DAILY RECORD OF PROGRESS

Week 1 internship at Zentrix Africa Technologies institute

Internship Duration: 30 June 2025 – 18th August 2025

Week covered: Week 1 (30th June – 06th July 2025)

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

DAY BY DAY DETAILED BREAKDOWN

Day 1 – Monday, 30th June 2025 (Physical)

Activity: Internship orientation and program overview

Key concepts covered:

- Overview of Zentrix Africa Technologies institute and its work in tech innovation.
- Structure and objectives of the internship
- Internship deliverables: Weekly reports, attendance, final project.
- Weekly schedule: Mon/Wed/Fri (Physical), Tue/Thu/Sat (Online)
- Expected technologies: HTML, CSS, JS, React, Node.js, Express, MongoDB, Git, GitHub

Lessons learned:

- Understood the structure and expectations of the internship.
- Learned about the technology to use and what will be covered in 8 weeks.

Challenges faced:

- Getting familiar with the internship workflow and expectations.

Recommendations:

- Provide a printed or digital orientation guide for interns.
- Have a questions and answer session to clarify doubts after orientation.

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info@zati.africa | www.zati.africa
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Day 2 and 3 – Tuesday, 01ᵗ July 2025 (online) and Wednesday ,02ⁿᵈ/July 2025(physical)

Activity: Tools installation and development environment setup

Key concepts covered:

- Installation of visual studio code (code editor)
- Installation of Node.js and npm
- Installed Git
- Verification of installations using terminal command
- What Agile is and how it works (sprints, daily stand-ups)

Lessons learned:

- Learned to install developer tools and configure environments.
- Understood the purpose of each tool in web development.
- Gained confidence using the terminal for checking installations.
- Understood Agile methodology in team projects.
- Learned to organize work in sprints and tasks.

Challenges faced:

- Slow internet affecting downloads.

Recommendations:

- Provide offline installers on flash drives for those with poor connectivity.

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Day 4 – Thursday,03rd July 2025 (online)

Activity: Introduction to Git and GitHub for version control

Key concepts covered:

- Version control using Git
- Creating GitHub accounts
- Connecting local repo to GitHub
- Uploading (pushing) code to GitHub

Lessons learned:

- Learned how to track code changes using Git.
- Practiced pushing code to GitHub and writing commit messages.
- Understood basic Git commands: init, add, commit, push.

Challenges faced:

- Errors during git push.

Recommendations:

- Repeat GitHub practice at least twice during internship.
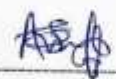- Use of GitHub desktop where command line becomes a challenge.

Day 5 and 6 – Friday, 4th/July 2025 (physical) and Saturday, 5th/July 2025(online)

Activity: Introduction to HTML5

Concepts covered:
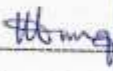
- HTML Structure: <!DOCTYPE html>, <html>, <head>, <body>
- Tags: Headings (<h1>-<h6>), Paragraphs (<p>), Lists, Links, Images
- Forms: <form>, <input>, <label>, <textarea>, <button>
- Tables: <table>, <tr>, <td>, <th>
- Hands-On Tasks: Created "About Me" HTML page using VS Code

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DAILY RECORD OF PROGRESS

Week 2 internship at Zentrix Africa Technologies institute

Internship Duration: 30 June 2025 – 18th August 2025

Week covered: Week 2 (7th July – 13th July 2025)

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

DAY BY DAY DETAILED BREAKDOWN

Day 1 – Monday, 7th July 2025 (Physical)

Activity: introduction to CSS

Described as like the clothing of HTML structure. It makes the plain skeleton (HTML) look beautiful, neat, and organized.

Key concepts covered:

- What CSS is and why we use it
- CSS Syntax: Selector, Property, Value
- Inline, internal, and external CSS

Lessons learned:

- Understood how to apply styles in multiple ways
- Learned how to organize CSS outside HTML for reusability

Challenges faced:

- Forgetting to link CSS file properly sometimes (missing href or wrong path)
- Long codes when using inline and internal CSS

Recommendations:

- There is a need to always double check CSS file paths when external CSS is used
- There is a need to use external CSS for cleaner and scalable projects

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Day 2 Tuesday, 08st July 2025 (online)

Activity: Text styling and color properties.

Described like changing fonts in a word document. It's all about choosing your favorite styles, colors, and sizes to make content appealing

Key concepts covered:

- Text styling: font-family, text-align, text-transform, line-height
- Colors using HEX, RGB, HSL
- Importing Google fonts

Lessons learned:

- Fonts can greatly affect readability
- Proper use of colors helps user experience

Challenges faced:

- Some fonts did not render until Google fonts were correctly linked

Recommendations:

- Use of Google fonts with proper link tags
- Checking for contrast for text readability

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Day 3 Wednesday, 09ᵗʰ July 2025 (physical)

Activity: Box model and layout spacing.

