Project Submission Report

1. Hugs
Building Backend with Node.js, Express, and PostgreSQL and connecting it with Frontend

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2. Approach / Methodology

I started by researching the fundamentals of backend development, focusing on how APIs interact with databases. I explored different resources such as documentation, online articles, and YouTube tutorials to understand Node.js, Express, and PostgreSQL.
The steps I followed:

- Installed Node.js and initialized a project.

- Learned how to set up an Express server.

- Understood middleware like express.json() and cors.

- Explored how to use PostgreSQL with the pg library.

- Implemented routes for user registration.
  I chose this approach because I wanted a hands-on way of learning while building something practical.

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3. Difficulties Faced

- Understanding how environment variables work.

- Errors during database connection (wrong credentials/ports).

- Struggled with password encryption(hashing) and why it's needed.

- Confusion in structuring frontend (React) with backend API calls.

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4. Solutions / How I Resolved Them

- I watched tutorials on .env usage and practiced by creating my own file with DB credentials.

- Debugged PostgreSQL connection issues by checking the port, username, and database name.

- Learned about bcrypt and why hashing is important through documentation and examples.

- For frontend-backend integration, I used Axios and tested endpoints using ThunderClient to make sure the backend worked before connecting it to React.

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5. Learning & Takeaways

- Gained a foundational understanding of **Node.js, Express.js** and **PostgreSQL** integration.

- Learned how to use **bcrypt and Hashing** for securing passwords.

- Understood the importance of .env files for hiding sensitive information.

- Realized the importance of debugging tools (like ThunderClient) for testing APIs.

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6. Self-Reflection

- I could have organized my learning steps better instead of jumping between too many sources at once.

- Next time, I'll start with small goals (e.g., just connecting to the database) before moving to bigger features.

- I plan to improve by following structured courses along with practical coding.

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7. Overall Summary

This project gave me my first hands-on experience with backend development. By exploring documentation and YouTube tutorials, I was able to create a simple backend with user registration functionality. Although I faced challenges with environment setup, database connections, and security, I successfully overcame them and gained confidence in backend concepts. This project is a good starting point, and I am motivated to continue building more advanced backend applications.