DOUGLAS COLLEGE
COMMERCE AND BUSINESS ADMINISTRATION

SafeSight

A Full-Stack Predictive Workplace Safety Management System with reference to

Fairmont Waterfront

CSIS 4495 002: APPLIED RESEARCH PROJECT

PROGRESS REPORT 1

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1. Introduction

Brief overview about the project

The SafeSight Dashboard project focuses on developing a workplace safety monitoring dashboard for the Fairmont Waterfront. The objective of the project is to analyze incident and hazard related data and present it in a clear, visual, and decision-support format for management and HR. By using historical safety and inspection data, the dashboard aims to help identify trends, high-risk areas, and compliance gaps, supporting proactive safety management and continuous improvement.

2. Summary Description of Work Completed

Overview of work completed during this reporting period

During this reporting period, I focused on establishing the project's technical foundation and preparing the data for dashboard development. I defined the Three-Tier Architecture (Presentation, Application, and Data layers) and successfully initialized the full-stack environment. The dataset was reviewed and refined to ensure relevance to the Fairmont Waterfront context, and a live connection between the server and the database was established to support real-time data flow.

Technical details of tasks performed

- Software Installation

  Installed and configured VS Code, Node.js, and MySQL Workbench.
- System Architecture

  Established a professional GitHub repository structure following the Three-Tier model, including dedicated folders for BackEnd (Node.js/Express), FrontEnd (React), and ReportsAndDocuments.
- Database Implementation

  Developed and implemented a MySQL relational database schema, including an incidents table designed to store historical hotel safety logs.
- Backend Development

Built a Node.js/Express server in the BackEnd directory to handle business logic and database communication.

- Full-Stack Connectivity

  Successfully executed a live connection test between the Application Layer (Node.js) and the Data Layer (MySQL).

- Frontend Initialization

  Bootstrapped the React.js framework within the FrontEnd directory to prepare for Phase 2 UI development.

- Data Refinement

  Cleaned and standardized key fields from the 478 hotel-sector incident records, focusing on Department, Severity, Root Cause, and PPE requirements.

Issues encountered and how they were resolved

One of the main issues encountered was the presence of excessive and redundant data fields that could complicate analysis and reduce dashboard clarity. This was resolved by filtering and retaining only the columns directly relevant to safety monitoring for a single organization. Another issue was inconsistent data formatting, which was addressed through data cleaning and standardization.

Encountered pathing issues in the terminal when navigating nested directories; resolved this by mastering directory commands (cd ..) to correctly manage the BackEnd and FrontEnd environments.

Initial connection hurdles were addressed by correctly configuring environment-specific credentials (host, user, and password) in the index.js server file.

Changes made to the original project proposal

Front end was changed to react from HTML. Based on data analysis, the project scope was slightly refined to focus more on actionable safety indicators such as incident frequency, severity flags, and inspection outcomes, rather than attempting to visualize all available data fields. This change

improves usability and aligns the dashboard more closely with management decision-making needs.

Refined the scope to strictly follow a Three-Tier Architecture, ensuring the database, server logic, and user interface remain modular and maintainable.

Updated timeline

- Phase 2 (Next Week): Develop the React-based Incident Reporting Portal and link it to the Node.js API.
- Core Dashboarding: Implement Chart.js visuals to display real-time safety KPIs from the MySQL database.
- Feature Implementation: Build the automated report generation engine for WorkSafeBC and HR reports.
- Final Phase: Final testing, predictive analytics refinement (Python/Flask), and project documentation.

3. Repository Check-In Summary

Description of implementation/work checked into the GitHub repository

During this reporting period, the foundational Three-Tier Architecture for SafeSight was checked into the repository. This includes a functioning Node.js backend environment, a React.js frontend framework, and initial data processing scripts. Additionally, project documentation, database schemas, and data refinement notes were uploaded to ensure full project traceability.

Folder/file structure used (Implementation / DocumentsAndReports)

Implementation/

- **BackEnd/**: Contains the Node.js/Express server logic and the index.js file for MySQL database connectivity.
- **FrontEnd/**: Contains the initialized React.js application framework for the presentation layer.
- **Misc/**: Includes the safesight_data_preparation.ipynb notebook and refined hotel-sector incident records.

