytics'

implementation 'com.google.firebase:firebase-database'

}

4. **Firebase Integration:**

* **google-services.json file** added to the app directory.
* Package name in google-services.json matches the application ID: com.example.securemessengerapp2.

5. **UI and Functionality:**

* Basic structure created in XML.
* Firebase Realtime Database integration for storing and retrieving data.
* Tested and running successfully.

**Steps Completed**

* Fixed Gradle errors:
  + Updated Google Services plugin to version 4.3.13 for compatibility with Android Studio 2021.1.1.
  + Addressed repositories error by modifying settings.gradle and aligning it with project-level build.gradle.
* Firebase setup:
  + Configured Realtime Database.
  + Linked the project with the Firebase Console using google-services.json.
* Resolved issues with:
  + SDK compatibility.
  + Package name mismatch in google-services.json.

**Next Steps**

1. **Enhance UI:**
   * Add login and signup screens.
   * Create chat interfaces for sending and receiving messages.
2. **Implement Firebase Features:**
   * Authentication (using Firebase Auth).
   * Real-time messaging via Firebase Database.
3. **Security Enhancements:**
   * Add encryption for messages.
   * Use Firebase rules to restrict unauthorized access.

**Backup Information**

* A **backup copy** of the project has been created. If further issues arise, restore from the ZIP file or Git repository.