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| **Final Year Project Title Proposal** | |
| **Student Name:** | Fui Yi Qi |
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| **Industrial Supervisor Name**  **and email :** | Chin Tzer Shyang  ts.chin@silverlake.com.my |

(i) FYP Title:Please choose a descriptive title. Avoid general titles like "Robot Navigation" or "Human emotions analysis". Prefer specific titles such as "Path planning algorithm for an unmanned aerial vehicle" or "Analysis of the effect of environmental illumination on human emotions". Overly general titles risk being rejected by the review panel.

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| Design and Implement a Full Stack Issue Reporting System |

(ii) Description / Objective / Scope: This information should enable students to understand the general outline of the project and the tasks/objectives that the student would have to achieve. Also, the Review Panel will primarily use this information to approve/reject titles. At the minimum, clear objectives and project scope must be provided.

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| **Description:**  This project aims to design and implement a comprehensive full stack web-based issue reporting system that allows users to log, track, and manage issues efficiently within an organization or community platform. The system will support different user roles such as end-users (issue reporters), administrators (issue managers), and system maintainers, each with specific permissions and interfaces.  **Objectives:**   * To analyze user and administrative requirements for an efficient issue reporting workflow. * To design a scalable and responsive front-end interface for real-time issue submission and tracking. * To develop a robust backend API for managing issue data, including creation, categorization, status updates, and escalation. * To implement secure authentication and authorization for different user roles using modern security frameworks. * To incorporate a notification mechanism (email or in-app) for status updates and resolution tracking. * To ensure system maintainability and extensibility for future feature integration.   **Scope:**   * Development of both frontend and backend components using contemporary frameworks * Integration with a relational database for persistent issue storage. * Implementation of RESTful API endpoints for seamless communication between client and server. * Deployment of the application on a cloud platform or local server with proper documentation. * Testing the system for functionality, performance, and security compliance. |

(iii) Equipment/Hardware: List the equipment you would need to have access to and use in the FYP (e.g., laptop, smartphone (optional), webcam (provided), microwave signal generator, displacement Transducer, CNC turning lathe, etc).

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| Laptop |

(iv) IT tools: List the IT tools you would use in the FYP (e.g., Word processing &/or name of any specific software)

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| **Documentation & Planning**   * **Microsoft Word** – for drafting the project proposal, documentation, and final report. * **Microsoft Excel** – for tracking progress, issue logs, and system testing results. * **Lucidchart / Draw.io** – for creating system architecture diagrams and flowcharts. * **Microsoft PowerPoint / Canva** – for creating your presentation slides.   **Frontend Development**   * **Visual Studio Code** – versatile code editor with extensions for HTML, CSS, JavaScript. * **React.js** or **Angular** – frontend framework/library for building dynamic UIs.   **Backend Development**   * **Node.js + Express** / **Django** / **Laravel** – depending on your preferred language stack. * **Postman** – to test RESTful APIs.   **Database Management**   * **MySQL Workbench** / **pgAdmin** – for managing MySQL or PostgreSQL databases.   **Authentication & Security**   * **OAuth 2.0 / Firebase Auth / Auth0** – for user login and role-based access. * **OWASP ZAP** – to test for security vulnerabilities.   **Deployment & DevOps**   * **Git & GitHub / GitLab / Bitbucket** – for version control and code collaboration. |

(v) Special requirement: List special requirements. Also consider including information on specific skill sets which would be advantageous (e.g., "AutoCAD skills required")

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| **Recommended Skill Sets:**   * **Frontend Development:** Basic knowledge of HTML, CSS, and JavaScript. Familiarity with frameworks like **React**, **Vue**, or **Angular** would be a strong advantage. * **Backend Development:** Understanding of server-side logic using **Node.js**, **Express**, **Django**, or **Laravel**. * **Database Management:** Experience working with **SQL** databases (e.g., MySQL/PostgreSQL). * **API Design:** Ability to create and test **RESTful APIs**. * **Authentication & Security:** Familiarity with authentication protocols (e.g., **OAuth 2.0**, **JWT**) and basic cybersecurity practices. * **UI/UX Design Awareness:** Basic design sense or tools like Figma for mockups/wireframes. * **Version Control:** Proficiency in **Git**, including branching and pull requests. * **Problem Solving & Debugging:** Critical thinking for isolating and resolving bugs or feature conflicts. * **Documentation & Reporting:** Ability to create technical documentation and present system workflow clearly |

(vi) Expected Deliverables: (List out the expected deliverable/ scope of the project. Examples, a developed system comprises of the following functions:……)

