# CS 255 Business Requirements Document Template

## System Components and Design

### Purpose

* The client for this project is DriverPass.
* The problem DriverPass is looking to address is the over 65% of prospective drivers failing their driver’s test and a lack of quality driver training.
* The purpose of this project is for DriverPass to be able to offer this improved training through both online and live courses and instruction.

### System Background

* DriverPass needs their new system to offer online courses (including practice tests) and the ability to schedule in person lessons and live driving sessions.
* DriverPass is attempting to close the skill gap between new drivers and what the DMV driving test expects of them. They hope to solve the problem of insufficient training with the services the system will provide.
* The system will need to have many different components, including the application that will run the actual system. This will store course material and ensure that it is up to date with DMV regulations, allow for user creation and storage of their information, an online reservation system, and various databases used for scheduling different cars and instructors. It will also have to offer the ability to generate reports for management to track reservations, as well as the ability to download reports for offline access by the administrators. The system will also have a physical component of a 10-vehicle fleet, along with instructors to go with them.

### Objectives and Goals

* Create an intuitive and visually appealing interface to make the user experience as positive as possible
* Include different lessons covering the range of topics a student will encounter both on their exam and on the road
* Create a database with various questions used for practice exams
* Introduce a scoring system, with feedback to help with any problem areas
* Enable students to record, track, and review their progress
* Offer the option to schedule in person driving lessons with multiple different packages
* Create another database to store the driving lesson schedule, including student information, special needs, and photos as requested by the client
* Implement a security system ensuring that only those with the proper clearance can access others’ account information, scheduling, etc.
* Record all changes to databases, reservations, etc. to ensure that any error that occurs can be traced back to the source and fixed

## Requirements

### Nonfunctional Requirements

First and foremost, the system must be both secure and reliable. Measures must be put into place to ensure that all personally identifiable information is protected and cannot be accessed by unauthorized users. Additionally, all recordings of student grades, reservations, etc. must be accurate. The system has to be scalable to accommodate a growing number of students, as well as any updates or additions to any DMV regulations or learning materials. Performance shall meet industry standards at the minimum in metrics such as loading times, and the interface must be simple and intuitive while still providing all necessary functionality.

#### Performance Requirements

* This system will require a web-based distribution system to run, with Linux-based servers capable of supporting multiple browser clients.
* The system will include multiple network heavy processes like making, changing, or cancelling reservations, accessing testing material, or creating/updating user profiles. These functions should all happen relatively quickly to ensure a seamless user experience.
* The system should be updated as frequently as it needs to be, but these changes must happen quickly. Every new grade, piece of instructor feedback, change in reservation, etc. must be updated whenever a user or administrator makes a change. Any changes in DMV regulations or requirements must also be updated as soon as possible.

#### Platform Constraints

* The system will be web-based, therefore will not be restricted by operating system. Development will focus on support for the most popular web browsers (Firefox, Edge, Chrome, and Safari) before attempting to branch out into lesser used programs.
* The backend to the system will require a database to perform its functions. This can be an SQL or NoSQL database, depending on the needs of the system and our developers.

#### Accuracy and Precision

* Each user will have a username and password that they create, this will be how the system differentiates between them. These accounts will have different assigned roles depending based on how they were created; any account made outside of a DriverPass authorized network will default to a basic user, with additional options for creation should the company need to create new accounts for employees or management.
* Both passwords and usernames will be case sensitive, for greater security with the web-based system.
* The administration should be alerted to a problem if there has been more than a predesignated number of failed login attempts. More routine matters such as forgotten passwords can be left to automated messages.

#### Adaptability

* As stated, both clients and staff must be able to create accounts with the ability to modify (contact information, payments, etc.) or delete them as needed. This should be done by form submission, which background system code will have to be written to accommodate.
* These changes should have no effect on the underlying code of the system, instead being focused on updates to the backend databases.
* The web-based environment should not have any issues with updates to browsers, but should bugs or errors arise, patches or updates to the system can be rolled out.
* Any updates, whether for compatibility, usability, or functionality, will be rolled out as the development team allows, with the highest priority put on those that will fix any errors preventing proper use of the system. These will all take place during off-peak hours, to limit the inconvenience to users as much as possible.
* An agile development strategy will help to ensure that any problems that arise can be dealt with quickly and efficiently.
* The IT admin will need full access to all accounts. This will allow them to remove accounts of former employees or help to address any account related issues whether from a client or staff member. Payment information will be stored separately to dissuade theft or fraud.