Described like thinking of every element on a webpage like a box. This day helped me understand how to put padding inside, borders around, and margins outside those boxes.

Key concepts covered:

- CSS Box Model: content, padding, border, margin
- Units: px, em, %
- box-sizing: border-box

Lessons learned:

- All elements are treated as boxes, and spacing matters
- Developer tools help see real-time spacing and styling

Challenges faced:

- Confusion between padding and margin

Recommendations:

- There is a need to always practice with developer tools to inspect box structure
- There is a need to use visual diagrams to grasp box model layers

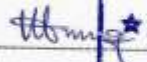I declare that all the information provided is true

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Day 4 – Thursday, 10th July 2025 (online)

Activity: CSS positioning and floats

Description: Positioning lets us decide exactly where an item sits on a page.

Key concepts covered:

- position: static, relative, absolute, fixed, sticky
- top, left, right, bottom, z-index
- float, clear, overflow

Lessons learned:

- Absolute versus relative positioning makes a big difference
- Floats can break layouts if not cleared properly

Challenges faced:

- Forgetting parent-relative reference for absolute elements

Recommendations:

- Practice small layout tasks to grasp each position type
- Use clear fix technique after floating elements

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Day 5 – Friday, 11th/July 2025 (physical)

Activity: Flexbox layout

Flexbox described like a magical container that automatically arranges items in rows or columns and aligns them perfectly without much effort.

Concepts covered:

- display: flex, flex-direction, justify-content, align-items, gap
- Horizontal and vertical alignment

Lessons learned:

- Flexbox reduces the need for manual spacing
- Helps build responsive design easily

Challenges faced:

- Items overflowing when container width was not defined

Recommendations:

- To always wrap items properly inside a flex container
- Use of gap instead of margins for spacing

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info@zeti.africa | www.zeti.africa
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Day 6 – Saturday, 12th/July 2025(online)

Activity: Mini project, applying CSS to previously created personal profile webpage in week 1

Lessons Learned:

- Combining all skills gives clarity on structure
- Writing clean code with clear layout saves time

Challenges Faced:

- Keeping layout responsive on smaller screens

Recommendations:

- Test projects on multiple screen sizes
- Comment code to stay organized

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Field supervisor name: ___TURWOMWE BENJAMIN___

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info@zati.africa | www.zati.africa
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DAILY RECORD OF PROGRESS

Week 3 internship at Zentrix Africa Technologies institute

Internship Duration: 30 June 2025 – 18th August 2025

Week covered: Week 3 (14th July – 20th July 2025)

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

DAY BY DAY DETAILED BREAKDOWN

Day 1 – Monday, 14th July 2025 (Physical)

Activity: Introduction to JavaScript

Key concepts covered:

- Learned what JavaScript is and why it is important in web development.
- Explored basic syntax, variables (`let`, `const`), data types (strings, numbers, Booleans).
- Practiced using `alert ()`, `console.log ()`, and string concatenation.

Lesson Learned:

- JavaScript is a powerful scripting language used to add interactivity to web pages.
- Variables help store and manipulate data.
- Output methods (`console.log`, `alert`) are used to test and debug code.

Challenges:

- Confusing between `let` and `const` usage.
- Typing errors in syntax (like missing semicolons or brackets).

Recommendations:

- Practice more small code snippets.
- Use browser developer tools console to test JavaScript interactively.

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Day 2 Tuesday, 15ᵗʰ July 2025 (online)

Activity: Functions and Operators

Key concepts covered:

- Learned how to define and call functions.
- Explored arithmetic, comparison, and logical operators.
- Created basic calculator functions using user inputs.

Lesson Learned:

- Functions allow code reuse and organization.
- Operators are used for calculations and decision-making.

Challenges:

- Understanding return values vs. direct outputs.
- Forgetting to use ` () ` when calling functions.

Recommendations:

- Reinforce function syntax and behavior through practice.
- Try building mini function-based tools (e.g., calculator, greeting app).

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Day 3 Wednesday, 16th July 2025 (physical)

Activity: Conditionals and control flow

Key concepts covered:

- Used `if`, `else if`, and `else` to make decisions in code.
- Explored `switch` statements.
- Built login form simulation with conditionals.

Lesson Learned:

- Control flow structures guide how code executes based on conditions.
- Logical thinking is key to structuring conditions properly.

Challenges:

- Nesting conditionals became confusing.
- Struggled with `==` vs `===` comparisons.

