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Fortnightly Training Report

Student Name:

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Program:

Bachelor of Computer Science

Week:

9 & 10

Dates:

Week 9 : 4 – 8 May 2025

Week 10 : 11 – 15 May 2025

Organization Name :

King Abdulaziz Hospital

Supervisor Name:

Adnan Zafar

Submission Date:

15 May 2025

1. Introduction

This report outlines my progress during Weeks 9 and 10 of the internship. The primary focus was on completing critical features in Phase 1 (Technical Support System), including user-linked actions, automated saving, and tracking. Additionally, I started working on the Network Diagnostic Tool in Phase 2, implementing real-time monitoring and network testing capabilities.

2. Tasks and Responsibilities

During Week 9 and Week 10 of my internship at King Abdulaziz Hospital, my responsibilities included:

- Finalized the core features of Phase 1 (Technical Support System), focusing on user-linked actions and security.
- Developed key system pages such as:
  - Email-based sign-in and password reset forms
  - Admin interface to track user activity history
  - Notification system for both users and administrators
- Ensured every user action is tied to their token, storing operations in both the frontend and a dedicated backend log table.
- Implemented a backend audit log system to document each user's movement within the system.
- Built a dynamic notification system that alerts users or admins upon request submission, status changes, or actions performed.
- Integrated session-based logic to maintain UI state when interacting with modals and dropdowns.
- Began working on Phase 2, specifically on the Network Diagnostic Tool, including:
  - Real-time ping execution (Ping, Ping -t, Traceroute)
  - Auto-run ping upon IP load
  - Filtering tools by ISP, location, company, and contract period
  - Display of active, failed, and unstable device counters
  - Logging of ping results with the ability to generate reports.

Screenshots – Network Diagnostic Tool

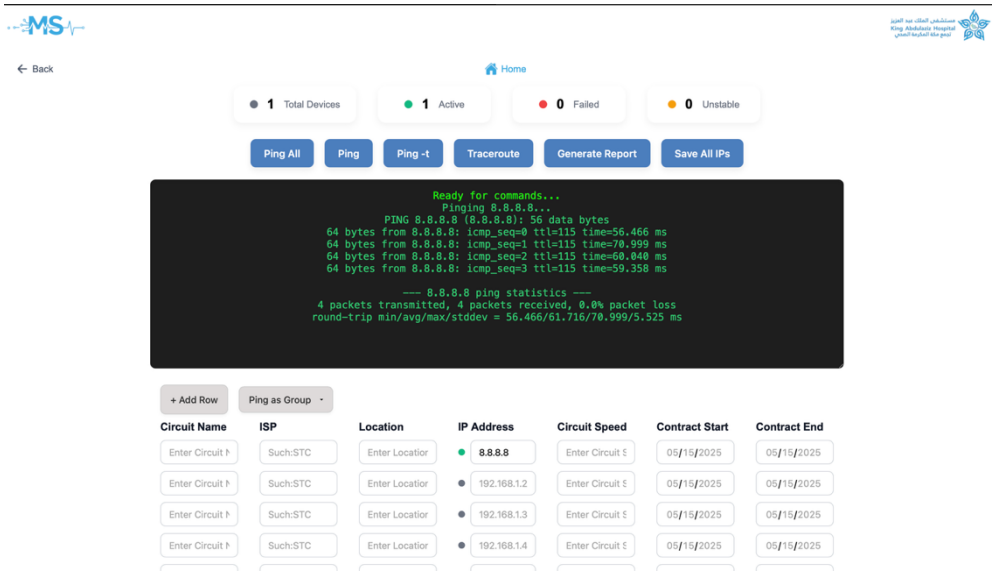

Figure 1: Real-time Ping Execution and Device Table.
This interface displays the output of a ping command to a specific IP address. It shows live response times, packet loss statistics, and allows administrators to add and monitor device details such as ISP, location, speed, and contract duration.

3. Skills and Knowledge Gained

During Week 9 and Week 10 of my training, I enhanced several technical and soft skills, including:

- **User Authentication & Token Management:**
  Strengthened my understanding of secure user identification by linking all system actions to authenticated users using token-based validation.
- **Activity Logging:**
  Gained experience in designing and implementing a full user activity log system, storing actions in both the frontend and a dedicated backend database table.
- **Notification System Design:**
  Developed and integrated a dynamic notification system that supports alerts for both administrators and regular users based on system events.
- **Session and State Management:**
  Learned how to maintain consistent interface states using sessionStorage, especially during popup interactions and dynamic field changes.
- **Network Diagnostics (Phase 2):**
  Began working on real-time network testing tools including Ping, Ping -t, and Traceroute, with features for auto-execution, result display, and filtering.
- **UI Refinement & Filtering Logic:**
  Improved filtering functionalities in the network interface to allow smooth search by ISP, location, company, and contract duration.

- **Backend Integration:**
  Strengthened backend logic to support auto-saving, data traceability, and real-time feedback from system commands.

4. Challenges Faced

Although Weeks 9 and 10 were productive overall, I encountered several challenges that required attention and adaptation:

- **Maintaining Interface State Across Modals and Dynamic Elements:**
  Ensuring that user selections remained consistent when popups were opened or closed was challenging, especially with dropdowns and session-based data.
- **Auto-Save and Duplicate Handling:**
  Implementing real-time auto-saving without causing data duplication or conflicts required careful logic restructuring and testing.
- **Async Ping Response and UI Updates:**
  While working on the Network Diagnostic Tool, handling asynchronous ping responses and updating the UI in real time introduced complexity in tracking and rendering status changes.
- **Multi-Phase Task Management:**
  Balancing between tasks in Phase 1 (technical support) and starting Phase 2 (network diagnostics) required effective planning and time allocation.
- **Interpreting Supervisor Feedback into Actionable Features:**
  Translating verbal guidance and general feedback into functional backend and frontend features occasionally involved ambiguity and rework.

5. Solutions and Improvements

To overcome the challenges faced during Weeks 9 and 10, I applied the following strategies:

- **State Management Using Session Storage:**
  I used `sessionStorage` to preserve user selections and restore UI state after closing modals or switching between dropdowns. This ensured a smoother user experience.
- **Backend Refactoring to Avoid Duplication:**
  I restructured the save and update logic in the backend to support auto-saving while preventing duplicate entries and ensuring data integrity.
- **Handled Async Network Responses Gracefully:**
  Implemented logic to manage asynchronous ping responses and dynamically display device status updates in the Network Diagnostic Tool.
- **Task Prioritization Across System Phases:**
  Divided time and focus between Phase 1 and Phase 2 based on urgency and progress, ensuring continuous delivery across both sections of the system.
- **Translated Feedback into Clear Action Items:**
  Documented verbal feedback from supervisors and turned it into specific backend and frontend improvements, reducing miscommunication and ensuring proper implementation.

6. Conclusion

Weeks 9 and 10 marked a major leap in both system tracking and interactive diagnostics.
Through Phase 1, I completed robust user-linked functionality and notifications. Simultaneously, I began building Phase 2's Network Diagnostic Tool with live ping tests, filtering, and reporting.
Only the dashboard and permissions management remain in Phase 1, which will be finalized in the upcoming weeks.