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CS255

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8/14/2024

# CS 255 Business Requirements Document Template

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 project aims to develop an online platform for DriverPass that transforms how students prepare for driving exams by providing an interactive and engaging learning experience.
* By leveraging innovative technology and innovative pedagogy, DriverPass seeks to increase student pass rates and improve test-taker confidence.
* The platform will include a user-friendly interface designed for ease of navigation, ensuring that students can effortlessly access all necessary features. Students will be able to sign up for various training packages, schedule and manage their driving lessons, and explore a range of online courses and practice tests. Additionally, the platform will offer tools for tracking their progress, allowing students to monitor their performance and see their improvements over time.

### 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 is looking to fix the problem of high driving test failure rates that are caused by insufficient preparation. They plan to develop a comprehensive web-based platform that provides a variety of learning tools and resources.
* The student portal allows registration, scheduling, and access to online resources.
* The curriculum management system enables instructors to create and manage online classes and practice tests.
* The scheduling system streamlines the process of booking, canceling, and modifying on-the-road training sessions.
* The payment gateway ensures secure and reliable transactions for all financial transactions.
* The security framework protects sensitive information and ensures data integrity.

### 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?*

* The system should include a secure authentication mechanism to manage and control user access for various roles effectively.
* Provide access to up-to-date online classes and practice tests, aligned with DMV requirements, to enhance student preparation.
* Facilitate seamless booking, canceling, and modifying of on-the-road training sessions, ensuring flexibility and convenience.
* Allow users to generate detailed reports and access relevant data from any device, with an audit trail for accountability.
* Implement encryption techniques and adhere to DMV regulations to safeguard sensitive information.
* Design a visually appealing, user-friendly web interface for easy navigation and accessibility.
* Build a flexible and scalable system architecture that supports future updates, remote maintenance, and robust error-handling mechanisms.

## Requirements

### Nonfunctional Requirements

*In this section, you will detail the different nonfunctional requirements for the DriverPass system. You will need to think about the different things that the system needs to function properly.*

#### Performance Requirements

*What environments (web-based, application, etc.) does this system need to run in? How fast should the system run? How often should the system be updated?*

* The system needs to be developed as a web-based application that operates smoothly across all major web browsers. It should be fully compatible with both desktop and mobile devices to provide a consistent and reliable user experience. This approach will enable users to access the platform effortlessly from any device they prefer, including computers, tablets, and smartphones, without facing any compatibility or performance issues. By ensuring broad device and browser support, the system will provide a flexible and user-friendly experience for all users.
* The system should operate efficiently, handling user requests and interactions quickly. Given the nature of the platform, including features like exams, the system must maintain a high speed to provide a smooth and responsive user experience.
* The system should be updated regularly to fix any security issues or bugs. Also, updates should be implemented promptly in response to changes in DMV guidelines to keep users informed and ensure compliance.

#### Platform Constraints

*What platforms (Windows, Unix, etc.) should the system run on? Does the back end require any tools, such as a database, to support this application?*

* The system must be designed to work across various platforms to ensure wide accessibility. For desktop users, it must be compatible with major operating systems, including Windows, macOS, and Linux. This ensures that users on any of these platforms can access and use the system without issues. Additionally, for mobile users, the system needs to support both Android and iOS operating systems. This dual support will make sure that users can engage with the system from their smartphones or tablets, regardless of the mobile platform they use.
* To effectively manage and store various types of data, such as user profiles, course materials, and other essential information, the system will require a reliable database solution. MySQL is recommended due to its strong performance, reliability, and capability to handle large amounts of data efficiently. On the server side, the system will need technology like Node.js. Node.js will be crucial for handling application logic, processing API requests, and managing real-time interactions.

#### Accuracy and Precision

*How will you distinguish between different users?* *Is the input case-sensitive? When should the system inform the admin of a problem?*

* Each user will be distinguished by unique identifiers, such as their email address or username. This ensures that each user has a separate account, preventing any confusion or overlap between different individuals. Additionally, passwords will be case-sensitive to enhance security and accuracy in user authentication.
* The system should keep administrators informed about potential issues. For example, it should alert them if there are repeated failed login attempts or any server-related problems. Notifications can be sent through email or shown through a dashboard alert, enabling admins to quickly address and resolve any issues that arise.

#### Adaptability

*Can you make changes to the user (add/remove/modify) without changing code? How will the system adapt to platform updates? What type of access does the IT admin need?*

* The system should be designed to allow administrators to manage user accounts, like adding new users, removing existing ones, or modifying user details—through an easy-to-use interface. This capability should be built into the system, ensuring that these tasks can be performed without needing to make any changes to the underlying code. By integrating this functionality directly into the system's design, administrators can efficiently handle user management tasks without technical complications.
* To remain effective as platforms evolve, the system must be capable of adapting to updates in operating systems and web browsers. This adaptability requires the system to be designed in a way that permits seamless integration of changes and updates provided by developers. This approach ensures that the system stays compatible with new versions and continues to operate smoothly, regardless of platform updates.
* IT administrators require extensive access to manage and oversee the system. This includes the ability to oversee and adjust user accounts, reset passwords, and remove inactive accounts. Additionally, IT admins should have the necessary tools to manage system logs, user data, and configuration settings. This comprehensive access ensures that they can perform maintenance tasks, troubleshoot issues, and ensure the overall stability and performance of the system.