Recommendations:

- Use flowcharts to visualize conditional logic.
- Prefer `===` for strict comparison.

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Day 4 – Thursday, 17th July 2025 (online)

Activity: Loops and Arrays

Key concepts covered:

- Learned about `for`, `while`, and `do...while` loops.
- Created arrays and iterated through them.
- Built student marks array and displayed results using loops.

Lesson Learned:

- Loops automate repetitive tasks.
- Arrays store ordered collections of data.

Challenges:

- Forgot to increment counters in loops (causing infinite loops).
- Misused loop conditions.

Recommendations:

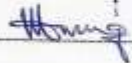- Practice with small loop tasks.
- Break loops into smaller logic steps.

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Day 5 – Friday, 18th/July 2025 (physical)

Activity: DOM manipulation basics

Key concepts covered:

- Explored how to access HTML elements using `getElementById`, `querySelector`.
- Changed content, styles, and attributes using JavaScript.

Lesson Learned:

- The DOM (Document Object Model) connects HTML and JavaScript.
- JavaScript can change how the page looks and behaves in real time.

Challenges:

- Forgetting to link JS file to HTML properly.
- Using incorrect element selectors.

Recommendations:

- Use browser Developer tools to inspect element IDs and classes.
- Ensure script tags are loaded after HTML.

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Day 6 – Saturday, 19th/July 2025(online)

Activity: DOM events and final mini project

Key concepts covered:

- Learned about `click`, `submit`, `keyup` events.
- Adding input validations and live feedback using event listeners.
- Incorporated JavaScript in the personal profile webpage

Lesson Learned:

Event handling makes webpages dynamic and user-friendly.

Real-time feedback improves user experience.

Challenges:

- Attaching multiple event listeners to form elements.
- Handling preventDefault() on forms.

Recommendations:

- Refer to MDN docs for various DOM methods.
- Test event handlers incrementally while building features.

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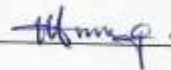
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Field supervisor name: TURWOMWE BENJAMIN

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DAILY RECORD OF PROGRESS

Week 4 internship at Zentrix Africa Technologies institute

Internship Duration: 30 June 2025 – 18th August 2025

Week covered: Week 4 (21st July – 26th July 2025)

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

DAY BY DAY DETAILED BREAKDOWN

Day 1 – Monday, 21th July 2025 (Physical)

Activities:

- Introduction to React.js and the importance of frontend frameworks.
- Setup development environment (Node.js, VS Code, React).
- Create React App using
- Understanding project structure and JSX (JavaScript XML) syntax.

Lessons learned:

- React allows component-based development.
- JSX combines JavaScript with HTML-like syntax for dynamic UIs.

Challenges Faced:

- Initial setup and understanding JSX syntax was confusing.

Recommendations:

- Use official React docs and beginner tutorials to reinforce concepts.

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Day 2 Tuesday, 22nd July 2025 (online)

Activities:

- Understanding and using React components (function and class).
- Passing data using props.
- Created a simple calculator app using props and state.

Lessons learned:

- Props allow components to communicate.
- State manages local data and re-renders components when changed.

Challenges faced:

- Managing state in multiple components was initially tricky.

Recommendations:

- Practice creating reusable components and passing props clearly.

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Day 3 Wednesday, 23rd July 2025 (physical)

Activities:

- Exploring state and event handling in React.
- Built a counter App.
- Explained the concept of lifting state up.

Lessons learned:

- State is essential for interactive applications.
- Event handlers can update state dynamically.

Challenges faced:

- Debugging event handlers and managing multiple states.

Recommendations:

- Use React developer tools to inspect components and state changes.

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Day 4 – Thursday, 24ᵗʰ July 2025 (online)

Activities:

- React lists and conditional rendering.
- Mapped through arrays and rendered dynamic data.
- Built a simple to-do list App.

Lessons learned:

- The map() method is useful for displaying lists.
- Conditional rendering helps create dynamic UI experiences.

Challenges faced:

- Understanding "key" prop in lists and rendering logic.

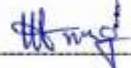**Recommendations:**

- Always use unique keys when mapping elements.

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Day 5 – Friday, 25th/July 2025 (physical)

Activities:

- Review of week's work and completed full React To-Do App.
- Integrated add, delete features.
- Styled the app using basic CSS.

Lessons learned:

- Combining props, state, and events creates fully functional apps.

Challenges faced:

- Managing app state and performance as app grew.

Recommendations:

- Break large components into smaller ones for maintainability.