DocumentsAndReports/

- **Progress Report**: Detailed summary of Phase 1 milestones and updated project timeline.
- **Work Log**: Log of hours spent on environment setup, database design, and data cleaning.
- **AI Usage**: Documentation of AI collaboration for technical troubleshooting and architectural guidance.

Commits

Commits were made few times during the reporting period, specifically targeting major milestones: repository initialization, backend dependency installation, database connection verification, and frontend scaffolding. These commits ensure regular progress tracking and robust version control for the Phase 2 development cycle.

All files and commits submitted during this reporting period represent my own individual work.

Work Log

Date	Number of Hours	Description	Remarks
January 9, 2026	3	Initial class of the CSIS 4495	Initial idea of the research project of the HRIS platform extension was extended to Prof. Priya and she gave the idea of Work Safety Dashboard
January 10, 2026	1	Research done on the WorkSafe practices and the availability of the similar dashboards	
January 12, 2026	0.3	Spoke to the HR of the Fairmont Waterfront to get the data	
January 15, 2026	0.5	searched about the technology that I have to use and created the Git hub Repo and sent the colloboration request to Prof. Priya	
January 16, 2026	3	Project discussion with Prof. Priya and Finalizing the scope	
January 20, 2026	2	Project Proposal draft	
January 21, 2026	1	Project Proposal draft	
January 22, 2026	0.5	Project Proposal draft	
January 24, 2026	2	Project Proposal draft	
January 25, 2026	2	Finalizing the research project	
January 30, 2026	2	Mandatory consultation with supervisor	Discussed project direction and received guidance to obtain operational requirements from Fairmont Waterfront
February 1, 2026	1	Development environment setup	Configured local development environment and required tools for system development
February 2, 2026	2	Meeting with Fairmont Waterfront HR department	Collected operational insights from HR to prioritise

			system features, as advised by the supervisor
February 4, 2026	1	Dataset and industry research	Conducted in-depth research on relevant datasets and reviewed comparable workplace safety systems
February 3, 2026	2	Developed Backend (Application Layer) using Node.js and Express.	Installed dependencies and wrote index.js for DB connectivity.
February 5, 2026	2	Dashboard feature research	Analysed and shortlisted core features required for the SafeSight dashboard
February 6, 2026	2	Dataset cleaning and SQL import	Cleaned selected datasets and prepared them for import into the SQL database
February 7, 2026	2	Integrated React.js Frontend (Presentation Layer).	Scaffolded the React app inside the FrontEnd directory.
February 7, 2026	0.5	Verified Full-Stack connection and committed changes to GitHub. Confirmed "Connected to SafeSight MySQL Database" in terminal.	
February 8, 2026	1	SafeSight data preparation (Jupyter Notebook)	Developed and documented data preparation steps using a Jupyter Notebook
February 9, 2026	3	Progress Report 1 finalisation	Compiled, reviewed, and finalised Progress Report 1 for submission

AI Use Disclosure

AI Tool Name	**Version / Account Type**	**Specific Feature Used**	**Prompt Used (Summary)**	**Value Addition (Student Contribution)**
ChatGPT	GPT-5.2 / Free	Idea generation & academic structuring	"Suggest HRIS add-ons related to workplace safety systems"	Evaluated relevance, selected only safety-focused HRIS features, and adapted them to Fairmont Waterfront context
ChatGPT	GPT-5.2 / Free	Comparative analysis	"List available work and safety systems used in hospitality"	Analysed limitations of existing systems and identified gaps SafeSight addresses
ChatGPT	GPT-5.2 / Free	Academic writing support	"Provide a format for a literature review"	Reorganised structure to meet postgraduate marking rubric and project scope
ChatGPT	GPT-5.2 / Free	Analytical framework explanation	"Explain types of gap analysis for information systems"	Selected operational and compliance gap analysis suitable for WorkSafeBC context
ChatGPT	GPT-5.2 / Free	Research methodology structuring	"Provide format of a research design"	Tailored design to technical system development rather than theoretical research

