

Individual Project (CS3IP16)

Department of Computer Science
University of Reading

Project Initiation Document

PID Sign-Off

Student No.	31002269
Student Name	Shin Zhi Kong
Email	s.z.kong@student.reading.ac.uk
Degree programme (BSc CS/BSc CSwIY)	BSc in Computer Science
Supervisor Name <i>(Consultation with supervisor is mandatory)</i>	Pat Parslow
Date	10-10-24

SECTION 1 – General Information

Project Identification

1.1	Project Title
	Modular Student Information System
1.2	Please describe the project with key-phrases (max 5)
	Distributed Databases Architecture Web-based User Interface Student Data Management Role-Based Access Control Module Selection and Enrolment
1.3	E-logbook maintenance agreed with supervisor <i>Use Google doc, OneDrive, or any mobile App whereby you will be able to generate a PDF copy</i>
	CSGitlab
1.4	GitLab link for maintain source code and research data <i>Any change in GitLab link and Source code repository MUST be explicitly mention in final report</i>
	https://csgitlab.reading.ac.uk/ty002269/modular-student-information-system

SECTION 2 – Project Description

2.1	Summarise the project’s background in terms of research field /application domain (max 100 words).
	<p>The Modular Student Information System is classified as an information management system and is tailored for use in educational settings. The goal of the system is to make it easier to manage student data across various departments in a decentralized database setting. The system improves data integrity, privacy, and administrative efficiency by providing centralized and role-based access to information such as administration, overcoming issues with decentralized student enrolment and multi-department courses.</p>
2.2	Summarise the project aims, objectives and outputs (max 250 words). These aims, objectives, and outputs should appear as the tasks, milestones and deliverables in your project plan (fill out Section 3).
	<p>The aim of this project is to develop a distributed student information management system that allows educational institutions to manage student data across multiple departments while maintaining a centralized interface for administration.</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1. Design a distributed database system for managing student information at the department level. 2. Develop web interfaces for different user roles, such as student, academic staff and administration staff. 3. Ensuring privacy and security through the implementation of role-based access control, ensuring that users can only access the data they are authorized to see. 4. Implement cross-department student records management. <p>Output:</p> <ol style="list-style-type: none"> 1. A fully functioning web-based application with distinct user interfaces 2. A distributed database for decentralized data management. 3. A business logic that allows for cross-database access. 4. Privacy and security features to protect sensitive student information.

2.3	Initial project specification – roughly indicate key features and functions of your finished program/application. Indicate possible method, data source, technology etc. (max 400 words) (Sensible and relevant Charts, Table, and Figures can be used)
	<ol style="list-style-type: none"> 1. Distributed Database Architecture: Each department will have its own database, allowing decentralized data management. The system will support cross-database access for students studying in multiple departments, ensuring seamless management of their records. 2. Role-based Access Control: providing distinct interfaces based on the roles of users. <ul style="list-style-type: none"> - Student: access their own academic/exam records, select modules, view current modules, check finance reports, and review personal data. - Academic Staff: View and manage modules they are teaching and view the list of enrolled students, add or modify student module selections, view student performance across all modules within their department. - Administration Staff: enrol new students by inputting personal details, programmed enrolment, option to withdraw students from modules or the entire program, updating the database and notifying relevant departments, full access to student records, view and manage student financial records. 3. Module Management: Students will be able to enrol in courses, select modules based on prerequisites, and review course descriptions. 4. Privacy and Data Integrity: Make sure that sensitive student data can only be accessed by authorized personnel. This involves ensuring secure user verification, encrypting data during transmission, and auditing access attempts. <p>Methods and Technologies:</p> <ul style="list-style-type: none"> • Backend: PostgreSQL (for its ability to support multiple databases and cross-database queries) • Frontend – HTML/CSS: The standard, free technologies for creating web pages and styling them or React.js • Cross-Database Access: PostgreSQL will handle complex queries across multiple databases. • Gitlab – manage project’s code and version control.

2.4	Describe the social, legal and ethical issues that apply to your project. Does your project require ethical approval? (If your project requires a questionnaire/interview for conducting research and/or collecting data, you will need to apply for an ethical approval)
	<p>This project involves the handling of sensitive student data, which raises privacy concerns. The system needs to adhere to data protection laws such as GDPR (General Data Protection Regulation) to ensure proper and ethical handling of personal data. It is important to properly establish user roles and permissions to avoid unauthorized entry to student records.</p>
2.5	Identify the items you may need to purchase for your project. A cost up to £200 can be applied (include VAT and shipping if known). You need to have consent of your supervisor. Your request will be assessed by the department.
	Not for now.
2.6	State whether you need access to specific resources within the department or the University e.g. special devices and workshop
	cPanel.

SECTION 3 - Project Plan

This is my Project Plan.

Project stage [this is only indicative – write your own stages]	START DATE: 3-10-24												
	Project Weeks												
	0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24-27	27-30	30-33	33-36	36-39
1 Background Research													
1.1. ...													
1.2 ...													
2 Analysis/Design													
..													
..													
3 Develop prototype													
4 Testing/evaluation/validation													
5 Assessments													