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Day 6 - Saturday, 26th/July 2025(online)

Activities:

- Documentation of project and writing README.md.
- App deployment
- Reflection on lessons and preparing for backend (Node.js) next week.

Lessons learned:

- Documentation and version control are crucial for collaboration.

Challenges faced:

- Ensuring clean and professional GitHub presentation.

Recommendations:

- Always document your project and follow version control best practices

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Field supervisor name: TURWOMWE BENJAMIN.

Field supervisor signature: _____

DAILY RECORD OF PROGRESS

Week 5 internship at Zentrix Africa Technologies institute

Internship Duration: 30 June 2025 – 18th August 2025

Week covered: Week 5 (28ᵗʰ July – 02 August 2025)

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

DAY BY DAY DETAILED BREAKDOWN

Day 1 – Monday, 28ᵗʰ July 2025 (Physical)

Activities:

- Introduction to backend development concepts.
- Setting up a basic Node.js project with Express.

Lessons Learned:

- Understanding server-side programming.
- How to initialize a Node.js project with npm init.
- Setting up routes and middleware in Express.

Challenges:

- Initial difficulty in understanding how backend differs from frontend.
- Errors during npm installation on some machines.

Recommendations:

- Ensure Node.js and npm versions are compatible.
- Revise basic JavaScript before diving into backend.

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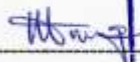
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Day 2 Tuesday, 29th July 2025 (online)

Activities:

- **Creating RESTful API endpoints.**
- **Learning HTTP methods: GET, POST, PUT, DELETE.**

Lessons Learned:

- **Difference between REST and other API architectures.**
- **How HTTP methods map to CRUD operations.**

Challenges:

- **Confusion in handling request and response objects.**
- **Typos in route definitions causing errors.**

Recommendations:

- **Practice writing simple routes repeatedly.**
- **Use Postman to test each endpoint after creation.**

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Day 3 Wednesday, 30th July 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.

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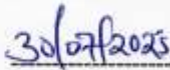
Day 4 – Thursday, 31st July 2025 (online)

Activities:

- **Creating MongoDB models and schemas.**
- **Implementing CRUD operations with MongoDB.**

Lessons Learned:

- **Importance of schema design in NoSQL databases.**
- **How to handle async operations with async/await.**

Challenges:

- **Schema validation errors.**
- **Async/await syntax mistakes.**

Recommendations:

- **Validate data before saving to DB.**
- **Revise JavaScript async concepts.**
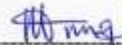
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Day 5 – Friday, 1st /July 2025 (physical) and day 6 - Saturday, 02nd /Aug 2025(online)

Activities:

- Finalizing CRUD API.
- Pushing project to GitHub and documenting endpoints.
- Preparing deployment.

Lessons Learned:

- How to write clear API documentation.
- Importance of version control in backend projects.

Challenges:

- Git merge conflicts when pushing updates.
- Forgetting to document changes.

Recommendations:

- Commit changes frequently.
- Update README file with endpoint details.

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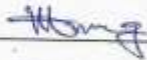
Student Signature: _____   02|08|2025

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Field supervisor name: ___TURIDMWE BENJAMIN___

Field supervisor signature: _____

DAILY RECORD OF PROGRESS

Week 6 internship at Zentrix Africa Technologies institute

Internship Duration: 30 June 2025 – 18th August 2025

Week covered: Week **6** (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**   **Date**

ZENTRIX AFRICA
Technology Institute

0 4 AUG 2025

+256 414 673 086
info@zentrix.africa | www.zentrix.africa
Plot 9-22 Port Bell Rd, Nakawa, K'la, UG

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

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

ZENTRIX AFRICA
Technology Institute
0 5 AUG 2025
+256 414 671006
info@zen.africa | www.zati.africa
Plot 9-22 Port Bell Rd, Nakawa, K'la, UG

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.**

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

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0 6 AUG 2025

+256 414 673 086
info@zati.africa | www.zati.africa
Plot P-22 Port Bell Rd, Nakawa, K'la, UG

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

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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.

I declare that all the information provided is true

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

ZENTRIX AFRICA
Technology Institute

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+256 414 673 666
info@zati.africa | www.zatiafrica
Plot 9-22 Port Bell Rd, Nakawa, K'la, UG

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.

I declare that all the information provided is true

Student Signature: _____   09/08/2025
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                                                              Date

Field supervisor name: _____ Hung · TURWOMWE BENJAMIN

Field supervisor signature: _____ Hung ·

ZENTRIX AFRICA
Technology Institute
★ Date 09 AUG 2025 ★
+256 414 673 086
info@zati.africa | www.zati.africa
Plot 9-22 Port Bell Rd, Nakawa, K'la, UG