Assignment Overview:

- This assignment forms an essential component of your final grades for the course. The assignment will be evaluated and graded by your instructor.
- This assignment is graded out of a total of twenty marks and will constitute 10% of your final module grade. The scoring for each question is provided at the beginning of the question.
- The scope of this assignment spans material covered in pre-recorded lectures, group discussions, and live sessions.

Total time estimated for assignment completion: Question – 5-6 hours

Assignment deliverable:

- You are required to upload the relevant source code and output for each question.
- Submit the source code files (Java/Kotlin, XML) and screenshots of each screen in a Word document. Include snapshots of the app output for each question in the document. You can zip all the files and upload them in the submission tab.
- Include a comment section with your student ID in each source file, and name the project as <UserManagementApp_<studentID>>, which should be visible in all screenshots.

Note: This is an individual exercise, and you are required to work on this assignment independently. Do not share code or duplicate code from others.

This project is critical for learners as it reinforces foundational skills in mobile application development, including shared preferences, Firebase, service integration and Background services all of which are essential for creating real-world mobile applications.

No. of attempts: 2

Assignment Task:

- This assignment is graded out of **Ten and will constitute 10% of your final module grade**. The scoring for each question is provided at the beginning of the question.
- The scope of this assignment spans material covered in pre-recorded lectures, group discussions, and live sessions.

Question (10 Marks)

The User Management App allows users to log in using a username, store additional details (Name and Email) in Firebase, and retrieve the stored data dynamically. Additionally, the app demonstrates background processing by sending periodic notifications using an Android Service. This project is designed to introduce core Android development concepts

such as Shared Preferences for data persistence, Firebase integration for cloud storage, activity navigation, and background task automation.

A) User Login with Shared Preferences
Implement a login screen using shared preferences

- Create a **RegisterActivity** with the following:
    - an EditText for the username
    - an EditText for password
    - a dropdown with values – ‘admin’ and ‘normal’ to identify the user
    - a button with name “Register”
    - a label with link to start login activity with the following fields
        - Username (TextView and EditText)
        - Password (TextView and EditText)
        - Login (Button)

- On Click of Register Button
    - Check for Network Connectivity in the Device, if it is connected, proceed further else ask the user to change the settings using a popup or toast
    - The details are stored in the Firebase database using “**createUserWithEmailAndPassword**”, display a toast message “User [Username] is registered”.

- On click of Login link , **LoginActivity** should be displayed
- After entering the details(Username and Password), click on the “Login” button
- The details need to be Firebase authenticated using “**signInWithEmailAndPassword**”
- Save the entered username in **Shared Preferences** when the "Login" button is clicked.
- Navigate to a second screen (**WelcomeActivity**) that displays the username (e.g., "Welcome, [Username]!").
- WelcomeActivity should have “logout” button
- On click of Logout button – SharedPref should be deleted, user should be logged out and RegisterActivity screen should be displayed

Deliverable:
- Source code for the register, login and welcome screens.
- Screenshot of the register, login screen and the welcome screen.

B) Storing and Displaying Data Using Firebase
Allow the logged-in user to store and retrieve user details using Firebase Realtime Database.

- Check for Network Connectivity in the Device, if it is connected, proceed further else ask the user to change the settings using a popup or toast.
- If network connectivity is there, Save the entered details to Firebase under a node for the logged-in user.
- If logged in as Admin - Retrieve all the user details for the logged-in user and display them in a ListView using scrollable list. Use **Service** to get all the details from Firebase.
- If logged in as a normal user – retrieve only the details which belongs to that user.

Deliverable:

- Source code for Firebase integration and data retrieval.
- Screenshot of the form and displayed data.

Please Note: Assume any missing information to bring in a logical flow to your App.

The assignment will be graded with the following distribution of points:

- **Question**: 10% of total points

Your submission will be graded primarily based on the following: Formatting of code for better visibility and adding relevant comments highlighting the purpose of the elements or style properties used is highly recommended.

Question A): 3 points

- 1 point for creating the login screen with input fields and the "Login" button.
- 1 point for saving the username in Shared Preferences and navigating to the Welcome screen.
- 1 point for displaying the username on the Welcome screen and clean, well-commented code.

Question B): 7 points

Subtask A: Storing Data in Firebase (3 Points)

- 1.5 points for creating the form to collect Name and Email.
- 1.5 points for saving the entered data in Firebase.

Subtask B: Retrieving and Displaying Data (4 Points)

- 2 points for retrieving the stored data from Firebase.
- 2 points for dynamically displaying the data and clean, well-commented code.

The submission will be graded primarily based on the following:
Formatting of code for better visibility and adding relevant comments highlighting the purpose of the elements or style properties used is highly recommended.

Question 1 (10 points)
Your code will be assessed for 10 points.

- 3 points for creating the login screen, saving the username in Shared Preferences, navigating to the Welcome screen, and displaying the username.
- 7 points for implementing Firebase integration to store and retrieve data dynamically and displaying it in a ListView or TextView.