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| **Expected Deliverables:**   1. **Project Proposal Document** – outlining objectives, scope, timeline, and tools. 2. **System Architecture Diagrams** – including entity-relationship diagram (ERD), system flow, and use-case diagrams. 3. **Functional Web Application** – deployed and fully operational system accessible via browser. 4. **Source Code Repository** – hosted on GitHub or similar platform with version control. 5. **Technical Documentation** – describing system design, modules, database schema, and API endpoints. 6. **User Guide** – explaining how to use the system based on various user roles. 7. **Testing Report** – functional testing, user acceptance testing (UAT), and security testing logs. 8. **Presentation Slides** – for final FYP defense, summarizing key features, challenges, and outcomes.   **System Functional Scope:**   * **User Registration and Login**   + Secure signup and login via role-based access (e.g., user, admin, technician). * **Issue Submission Interface**   + Form to report issues with fields like title, category, description, priority, and optional image upload. * **Issue Tracking Dashboard**   + View submitted issues with filter and search capabilities based on status, priority, or date. * **Issue Management**   + Admin/technician panel for updating status (e.g., Open, In Progress, Resolved), assigning tickets, and leaving internal notes. * **Notification System**   + Email or in-app alerts on status updates, resolution notes, or assignment. * **Commenting or Communication Module**   + Optional chat or thread-based commenting between reporters and assignees. * **Analytics & Reports**   + Admin view with summary of issue trends, types, and resolution timelines. * **Audit Logs**   + Track changes to issues and user activity for transparency. * **System Settings** * Manage issue categories, user roles, and escalation rules. |

(vii) Industrial Links: Specify the **names of companies or industrial partners** directly involved in this project (if applicable). Include industry supervisor’s contact.

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| Industry Supervisor: Chin Tzer Shyang  Company: Silverlake Innovation Partners  Email: ts.chin@silverlake.com.my  Phone: +6017-303 2779 |

(viii) Community Project: Specify whether this project benefits or serves the community at large (as opposed to primarily serving scientific, research, or commercial interests)

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| N/A |

(ix) CP/CA: Specify **TWO(2) Complex Problems (CP) or TWO(2) Complex Activities (CA)** that are related to the project

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| **(CP1) Complex Problem 1: Ensuring Secure, Scalable Multi-role Authentication and Authorization**  Implementing a secure and scalable system that supports multiple user roles (e.g., issue reporters, administrators, technicians) involves integrating advanced **authentication mechanisms (e.g., OAuth 2.0, JWT)** and **role-based access control**. The challenge lies in maintaining both **data integrity** and **user experience** across devices and user groups. This requires applying principles of **cybersecurity, system design, and backend logic coordination**, which intersect across multiple knowledge areas and demand deep integration planning.  **(CP3) Complex Problem 2: Designing Real-time Issue Tracking with Status Management and Notifications**  Developing a real-time issue tracking feature that includes **status transitions, escalation paths, and automated notifications** (via email or in-app) requires the application of **distributed system design, asynchronous communication, and UI/UX synchronization**. It poses a challenge in balancing system responsiveness, user clarity, and resource optimization—especially if aiming for cloud deployment with concurrent users. |

**CP/CA**

**CP1:** Various parameters involving wide-ranging issues

Project involves various parameters that are broadly categorized as defining the goals and objectives of the project, determining the deliverables, identifying the stakeholders, and establishing the timeline for completion.

**CP2:**depth of analysis of the problem with no obvious solution

Projects can involve varieties of analysis such as requirement analysis, feasibility study on the schedule, technical aspect, risk, cost etc. Thus, it is necessary to understand the underlying causes of the problem, explore potential solutions, and evaluate the feasibility and effectiveness of the proposed solution.

**CP3:** in-depth knowledge of the field of study

Project involves varities knowledge in the field of study such as development/research methodology, design, technical aspect, implementation, testing, modeling, deployment, presenting the idea, etc.

**CP4:** involves infrequently encountered issues

Project involves a range of issues such as integration of sub-systems and services, machine learning and artificial intelligence, data privacy and security, performance optimization, platform-specific challenges, etc.

**CP5:** uncommon requirement beyond standard practice

Project may require the implementation of a novel algorithm or technology that is not commonly used in the field or may need to meet a unique set of requirements or specifications that are not typically encountered in similar projects. Thus, additional research methods or fact-finding may require to understand and to find the optimal solution.

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**CA1:** diverse resources (people, money, equipment, materials, information, and technologies)

Project involves of diverse resources such as software, hardware, data, research materials, guidance from the experts in the field.

**CA2:** considering solutions for different parameters

Each of those resouces will be analyzed and evaluate its impact on the project's success and the implementation.

**CA3:** involves creativity and innovation in providing a solution

The implemented solution meets the needs of the target audience or user. This involves gathering feedback and input from users throughout the design and development process. Students need to identify innovative solutions to the problem they are trying to solve by incorporating new technologies, engaging user in the interaction with the developed solution, or create new method/ approach. Combining knowledge and skills from different fields can create a more innovative and effective solution.

**CA4:** sustainable solution

Students can conduct a life cycle analysis of their solution to identify areas where sustainability can be improved. This involves analyzing the environmental, social, and economic impacts of the solution. It may also involve designing business models that create economic value to ensure the long-term viability of their solution, incorporating educational and motivational elements to their solution, or engaging stakeholders in the project to ensure their expectations are met.