ChatGPT	GPT-5.2 / Free	Methodology guidance	"How to form a research design for technical development research"	Aligned SDLC phases with academic research expectations
ChatGPT	GPT-5.2 / Free	Research methods suggestion	"Data collection methods for technical research projects"	Selected simulated datasets and system-generated data relevant to safety analytics
ChatGPT	GPT-5.2 / Free	Research validation strategy	"Explain triangulation strategies in applied research"	Applied triangulation using system output, predictive results, and usability feedback
ChatGPT	GPT-5.2 / Free	Technology recommendation	"Identify technology stack for a full-stack predictive dashboard"	Finalised stack based on feasibility, course scope, and personal skill level
ChatGPT	GPT-5.2 / Free	Code generation	"Generate Mermaid code for Kanban timeline"	Validated task logic, adjusted timelines, and aligned with Gantt and PERT plans
ChatGPT	GPT-5.2 / Free	System design explanation	"Describe three-tier system architecture for a safety system"	Adapted architecture specifically for HR, manager, and reporting portals
ChatGPT	GPT-5.2 / Free	Formal document drafting	"Draft a project contract for academic proposal"	Simplified language, aligned with course outline, and customised for instructor

M365 Copilot	GPT-5 chat model / Free	Logo creation	"create a logo for work safety dashboard name: SafeSight"	
ChatGPT	GPT-5.2 / Free	Database design guidance	“Suggest database structure for a workplace safety analytics system”	Reviewed proposed schema, normalised tables, and selected entities relevant to hospitality safety incidents
ChatGPT	GPT-5.2 / Free	Data modelling explanation	“Explain relational vs analytical database models”	Chose relational model for transactional safety data and justified design choice in report
ChatGPT	GPT-5.2 / Free	Dataset cleaning guidance	“How to clean and prepare incident datasets for predictive analysis”	Applied only applicable cleaning steps and excluded unrealistic transformations for simulated data
ChatGPT	GPT-5.2 / Free	Data validation rules	“What validation checks are required for safety datasets”	Defined validation rules aligned with workplace incident reporting standards
ChatGPT	GPT-5.2 / Free	Front-end architecture explanation	“Explain front-end architecture for a data dashboard”	Selected dashboard-based UI approach suitable for managers and HR users
ChatGPT	GPT-5.2 / Free	Back-end design support	“Describe back-end services for analytics systems”	Mapped suggested services to a simplified API structure appropriate for course scope

ChatGPT	GPT-5.2 / Free	API design guidance	"Design REST API endpoints for a safety reporting system"	Filtered endpoints to core MVP features and documented them at a conceptual level
ChatGPT	GPT-5.2 / Free	Environment setup guidance	"Development environment setup for full-stack analytics project"	Selected tools and configurations compatible with local machine and institutional constraints
ChatGPT	GPT-5.2 / Free	Deployment awareness	"Common deployment considerations for academic system projects"	Identified constraints and documented limitations rather than attempting premature deployment
ChatGPT	GPT-5.2 / Free	Progress report structuring	"Provide a format for Progress Report 1 for a system development project"	Selected only sections required by course guidelines and adapted structure to reflect SafeSight's early development stage
ChatGPT	GPT-5.2 / Free	Milestone planning	"Identify suitable milestones for Phase 1 of a predictive system project"	Refined milestones to align with completed research activities and realistic academic timelines
ChatGPT	GPT-5.2 / Free	Scope clarification	"Explain how to define project scope for an applied IT research project"	Clarified system boundaries and excluded advanced features not feasible within course duration
ChatGPT	GPT-5.2 / Free	Requirement prioritisation	"How to prioritise functional requirements for an MVP system"	Evaluated suggested requirements and selected core safety analytics features for initial implementation

ChatGPT	GPT-5.2 / Free	Risk and issue identification	“Common early-stage risks in system development projects”	Identified relevant risks and documented mitigation strategies applicable to SafeSight development
ChatGPT	GPT-5.2 / Free	Academic reflection support	“How to write reflective progress for an IT project”	Rewrote content in own words, ensuring critical reflection rather than descriptive reporting
ChatGPT	GPT-5.2 / Free	Alignment check	“How to align progress reports with original project proposal”	Cross-checked progress against proposal objectives and adjusted report to maintain consistency