# CS 255 Business Requirements Document Template

## System Components and Design

### Purpose

* The purpose of this project is to provide a system that will boost the effectiveness and efficiency of the client’s business. The client is Liam who is the owner of the company DriverPass with his IT officer Ian.
* The purpose of the client company DriverPass is to provide training for students who are expecting to take their drivers test at their local DMV. These users will be the primary customers of Driver Pass’s services.
* The purpose of the system is to deliver online training resources for students. These resources include online courses, online practice tests and a scheduling tool for Driverpass’s “On-the-road” training service. These will be the main features that the system needs to be able to carry out.
* Additional features and functions will be needed to support the main features, and ensure that the system is ran as effective as possible. Some of these additional features and functions include: Accessing data from multiple devices, Connection to DMV’s, Administrative roles/users, disabling on-the-road packages, Tracking, Support for the different users accessing the system.
* Together these features will deliver the company’s goals of improving the success rate of DMV drivers test takers, in the most effective and efficient way possible.

### System Background

* The background of the system is to provide training for students to improve their chances at passing the DMV driver’s test. There is currently a void in the market for DMV drivers test training resources. Many test takers fail and there is a need for better training. Driverpass hopes to solve this issue by providing adequate resources to train test takers and capitalize off the void in the market.
* There will be multiple different components within the system. The system will be able to deliver its 3 main features to students. Online courses, practice tests and scheduling on-the-road training. These features can be updated modified and utilized by students.
* There will be multiple types of data that will be utilized by the system. An example of some would include Student data, Reservation data, course progression data and system integrity data. There will also be numerous users like customers, administrators, and IT.
* These multiple different components will all work together to fulfill Drivepass’s goals and address the problems that they would hope to solve.

### Objectives and Goals

* Registration and profiles: Customers should be able to create a new profile and have their information and data stored. Some of the data included will be address, email, phone number and payment. They should have security measures such as passwords, 2 factor authentication and administrative support.
* On-the-road scheduling: users should be able to schedule on-the-road sessions. There will be 3 packages to choose from. Administrative and IT roles should be able to disable and cancel packages when necessary. Packages need to be maintained and updated, so they should be flexible. Some reservation data will include the time, date, instructor, car, and comments.
* Online courses and practice tests: Customers should be able to utilize online courses and practice tests. Their progress should be visible and informative. Administrative and IT roles should be able to update and manipulate the content of the courses and practice tests.
* Accessibility: users should be able to access the system and download reports form multiple different devices. Most computers or mobile devices should have access if they are connected to the internet.
* Interface: The user interface should match with the client desires and wants, whilst also being user-friendly. The outline given in the interview should be the starting point.
* Security: Specific authorized users should have full access to all accounts. These users should be able to reset passwords and block users. Separation and authentication between these users and other users will be needed.

## Requirements

### Nonfunctional Requirements

#### Performance Requirements

* System should be website based. Client has referenced the web as a preference. This will minimize the delivery of outdated content and will require less effort to improve accessibility.
* Accommodations for mobile devices should be implemented. This will greatly improve accessibility and reach the clients desires of accessing data from mobile devices. This should be a mobile accommodated website and not a mobile application.
* System needs to run off the web over the cloud. Client doesn’t want to deal with backup and security. Client prefers to run it this way to minimize technical difficulties.
* The system needs to run as fast as possible to deliver the clients goals in the most efficient way possible. If speeds are too slow this will greatly impact user experience, harm the accuracy of user data and cause security hazards. Speed should be fast enough to maintain fluid access to data, should be fast enough to minimize disruptions and be able to maintain scalability.
* Due to the nature of DMV regulations and potential legal implications, updates must be rolled out quickly and based on instances when needed. The system should be built in a way where minimal updates such as content manipulation or regulation changes can be implemented more rapidly.
* Bigger updates such as Ui changes, Bug fixes, performance improvements and additional functionalities should be released in a complete package. This will be determined by admins and developers and is done to minimize the amount of updates being released and amount of versions of the website. Major bug fixes, security fixes or other emergencies is an exception and must be implemented rapidly, however.

#### Platform Constraints

* The system should run on Linux. Linux’s open-source model will offer an extensive tool set at a low cost. Linux offers extensive support, and its system architecture offers a great advantage in security when compared to other competitors. Linux is also incredibly stable and holds an advantage with this aspect over others as well.
* A higher level of expertise will be needed, but the increased stability, security and support will greatly minimize technical difficulties which was a concern of the clients. Along with lower costs these benefits outweigh the downsides and will be the strongest choice for the client.
* Linux offers many cloud options which will appeal to the clients’ desires. Utilizing cloud options will lower the number of back-end tools that are required and can serve as DriverPass’s database. Beyond databases Linux offers an incredibly diverse and numerous amount of back-end tools that the client can utilize.
* It should be noted that MacOS may be needed to accommodate for IOS mobile devices to fully realize the desires of the client. IOS development will be restricted and limited to MacOS only however this can be utilized alongside Linux.

