UGANDA TECHNOLOGY AND MANAGEMENT UNIVERSITY

WEEKLY JOURNAL REPORT

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SEP23/BSC/3567U/F

BACHELOR OF SCIENCE COMPUTER SCIENCE

WEEK 6:   04th/August/2025 – 10th /August/2025

1. What have been your successes/accomplishments?

- **Successfully integrated the frontend React application with the backend Node.js + Express + MongoDB API.**
- **Implemented user authentication using JWT and bcrypt for secure password storage.**
- **Created protected routes in both backend and frontend to restrict access to authenticated users only.**
- **Learned how to manage state persistence by storing tokens in local storage.**
- **Deployed and tested a working MERN Full stack Authentication App locally.**

2. What have been the challenges/fears?

- **Configuring CORS issues when connecting frontend to backend.**
- **Struggled with managing authentication tokens and keeping sessions secure.**
- **Fear of handling security vulnerabilities like token theft and unencrypted environment variables.**
- **Difficulty in debugging server errors when connecting to MongoDB Atlas.**

3. What is the relationship between your internship and your previous job training?

- **Previous training introduced theory of backend and databases, but internship allowed hands-on application in real projects.**
- **Job training taught JavaScript and React basics, while internship expanded into full MERN integration.**
- **Training emphasized frontend design, but internship showed the importance of security, authentication, and API integration.**

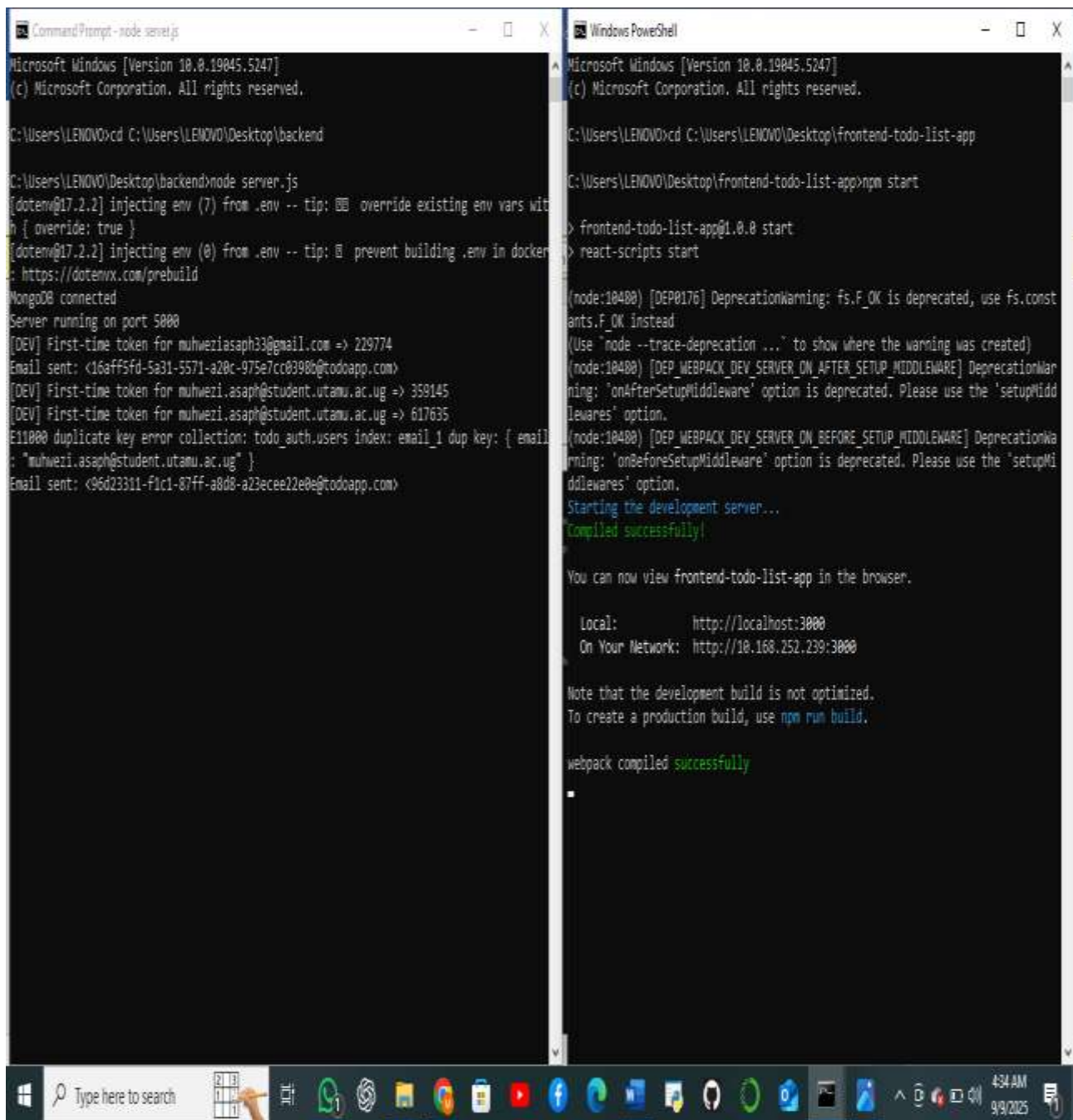## 4. What is the difference between what you observed in the field and what you learned in class?