#### Security

*What is required for the user to log in? How can you secure the connection or the data exchange between the client and the server? What should happen to the account if there is a “brute force” hacking attempt? What happens if the user forgets their password?*

* Users must log in using their email address or username along with a password.
* All data exchanged should be encrypted to keep it safe.
* In the event of a “brute force” attack, where multiple failed login attempts occur, the system should automatically lock the user’s account after a specified number of unsuccessful attempts. The user should then receive a notification alerting them of the account lockout and providing instructions on how to address the situation.
* If a user forgets their password, they should be able to securely reset it through a recovery process involving email verification or SMS. This method ensures that the password recovery process is secure and that only the authorized user can regain access to the account.

### Functional Requirements

*Using the information from the scenario, think about the* *different functions the system needs to provide. Each of your bullets should start with “The system shall . . .” For example, one functional requirement might be, “The system shall validate user credentials when logging in.”*

* The system shall check user credentials during login and show helpful error messages if there is an issue.
* The system shall allow users to choose and buy learning packages securely.
* The system shall track user progress, like completed courses and test scores.
* The system shall let instructors generate reports on student performance.
* The system shall provide a way for users to schedule and manage course content.
* The system shall offer access to online classes and practice tests, including interactive elements.
* The system shall process payments securely.
* The system shall provide a secure means for users to communicate with customer support.
* The system shall comply with DMV rules and regulations, ensuring that all features and operations adhere to relevant legal and regulatory standards.

### User Interface

*What are the needs of the interface? Who are the different users for this interface? What will each user need to be able to do through the interface? How will the user interact with the interface (mobile, browser, etc.)?*

* The interface should be designed to be intuitive and visually attractive, offering a user-friendly experience. It must be straightforward to navigate so that users can easily find and use the features they need. The design should ensure that users can quickly understand how to interact with the system and access the functionalities without confusion.
* The interface needs to accommodate several user roles, each with specific requirements:
  + Student - access courses, schedule sessions, track progress and manage their accounts.
  + Instructor - manage driving schedules, record lesson feedback, and track student progress.
  + Admin - manage users, permissions, oversee system operations, and adjust settings.
  + Secretary - handle appointment bookings, cancellations, and customer information.
  + IT Officer - manage user accounts, reset passwords, and access activity logs.
* The system will be accessible through a web browser, allowing users to interact with it from both desktop computers and mobile devices, including smartphones and tablets. This design ensures a reliable and consistent experience across all devices, ensuring users can access and use the system whether they are at home, on the go, or anywhere else.

### Assumptions

*What things were not specifically addressed in your design above? What assumptions are you making in your design about the users or the technology they have?*

* Users have a steady internet connection, which will allow them to access and utilize the system effectively.
* Users will access the system using standard devices like desktops, laptops, or smartphones, all of which should have up-to-date web browsers and be capable of connecting to online services.
* Users have a basic understanding of technology and online processes. This includes experience with navigating web interfaces, managing online accounts, and handling digital tools for tasks such as registration and scheduling.
* The system will maintain high availability, meaning it should be operational 24/7 to accommodate users’ varying schedules and ensure they can access the system whenever needed.
* The system will be continuously updated to reflect any changes in DMV rules and regulations, maintaining compliance and ensuring it adheres to current legal and procedural standards.

### Limitations

*Any system you build will naturally have limitations. What limitations do you see in your system design? What limitations do you have as far as resources, time, budget, or technology?*

* The system might face problems if there is a sudden increase in the number of users. This could lead to slower performance and longer response times, especially during busy periods.
* While the system should allow for disabling packages, adding or removing them might need technical help from developers. This means that making changes to the packages will not be straightforward for someone without technical skills.
* Due to budget limitations, the system might not initially include some advanced technologies or features. This could mean starting with a more basic version of the system and adding more features later as funds allow.
* The project might need to be completed in stages due to limited time. This means that not all desired features and functions will be available in the first version of the system. Some features will be added in future updates.
* Keeping the system up to date with the latest updates from the DMV could be complex. It will require ongoing maintenance and technical work to ensure that the system complies with the latest rules and regulations.
* Since the system is expected to run on the cloud, the responsibility for backup and security will lie with the cloud provider. This could limit the control that DriverPass has over these aspects and requires trust in the cloud service provider’s security measures.

### Gantt Chart

*Please include a screenshot of the GANTT chart that you created with Lucidchart. Be sure to check that it meets the plan described by the characters in the interview.*

A screenshot of a project

Description automatically generated