**CS 255 Business Requirements Document**

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**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 this project is to create a database system that organizes DriverPass’s appointment data. The system should be able to be accessed from any mobile device or computer over the internet, and customers should be able to make appointments either over the phone or the internet. The system needs to recognize different users and give different users different types of access. For example, the owner should have full access to all the different accounts, employees will need to see more information than customers based on their roles and responsibilities, and the customers will only have access to their own accounts.

The client is DriverPass, and they have a vision for what the system should look like, which can be described by the following requirements:

* The system needs to allow users to take online tests and in-person driving training so they can pass their driver’s tests.
* Users should also be able to book training sessions and take tests online.
* Customers should be able to pick from different class packages and have a way to keep track of each class online.
* Accounts should have different levels of access. The administrator account should have the ability to restrict different accounts and reset passwords for other accounts.
* There should be a way to keep track of each customer and driver’s schedule.

### 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?*

The DriverPass system was designed with the vision of helping students have access to better driver training, so that they can pass their driving tests. DriverPass’s owner, Liam, wants to create a company where customers can practice for their road tests both online and in-person with an instructor.

DriverPass has a set vision for what it wants its company to do. They want the system to be capable of doing the following:

* Have a user interface that the user can interact with online, and it should be able to allow users to browse through different driving packages that allow the user to book different trainings with an instructor.
* Allow users to access online class materials and take different practice tests.
* The owner should also be allowed to customize different training packages with the functionality to both remove old and add new packages.

DriverPass want to fix the problem of many students failing their driving tests and the need for better driver training by offering a better driver training experience to their customers.

The following components are needed for this system:

* First, you need to have a login portal so that users can access their own individual data. They need to be able to access their own scheduled lessons with instructors and any course materials.
* You also need to be able to create a database that can keep track of the different users and their different bookings.
* There also needs to be a way for the employees to access all the data of the users so that they can better manage the bookings. This will need different layers of security protocols and measures.
* The system also needs a way to track the Department of Motor Vehicles’ (DMV) policy changes, and then it needs to be able to process this data and send a notification to DriverPass to inform them of the change.
* The system needs to have a tiered access system where the administrator account has full access to all the other accounts. This account needs to have the ability to block access for different users, add new accounts with different levels of access, and also the ability to reset someone’s passwords.
* There also needs to be a way for employees or the administrator account to customize and edit the different class packages, like adding and removing different packages in the future.

**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 is designed with functionality in mind for both the customer and the employees. As such, there are different objectives that this system needs to achieve when completed. For example, the system needs to handle the following tasks when completed:

* Handle customer logins and account data successfully
* Manage the customer’s scheduled trainings and driver availability data
* Have an administrator account that can disable different packages, manage different users with different access levels, and reset passwords

To ensure the above objectives, the following measurable tasks need to be included in the system design:

* Once the login and account data code is implemented, you can test that it works as intended by creating 3 different accounts and signing each of them up with a different package. Then schedule different trainings on each of the accounts to ensure that they all function properly. During the testing phase, the developers should also try to reset their passwords with each account and ensure the functionality works.
* To ensure that the training and driver availability data work as intended. The development team should schedule various trainings with various instructors. After scheduling each data they can check for double bookings or other errors and fix them accordingly. After each error is fixed, the tests should be run again until there are no errors.
* To ensure that the administrator can change the different packages and manage different accounts, developers should create different customer and employee accounts. Then they should test to see if the administrator can remove access from the different accounts. They should also send password requests from both employee and customer accounts to see if the administrator can reset them. They should also try to customize current driving packages, adding new packages, and removing existing packages.

## 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?*

DriverPass’s owner wants to be able to access data both from a computer and online. The system should also run smoothly and be able to handle all functionalities even at peak user loads.

* The system should run on a web-based environment, which should be optimized for both mobile and computer devices. Optimizing the site for both mobile and computer devices will allow users to access the system smoothly from either device.
* While it is not possible to know the exact speeds that the system should run without exact user data and information on peak loads for DriverPass’s expected customers, we can make some inferences. For example, if we design a system capable of handling a customer base smaller than is needed, then we will end up with slow load times and error rates (Gerpe, 2025). The system should run smoothly and have load times of no more than 3 seconds; otherwise, visitors may leave the site (BrowserStack, 2025).
* The system should be updated regularly, and how frequently a section gets updated differs depending on what type of content it is (Knowledge Anywhere, n.d.). For example, quizzes and assessments should be updated every 6-12 months, while bugs and errors with the website should be fixed promptly, depending on the severity of the issue.

#### 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 is designed with both the users and employees in mind and should be available on both computers and mobile devices. The employees also need different functionality in cases where they need to help the customer out.

* In order for the system to be available on the web and phone, the system needs to support the following platforms:
  + Windows, macOS, Android smartphones, and iOS
* The system does require backend tools like a database and different administrator access functionality to support the application. For example, there needs to be a database of different customers and a way to track their training schedules. The different drivers will have their own availabilities as well, and the system will need to track those as well.

#### 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?*

The system needs to be able to distinguish each user and each user should be able to access their own account data.