- **In class concepts were mostly theoretical and based on small isolated exercises where as in the field applied knowledge to real-world full stack projects with deployment is considerations.**
- **Fieldwork highlighted best practices like version control, environment configuration, and error handling, which were not emphasized in class.**
- **Internship revealed the importance of teamwork and documentation, unlike classroom coding done individually.**

5. What experience have you gained so far from being part of the organization/community?

- **Practical experience in building production-ready applications with fullstack architecture.**
- **Improved ability to collaborate with a team using GitHub.**
- **Learned how organizations handle project structure, security, and scalability.**
- **Gained exposure to industry standards like. gitignore, README.md, and structured project documentation.**
- **Developed confidence in debugging and solving real-world coding problems under deadlines.**

6. List activities done for the week:

- **Set up backend server with Node.js + Express.**
- **Created user authentication system (register, login, token validation).**
- **Integrated frontend React app with backend API.**
- **Implemented protected routes in both frontend and backend.**
- **Used MongoDB Atlas for database management.**
- **Wrote documentation (README, .gitignore) for projects repositories.**

Figure 1showing screen shot of testing frontend and backend locally
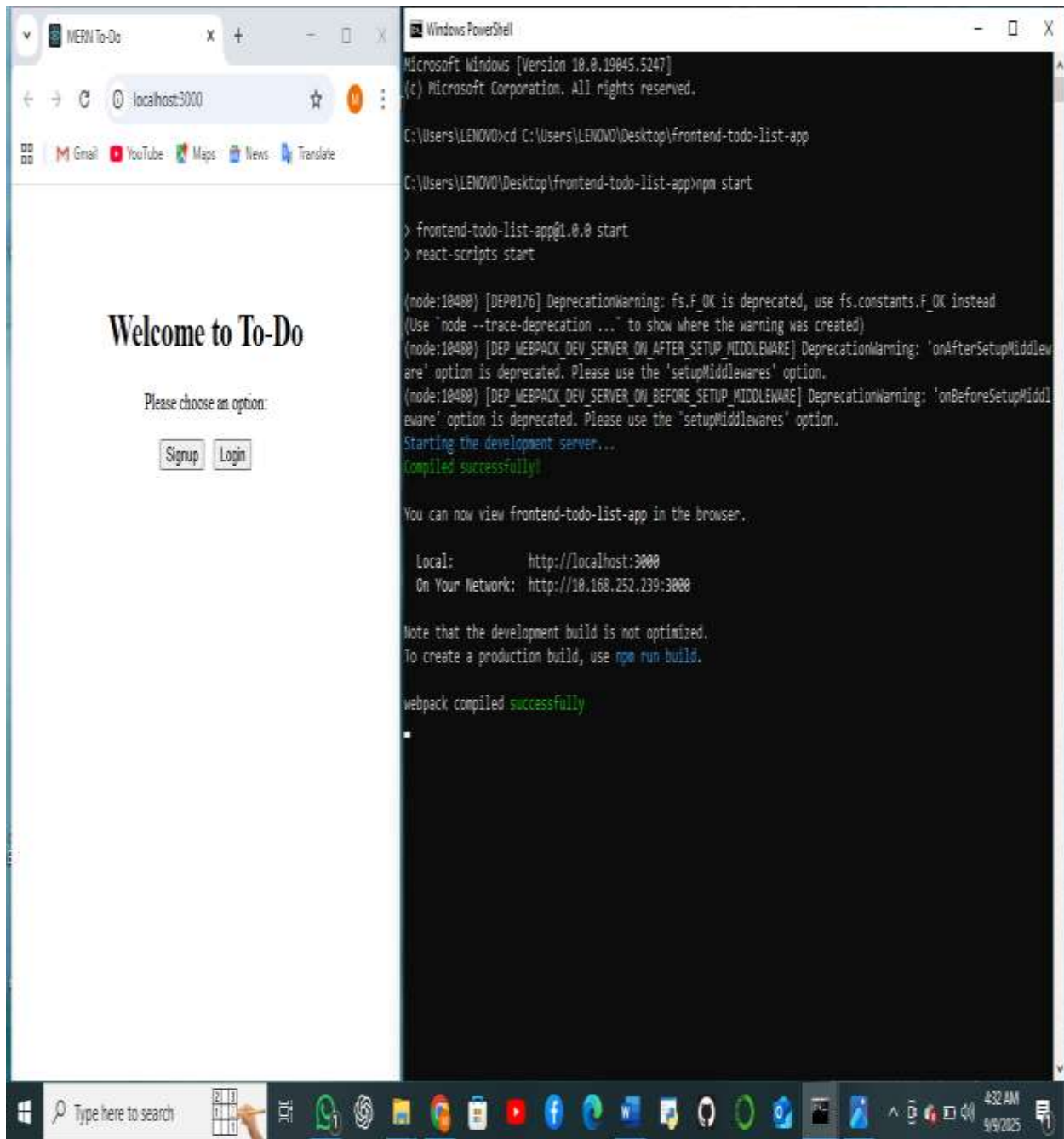
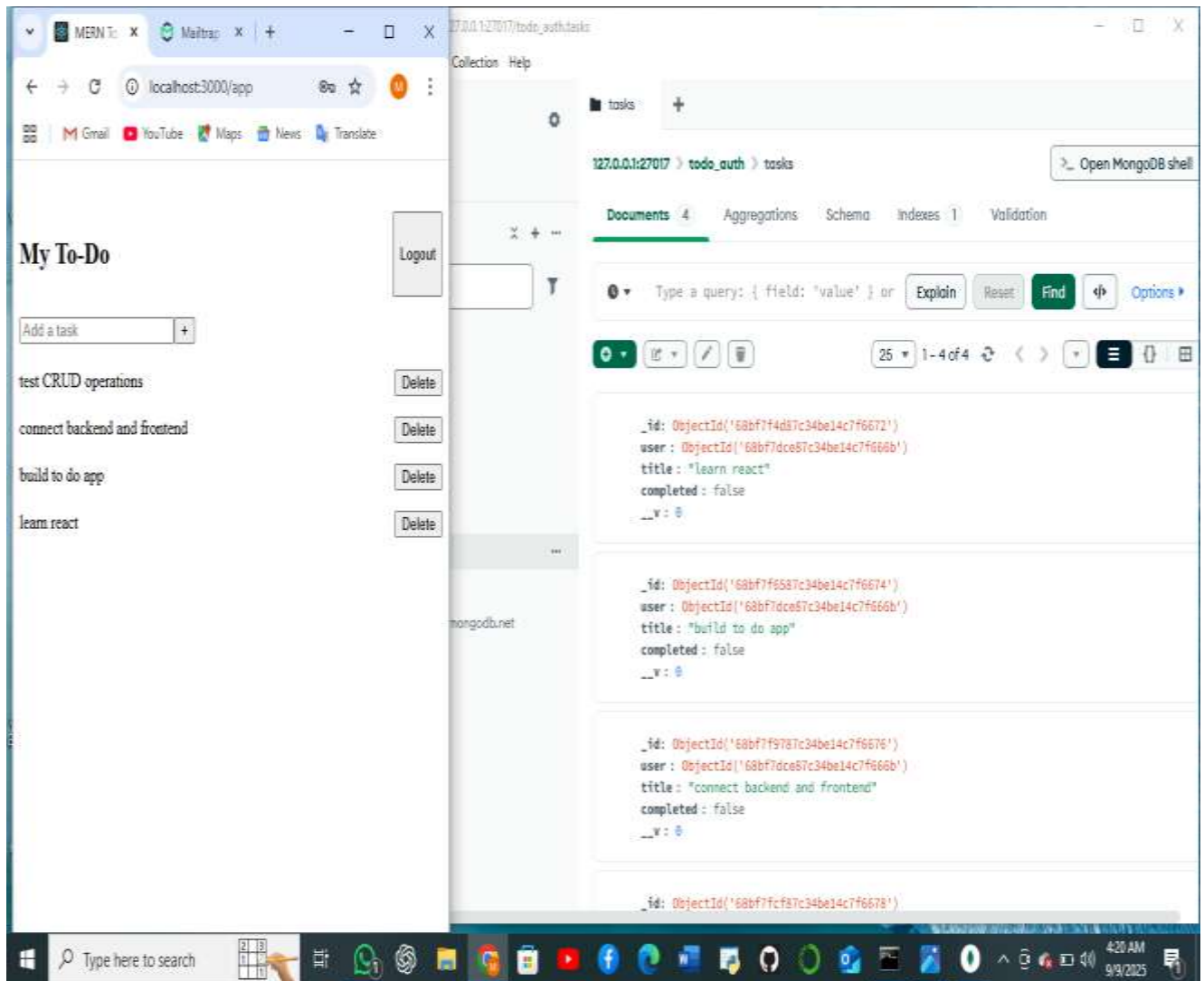*Figure 2screenshot of functioning MERN app tested locally*