#### Security

* A username and password will be required for a user to log in to the system.
* HTTPS will provide the protocols to ensure secure communication between a client’s device and the system and its applications. POST requests will ensure that sensitive data is not transmitted via the URL of the request.
* As an added level of security, cryptography will be used to encrypt any sensitive data so that in the unlikely event of a data breach, the data recovered will be useless.
* Should anyone attempt to brute force their way into an account, the system will automatically lock it down after several failed attempts. This will send a prompt to the IT admin, who will then notify the proper owner of the account of the issue and steps they can take to regain control of their account.
* Forgotten passwords, on the other hand, will be handled by the user. After providing answers to security questions provided at account creation, an email will be sent to the address on record with instructions on how to reset their password. This will include a link to a website where they can input a new password.

### Functional Requirements

* The system shall authenticate a user’s credentials as they log in based on the access type assigned to the account.
* The system shall allow for account registration and the inputs required, such as first and last name, address, phone number, email address, and payment information.
* The system shall provide course material (including tests) online which can also be downloaded to be accessed offline. Any modifications (password reset, reservation, etc.) will still need to be done online.
* The system shall track all updates made to reservations, including newly created, modified, or canceled ones.
* The system shall be capable of providing a detailed activity report for the administration to analyze.
* The system shall provide reports on a student’s progress through things such as grades and instructor feedback.
* The system shall allow for communication between users and instructors/administrators.
* The system shall allow users to change their password.
* The system shall offer three course packages offered by DriverPass, with the ability for admins to add or remove packages as needed.

### User Interface

* The interface will need to offer a clean, easy to understand way for users to interact with the system. This will be done by segmenting the overall system into several pages, including a home page, account creation page, course material page, student progress page with tests taken and scores, a reservations page with a section for driver notes (start and end times for lessons, instructor feedback, etc.), and a contact page should the user need to reach out to DriverPass or any of their instructors.
* There are a multitude of different users and access levels who will be accessing the system. Both the DriverPass owner and IT officer level accounts will have full access to all accounts and can edit them as they see fit. The DriverPass secretary level account will have access to all scheduling, making it possible for them to add, cancel, or modify appointments as needed. Finally, there will be the client/student level account. This will have no access to any scheduling or accounts other than its own but will have access to course materials and the ability to schedule, modify, or cancel driving reservations.
* Since the system will be web-based, all interactions will occur through browsers. This includes Windows, Mac, Android, or iOS systems.

### Assumptions

* The biggest assumption made is a client’s access to the internet and a device that allows them to browse the system. While there are some features to help with offline learning, the system cannot function without the internet.
* While going for as much compatibility as possible, mobile apps were neglected. This could prove an issue, though access through a phone’s web browser is still possible.
* The system is developed with the assumption that most of its clients will be young, and therefore tech savvy.
* It is assumed that DriverPass employees will all have the hardware allowing them to interact with the system.

### Limitations

* As stated, the system is web-based and as such requires an internet connection to function. Almost nothing can be done without it except for reviewing material downloaded when a connection was available.
* Physical servers to house the system will have high costs whether purchased and maintained or rented, limiting the resources that can go to development. A cloud-based storage solution would help with this but would further add to the reliance on the internet.
* Time and budget restrictions are currently unknown. They will be a limiting factor in how many employees can be put on the project, and whether independent contractors will be needed, or even afforded.
* Technology to this end should not be an issue, but since there are DMV regulations that DriverPass must adhere to, they are at the mercy of how quickly these new regulations are made available to them so that they can be implemented.

### Gantt Chart

*A diagram with a number on it

Description automatically generated with medium confidence*