#### Accuracy and Precision

* All users will have their own account with their associating data. Users will register with their own email and have their own account identity/username. This will distinguish every user and help the system be able to manage them all profiles.
* The system should utilize separate login portals for the different types of users. Users will have different abilities and authorizations depending on their type and role within the system. Utilizing separate login portals for each type will minimize events of unauthorized access.
* Input is required to be case sensitive to maintain security. This is specifically important for user passwords. It’s a universal standard and will secure individual accounts more efficiently. Most inputs beyond passwords or sensitive security material should not be case sensitive. In the case of usernames and emails it should be turned off to avoid unnecessary inconveniences. Input sensitivity can also harm the accuracy of user progress or performance within the courses and practice tests within the system. Learning when case sensitivity is needed and implementing them properly will be important for the system to be as effective as possible.
* The admin should be notified when there are cases of suspicious activity. This can be too many failed login attempts, signs of fraudulent monetary activity, among others. Admin should also be notified with major disruptions and errors within the system, like If the system were to go down. Any problem with severe implications that is time sensitive should be notified to the admin. Beyond that notifications can be obnoxious and decrease the effectiveness of other severe notifications.

#### Adaptability

* The system should allow changes to users without changing the code. Changes to the user shouldn’t require advanced expertise or major modifications to the system. This will allow for a more agile approach to modifying users which will improve security, help accessibility and boost user support. This was also a feature the client wanted.
* Since the system is web-based updates will be rolled out seamlessly and automatically. Both minor updates and packaged updates should be rapidly implemented without disrupting the user experience. Some updates or changes may require the website to be down, if this is the case then all users should be notified in advanced and maintenance should be appropriately scheduled.
* The IT admin will require full access. Access to user profiles, content and packages would be necessary for the admins to maintain maximum efficiency. Without full access some required tasks or functionalities cannot be achieved or will be more ineffective. This can also minimize technical difficulties and keep the system adaptable and agile.

#### Security

* Users will need their email or username, along with their password to log in. Multifactor authentication will be an option available for users. A security code can be sent to their email or generated from an authenticator app, this code would be required on top of the other requirements for the user to log in if they have this option enabled.
* A Secure Socket Layer (SSL) should be utilized to secure connection and data exchanges between clients and the server. An SSL will encrypt exchanges data that is exchanged and help keep interactions more private. Exchanges and interactions through the cloud will be the cloud providers responsibility for security. This will be an important factor to consider when determining a cloud provider.
* A brute force hacking attempt refers to tactic where an attacker attempts to try out every possible password combination in order to gain access to a user’s account. There is a couple measure to implement to combat this. Password requirements like uses of symbols or minimum character limits can greatly increase the difficulty of a brute force attack. After a certain number of attempts within a certain period of time, an administrator should be notified. The administrator with full access will be able to block access or grant access once verifying the user’s identity.
* If a user forgets their password the primary method of regaining access should be sending a reset password link to the user’s associated email. The user can then reset their password through their email and regain access. A user can also utilize the IT admins. After standard procedures of verifying the users identity the admin will be able to give the user access to their account.

### Functional Requirements

* The system shall validate the users credentials when logging in.
* The system shall provide online DMV training courses and practice tests, that are accurately up to date with current local DMV regulations and laws.
* The system shall provide a scheduling tool for DriverPass’s “on-the-road” sessions. Users will be able to be choose between 3 packages.
* The system shall notify the IT admin of suspicious activity or major disruptions within the system.
* The system shall track and report user analytics. These reports can be downloaded and displayed to the user.
* The system shall block access to accounts once a failed number of logins attempts within a given period of time has been reached.
* The system will register users utilizing their email, address, payment info and phone number.
* The system shall give feedback on the user’s performance informing what areas needs improvements or displaying instructor comments.

### User Interface

* The Client provided their desires for the interface. On the main front page, the logo will be in the top center of the page. Below the logo will be the online test progress to the left and the user’s information to the right of that. Towards the bottom will have drivers notes to the left with special needs and photos of the drivers and students to the right of that.
* The interface must stay consistent and user friendly. A similar color scheme and style needs to be used throughout all users and devices to avoid confusion. Each user should easily access their appropriate functionalities within the site.
* IT admins, Students and Instructors are some of the users who will be using this interface. The IT admins will have access to many tools and full access to many aspects within the system. They will have options and tools that will help them maintain the system. Instructors can have options to pair them with students and give tools to give out feedback. Students will be able to access DriverPass’s primary services and content.
* Each user needs to be able to access their abilities and content within the site. The user can interact with the interface through many different devices, each device and interface however should have a familiar layout and the same amount of access to each function. A mobile device will have a different layout and be more accommodated for those devices.

### Assumptions

* For this design I was under the assumption that all users have the proper technology and infrastructure to access and utilize this system properly. I assumed that all users had modern devices that are compatible with this system and can handle the demands of this system properly. Assuming that users have a modern capable device, I designed the system to be able to run as efficiently as possible without the restriction and considerations of incapable devices.
* I also assumed that all users are connected to the internet and have the proper infrastructure to connected to the internet whenever they are accessing this system. This system was not designed for offline use. The system is dependent on internet connection.
* This design also assumed that DriverPass has the necessary staff to properly run the system. This design did not accommodate for inadequate staff and is dependent on the many different types of users for all features and functionalities to work properly. All students/customers are assumed that they have an email, address and valid payment to access these systems features.

### Limitations

* Budget: This limitation will impact many other aspects of development. The budget can affect the amount or resources and tools that a team can utilize. The level of expertise, technology available and amount of time can all influenced by this limitation. The bigger the budget the higher chance of success in many different aspects within the project.
* Time: The table provided by Jennifer shows that there is 15 weeks total for the development of this project. This can strain the team in many ways and can greatly impact the flexibility and adaptability of the project. This limitation can potentially affect the quality and performance of the final project and have some implications of the completeness of the system if time isn’t utilized properly.

### Gantt Chart