Figure 3showing the screenshot of a well-functioning app frontend well communicating with backend at local testing
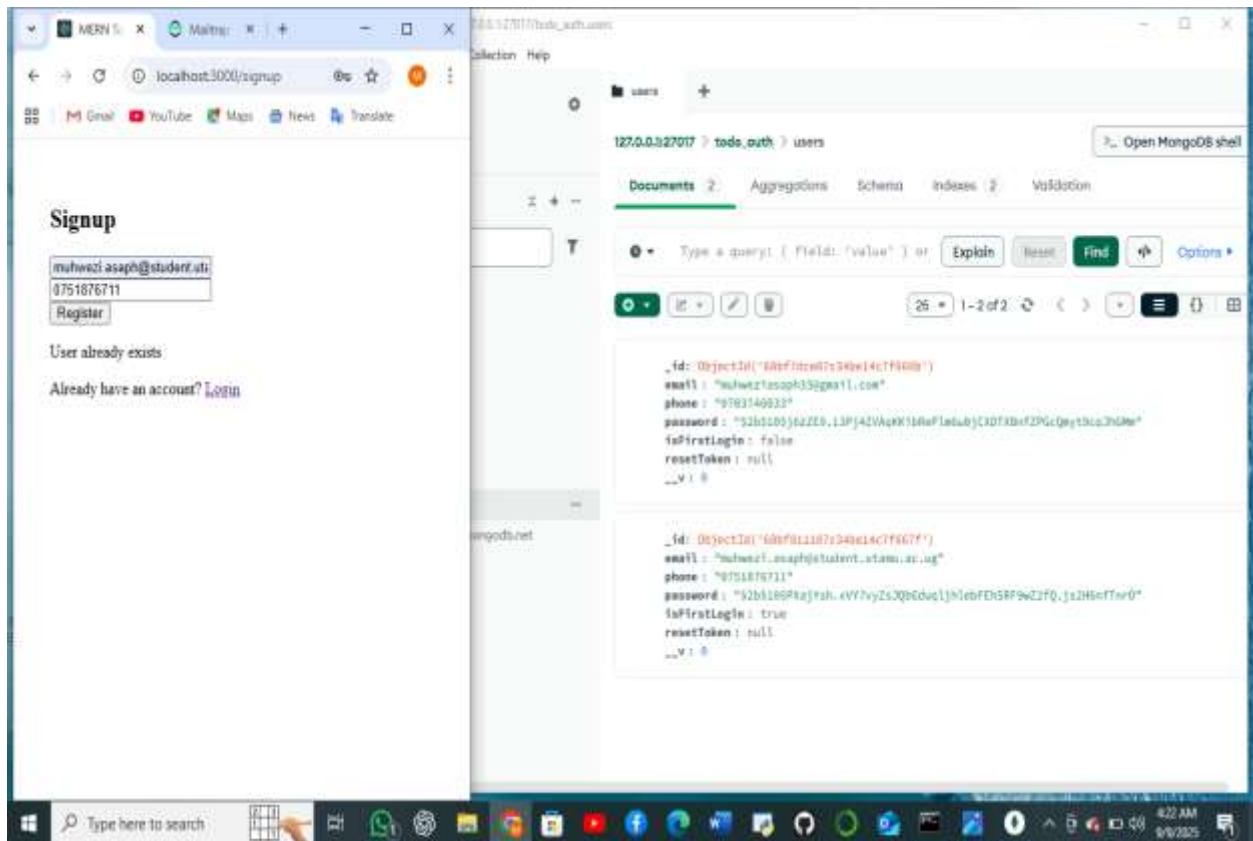
Figure 4 showing a well-functioning app registering new user