* Each user, be it customer or employee, will need to have their own unique login information. This will allow the system to distinguish between customers and employees. As a result, the system can give different access privileges to different users.
* The input should be case-sensitive for both usernames and passwords.
* The system should immediately inform the administrator of different issues it detects.

#### 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 will need to be flexible to allow users who are not familiar with the code to make changes that may be necessary in the day-to-day.

* As per DriverPass’s request, there needs to be a way for the administrator account to manage different accounts. For example, they need the ability to remove access to certain users. They also need to be able to reset the password and modify different packages. These functionalities need to be implemented within the code.
* The system will adapt to platform updates by making sure the code is up-to-date and can run on the new versions of the platforms. There also needs to be backward compatibility for users who may not be on the latest version of the platform.
* The IT admin will need to access all the components required to help maintain the system, like different databases and a way to manage server loads and speeds.

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#### 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?*

Security should be a high focus for the system, as we are dealing with payments from the customer. As a result, we need to ensure we are taking the security of the system seriously and using the necessary encryption where needed.

* The user will need to input both their username and password, which will be case-sensitive, in order to log in to the system.
* We can secure the connection and data exchange between clients by using data encryption. Since we are dealing with a website, we should use the Hypertext Transfer Protocol (HTTPS) to secure the website (Clinton, 2023). We can also use a 128-bit Advanced Encryption Standard (AES) for the login information to ensure higher levels of security.
* One way we can prevent a “brute force” hacking is to limit the number of login attempts a user has and then lock the account until the user either resets their password or contacts DriverPass to enable account access.
* If the user forgets their password, they can reset their password by clicking the password reset link on the login page. Additionally, administrators will also have the ability to prompt users to change their passwords remotely.

### 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 has a lot of different functions that it needs to achieve. Here are some of the functional requirements that the system needs to meet:

* + - The system shall display a student’s schedule for different trainings.
    - The system shall provide the user with different package options to choose from.
    - The system shall allow the administrator to manage access to other accounts.
    - The system shall allow the administrator to customize, remove, and add new packages.
    - The system shall allow the administrator to reset customer passwords.
    - The system shall allow customers to reset their own passwords via a link.
    - The system shall validate user login credentials.
    - The system shall send notifications when the DMV updates its requirements.
    - The system shall display different driver availability.
    - The system shall track customer progress throughout their training based on their package.

### 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 user will be accessing the system from both computers and mobile devices, so the interface needs to be user-friendly enough that the user can navigate it easily from both types of devices.

* The user interface has many needs, like ensuring the following is possible:

o   Allowing users to buy different packages for their training.

o   Allowing users to make different reservations for their trainings.

o   Allowing users to log in and access their own specific data.

o   Allowing users to reset their passwords.

* The different users for the system are the customers, employees, the owner/administrator, and the technician.
* Each user will have different needs and actions they need to take.
  + Customers need to be able to book different trainings and have the ability to schedule those trainings. They will also need the ability to cancel potential trainings or reschedule them. The customer will also need to have a way to reset their password.
  + The employees will need to see more information. They will need to have the ability to schedule different drivers with different students and the ability to help customers with password resetting.
  + The administrator will need to be able to manage different account access, reset passwords, and the ability to customize and edit the different packages.
  + The technician will need to be able to manage and update the system depending on different issues that arise.
* All of the users should be able to access the system from the browser on both computers and mobile devices.

### 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?*

There are many variables that impact a system’s user experience and success. It is not possible to control every variable, so we make certain assumptions that we believe to be true in order to move forward with the project. Below are some assumptions that we believe to be true about the project.

* There is a lot that we addressed in our project’s design; however, there is a lot we did not include, like the following:
  + The specifics of how the user interface will look
  + The different scenarios that could cause setbacks in the project schedule
  + The specific employees that DriverPass currently has and what their access level should be
  + The specific design choices about how navigation will work from both the customer and employee perspectives
* We are also making a lot of assumptions about the users and their access to technology, like the following:
  + Users will have access to an internet connection to run the browser (Usmani, 2024).
  + Customers have basic knowledge about navigating a website and its menus (Usmani, 2024).

### 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?*

There are also a lot of things we know about the system, and we know that the system will inevitably have limitations. While we try to accommodate all users and their needs, we are limited by the system and its capabilities.

* Based on the system design, these are the following limitations:
  + There are currently only 10 cars, and as such, there can only be at most 10 cars on the road at any given time (Southern New Hampshire University, n.d.).
  + There is only one secretary to handle all the calls (Southern New Hampshire University, n.d.).
* In terms of resources, time, budget, and technology, these are the following project limitations:
  + There is a limited budget, so we cannot just make the system instantly capable of handling all potential users on Earth. Instead, we need to create a scalable LMS to handle different user loads as time goes on (Gerpe, 2025).
  + The current project schedule is from January 22nd to May 10th, and the fact that this project must be completed within this given time frame is a limitation (GeeksforGeeks, 2025).

### Gantt Chart

The estimated development period is from January 22nd to May 10th. The following Gantt chart has been created based on the information from the DriverPass interview.

A screenshot of a diagram

AI-generated content may be incorrect.

A gantt chart with purple and blue squares

AI-generated content may be incorrect.

**Citations:**

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