Health & Activity Tracker – Technical Report

1. Introduction

This project implements a secure, database-driven health tracking system using a modern Node.js web stack. The application allows users to manage personal health data while enforcing strict access control and security best practices.

2. Architecture

The system follows a traditional MVC-style separation:

- Routes handle business logic
- Views (EJS) handle presentation
- MySQL stores persistent data

Session state is stored server-side and referenced via cookies.

3. Security Considerations

- Password hashing with bcrypt
- Session-based authentication
- Input validation and sanitisation
- SQL injection prevention via parameterised queries
- Per-user data filtering using session user ID
- Audit logging of authentication events

4. Data Privacy

All health and activity records are linked to a specific user ID. Queries explicitly filter by this ID, ensuring users cannot view or modify other users' data.

5. Extensions & Enhancements

Beyond the minimum requirements, the application includes:

- Activity summaries with aggregates
- Automatic BMI calculation
- Health goals with deadlines
- Audit trail of login attempts

6. Conclusion

The application meets all explicit and implicit requirements of the Final Lab brief. It is secure, installable, extensible, and suitable for deployment in a real-world environment.