DAILY RECORD OF PROGRESS

Week 6 internship at Zentrix Africa Technologies institute

Internship Duration: 30 June 2025 – 18th August 2025

Week covered: Week 5 (04ᵗʰ Aug – 09th August 2025)

Location: National ICT Innovation Hub, Nakawa (Physical) and Online

DAY BY DAY DETAILED BREAKDOWN

Day 1 – Monday, 04ᵗʰ Aug 2025 (Physical)

Activity:

- **Create a simple backend API (Node + Express + MongoDB).**
- **Connect the React frontend (Week 4 To-Do App) with the backend API.**
- **Test data flow using Axios/Fetch.**

Lessons learned:

- **How API endpoints serve data to React.**
- **Understanding CORS and cross-origin requests.**

Challenges:

- **CORS errors when connecting frontend to backend.**
- **Managing environment variables (.env).**

Recommendation:

- **Always test APIs on Postman before connecting with frontend.**

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Signed by trainee   **Date**   **Signed by field supervisor**

Figure 5 shows screenshot of record of progress day 1

Day 2 Tuesday, 05th Aug 2025 (online)

Activity:

- Create a User model in MongoDB with fields (name, email, password).
- Implement a register route (/api/users/register).
- Hash passwords using bcrypt.js before saving.

Lessons learned:

- Importance of password hashing.
- How to create secure user schemas with validation.

Challenges:

- Validating duplicate emails.
- Handling errors gracefully.

Recommendation:

Use try/catch blocks and proper HTTP status codes.

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05/08/2025

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Figure 6 shows screenshot of record of progress day 2

Day 3 Wednesday, 06ᵗʰ Aug 2025 (physical)

Activities:

- **Introduction to MongoDB.**
- **Installing and connecting MongoDB with Node.js using Mongoose.**

Lessons Learned:

- **Understanding NoSQL databases.**
- **How Mongoose simplifies database interactions.**

Challenges:

- **Difficulty in installing MongoDB locally.**
- **Errors in connection strings.**

Recommendations:

- **Use MongoDB Atlas if local installation fails.**
- **Double-check database URIs.**

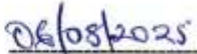I declare that all the information provided is true

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Figure 7 shows screenshot of record of progress day 3

Day 4 – Thursday,07th/ Aug 2025 (online)

Activity:

- Create middleware to verify JWT tokens.
- Protect API routes (e.g., only logged-in users can add/edit data).
- Test with Postman using Authorization: Bearer token.

Lessons learned:

- Role of middleware in Express.
- Importance of securing routes to prevent unauthorized access.

Challenges:

- Handling expired/invalid tokens.

Recommendation:

- Always send meaningful error messages to the frontend.

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_____   07/08/2025   _____ ⭐   ZENTRIX AFRICA

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Figure 8 shows screenshot of record of progress day 4

Day 5 – Friday, 8ᵗʰ /Aug 2025 (physical)

Activity:

- Create signup & login forms in React.
- Store JWT token after login.
- Fetch user-specific data only if authenticated.

Lessons Learned:

- How frontend uses backend authentication.
- React state management for authentication.

Challenges:

- Redirecting unauthenticated users.

Recommendation:

- Use React Router for private routes.

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Figure 9 shows screenshot of record of progress day 5

Day 6 – Saturday, 09th/Aug 2025(online)

Activity:

- Finalize a **MERN Full stack app**
- Test all CRUD operations + authentication flow.
- Push to GitHub.

Lessons Learned:

- How all MERN technologies integrate.
- Real-world application of full stack skills.

Challenges:

- Debugging errors across both frontend & backend.

Recommendation:

- Keep logs in both frontend & backend for easier debugging.

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Student Signature: _____   09/08/2025

                                                                                    Date

Field supervisor name: _____ TURWOMWE BENJAMIN

Field supervisor signature: _____

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Figure 10 shows screenshot of record of progress day 6

Student Signature: _____

Field supervisor name: _____ TURWOMWE BENJAMIN

Field supervisor signature: _____

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Figure 11 shows screenshot of final page of weekly report with the signature and name of the field supervisor

Below is the link to the repository of internship week 6

https://github.com/muhweziasaph/Internship-week-6.git