# CS 255 Module Two Assignment Template

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Complete this template by replacing the bracketed text with the relevant information.

This template lays out all the different sections that you need to complete for Project One. Each section has guiding questions to prompt your thinking. These questions are meant to guide your initial responses to each area. You are encouraged to go beyond these questions using what you have learned in your readings. You will need to continually reference the interview transcript as you work to make sure that you are addressing your client’s needs. There is no required length for the final document. Instead, the goal is to complete each section based on your client’s needs.

**Tip:** You should respond in a bulleted list for each section. This will make your thoughts easier to reference when you move into the design phase for Project Two. One starter bullet has been provided for you in each section, but you will need to add more.

**System Components and Design**

**Purpose**

*What is the purpose of this project? Who is the client and what do they want their system to be able to do?*

* The purpose of the project is to build a website to help students prepare for their driving test.
* The client is Liam, who owns the business known as “DriverPass.”
* Liam ants the site to provide:
  + Training in the form of online classes
  + Practice tests to prepare for actual driving tests
  + A scheduling funnel for their in-person classes.

**System Background**

*What does DriverPass want the system to do? What is the problem they want to fix? What are the different components needed for this system?*

* DriverPass wants the system to:
  + Function as a bank of knowledge for students
  + An access point for new clients to reserve classes
  + A database that employees can use to support their clients
* The problem they want to fix is that:
  + There currently is no such system
  + Most classes are only available in person
* The different components needed include:
  + Security
  + Tracking
  + A scheduling system for booking reservations
  + A database system for storing information
  + A query system for producing reports and retrieving client information.

**Objectives and Goals**

*What should this system be able to do when it is completed? What measurable tasks need to be included in the system design to achieve this?*

* Once complete, the system should:
  + Allow new clients to book in-person classes from the site
  + Take classes online
  + Take practice tests online
* The site should also allow employees to:
  + Retrieve client data
  + Protect client data
* It should also be relatively easy to maintain
  + DriverPass does not have a large staff
  + The owner will be working to maintain the site themselves

## Requirements

## Nonfunctional Requirements

**Performance**

* High speed access to course content and forums as well as educational tools
* Rapid analytics and data gathering to provide insight without slowing users down
* Multi instance support on multiple cores to ensure full CPU utilization for multi-tasking

Rationale: Managing the activity of thousands of students every day can bog systems so the software will need to be as efficient as possible so that students do not experience any increased difficulty during peak activity time periods like after class and during testing seasons (Goruganthu, 2022).

**Platform Constraints**

* Framework that allows IT staff to quickly expand access to large numbers of students
* Flexible data systems that ensure the school is not using too much or too little data
* Modular backend that allows introduction of new courses and education communities

Rationale: An online learning management system makes it possible for a school to reach a large audience around that world and the software behind it must be easy to expand in order to support a rapidly growing student body (Podorozhko, 2021).

**Accuracy and Precision**

* Consistent speeds on videos and course materials that require heavy processing
* Redundancies to ensure information isn’t lost during temporary connection gaps
* Backup systems to restore functionality in the event of catastrophic failure

Rationale: Students often complain about software that does not perform when it’s needed most. It’s important to ensure that the learning management software student’s rely upon to learn and complete work every day can be trusted to function and be available at all times (Carnegie Mellon, 1999).

**Adaptability**

* Compatibility with various operating systems likes Windows and iOS
* API access to integrate with other systems like finance and records
* Standardization to improve embedded software like MS Office

Rationale: Students might be anywhere in the world and using many different types of technology or software to access the learning management system. The school will also need the software to work well with their other related back end systems (Flynn, 2022).

**Security**

* System security to prevent data breaches and protect sensitive user information
* Internal monitoring to identify when malicious activity is present
* Isolation and removal features to remove malware while preserving student data

Rationale: Malware and other cyber attacks can cripple entire institutions and lead to disruption systems and processes. In education it can lead to destroyed records, delayed graduation, or failure to complete coursework. The system must be protected (Thales, 2024).

## Functional Requirements

**Course Scheduling**

* Offer list of courses available to students including descriptions and pre-requisites
* Allow students to build “draft” schedules to find the right plan
* Send requested schedules straight to counselors and registrar

Rationale: An effective learning management system won’t be of much use to students if they can’t see what courses are available and then schedule those courses through the system. Any system that also streamlines backend administrative processes reduces friction in the enrollment process and makes it more likely that students will enjoy the platform (Singh, 2024).

**Curriculum Delivery**

* Allow teachers to upload premade course content including text and video
* Provide forum for discussion and information sharing between students and teachers
* Send notifications to students and teachers when assignments are due

Rationale: Without an easy to learn and reliable platform that educators can use to quickly, and comfortably, distribute course materials to students, the learning management system won’t be effective in its initiative to offer a robust academic experience to students (Guest, 2020).

**Grading System**

* Document editing system that allows teachers to mark student’s documents
* Tabular grade reporting system for easy to view grades
* Automation that allows teachers to leverage their time by auto grading quizzes

Rationale: A school needs to provide students with helpful feedback as quickly as possible and a best-in-class learning management system needs advanced tools that help students improve and help teachers get more done with less (Jones, 2021).

**User Accounts**

* Unique accounts that are associated with specific students
* Dashboard to show which courses the student is enrolled
* Summary of financial charges to track the costs of education

Rationale: For many students, education is overwhelming so any tool that is able to consolidate important information in one place provides and advantage. Unique user accounts also help the university give credit to students for their work and prevent academic dishonesty (Southern Association of Colleges and Schools, 2023).

**Tutoring**

* AI driven feedback that gives students hints on their homework
* Real time Q&A portal that allows students to ask simple questions
* Access to find and book live tutoring sessions for difficult problems

Rationale: Often, students just need someone to explain things in a different way and an online education platform can sometimes lack the human element of education. A tutoring are on the site would help guide students in the right direction and also allow them to speak with experts in the subject should they need it (Schrumpeter, 2024).

**Activity Tracking**

* Keystroke and mouse movement activity logging
* Camera activity and facial recognition history
* Plagiarism check to confirm authenticity of student’s work

Rationale: Today, advanced educational aids and automation software help students complete work without learning or doing any of the work themselves. The school needs basic features that make it possible to identify when students may be committing academic fraud (English, 2023).

## User Interface

* Dashboard to quickly view upcoming material and practice tests
* Menu to select different functions of the site
* User account button that can be clicked for redirection to their profile

Rationale: It is very helpful to users if the first thing they see upon logging into the site is an overview of everything find most important. The first would be a view of what upcoming work is scheduled for them. There is also broad functionality on the site which is ideally reached via a simple menu. Many will also need to make adjustments to their user account and a profile button allows that succinctly (Stevens, 2023).

## Assumptions

* Users will have their own personal computer that can be used to access the site
* Users will have their own internet connection that is off adequate speed
* Users will have basic proficiency in using computers and internet tools

Rationale: While the school can offer courses to assist students in learning more about computer systems and becoming more proficient in the use of technology in an academic environment, it is not feasible to teach every student before starting their curriculum. It is assumed that they will have the knowledge and resources to access coursework and learn (Thai, 2023).

## Limitations

* The learning management system will not be open source
* Students will not be able to permit access to outside users (ie github type links)
* The learning management system will not process financial transactions

Rationale: The school cannot afford the risks of having the learning management system copied by competitors or co-opted by malicious actors to harm students or faculty members. It also, despite communicating with the finance department, not process financial transactions like charged students bank accounts for tuition. This is the purview of an outside department (Helms, 2023).

## Gantt Chart

A screenshot of a computer

Description automatically generated

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