# CS 255 Business Requirements Document Template

## 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?*

* DriverPass is the client commissioning this project, and they would like to create a system which helps them better serve people who are driving students.
* They want the system to help them serve a greater audience, and increase business through the use of an online marketplace.

### 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 primary focus of DriverPass’ system will be to provide an online platform to driving students where they can take their driving classes as well as practice tests.
* DriverPass will also be serving driving students who prefer on the road training, and the system should support this side of their business as well.
* The system should be accessible through the web and support mobile devices so that the user and employee’s location is irrelevant, and the employees should be able to export data from the system in various formats. A cloud hosted application may be the best choice to outsource security and data storage.

### 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 must be built with different user permission roles and be capable of storing audit logs so that user access can be limited and traced.
* The functionality to support on the road training should be in the form of a reservation system which can connect requested appointments to available driving instructors. The reservation system should also track which cars in the fleet are paired with the appointment. Customers and employees should both have the ability to book reservations through the system.
* The system should support employee users with appropriate permissions restricting which driving packages can be purchased without the assistance of a developer.
* Customer registration will be managed by employees of DriverPass, but once a customer is set up in the system they need to be able to reset their password independently.
* The online practice tests need to be updated when the DMV releases a new version, so notification to relevant personnel should be set up to ensure compliance is maintained.
* The system should have multiple pages to support all of the features, but a homepage with the most relevant information compiled in an easily accessible format is desired.

## 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 DriverPass application should be web-based and accessible over https. The application will need to be accessed by both employees and student customers, so allowing open access over the internet will allow this access by all user types.
* The system will need to be updated in real time, as a main function of the application is a scheduling system. The schedule of available tutors and cars needs to be up-to-date at all times to avoid overbooking or other scheduling conflicts.
* The application should be built with performance in mind, but with a relatively small dataset and a limited budget there should not be an unrealistic goal set for loading speed. The application should be fast enough to not cause issues with scheduling due to time-outs, and should not deter users because of poor loading quality.
* DriverPass is a local company, so the potential application users will be limited. The platform should support 500 concurrent users without affecting performance, which is far more users than will likely ever be accessing the application at once unless DriverPass expands into other markets.
* The application should be available 24/7 to allow students to schedule lessons and take practice exams at any time, though scheduled maintenance is allowed for.

#### 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?*

* As a web-based application, DriverPass should have no user platform requirements. It should be accessible using the last few versions of all popular web browsers such as Chrome, Firefox, Safari, etc.
* Data exports for employee users should be in a non-proprietary format such as CSV, TXT, or JSON to avoid compatibility issues with the employee’s system platform.
* A database will be needed to store student data, lesson data, and practice exam data. A relational database such as MySQL is appropriate for the DriverPass application as student data will need to be connected to lesson data and exam data.

#### 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?*

* DriverPass has specified that user roles should be well defined with different permission levels. Admin and employee user accounts will need to be distinct from student users, as the data available and platform usage will be very different for these users.
* Case sensitivity should be considered in some parts of the application and ignored in others. The user’s password should certainly be case sensitive, as should their name. The user’s email address and username should not be case sensitive, and the address inputted for pick-up and drop-off should also not be case sensitive.
* Notifications of suspicious activity or system malfunctions should be sent to DriverPass IT and management immediately to allow for a rapid response.

#### 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?*

* DriverPass has IT staff, but no developers so the application needs to function and be modifiable without altering the code. Employee users as well as student users need to be able to create user profiles, and employee admin users must have the capability to remove or modify users.
* The IT admin and DriverPass senior management must have super admin capabilities over the platform, with the ability to create, modify, or delete any data within the system.
* DriverPass IT should be able to update the platform as needed, and this maintenance will be done remotely.

#### 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?*

* Student users of the platform will log in using their username and password as credentials.
* Employee users will also have a username and password to access the platform, and MFA should be implemented for admins with access rights to student billing information.
* The application is web-based and should be locked down to port 443 with encryption of data in transit.
* To prevent attackers of the platform gaining access, the application should have a strong password policy enforced, and the account should lock after a limited number of incorrect login attempts. CAPTCHA should be enabled at account creation and may be enabled for all login attempts as desired by DriverPass IT.
* The application users will need to have the ability to reset their passwords. The application should have a link to reset the user’s password which will send a temporary password to the email address on file and prompt the user to change their password on next login.

### 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 allow student users and DriverPass employees to create accounts.
* The system shall validate the user’s credentials when logging in.
* The system shall be accessible over the internet on desktop and mobile devices.
* The system shall allow users to create and modify reservations.
* The system shall allow students to take practice exams.
* The system shall allow driving instructors to log lesson notes which are available to students and employee users.
* The system shall receive notifications of updated DMV practice exams.
* The system shall provide data export to users with appropriate permissions.
* The system shall show a test progress icon which is updated as the student user takes practice exams.
* The system shall log all data modification.
* The system shall support admin auditing features.

### 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 of the DriverPass application will look different for both types of user, student user and employee user.
* All student users will have the same permission levels for this account type, while employee users will have several access levels which will be determined by the admin who creates the account.
* Student users will need to be able to create their accounts and reset passwords independently, make and manage their reservations, purchase driving lesson packages, view their data, and take practice exams.
* Employee users (inclusive of admin and non-admin accounts) will need to be able to create student accounts, make reservations, view the scheduling system of available cars and driving instructors, manage user accounts, export data, modify the packages being sold, view student test reports, and update exam questions.
* The web-based application should be accessible and optimized for both browsers 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?*

* It is assumed that all users of the application will have access to a computer or mobile device by which to access the application.
* The users will need to have a connection to the internet to access the application.
* Student users will have a credit or debit card which can be used to purchase lesson packages.
* Student users will already have their learner’s permit, where applicable.
* All application users will be familiar with technology and able to interface with the application without instruction.

### 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 must be built with a limited budget as DriverPass is a small company. Hosting and database usage fees will need to be considered as well as initial development costs.
* If DriverPass wants to change the functionality of the website significantly they will need to employ a developer.
* The application cannot support unlimited users.
* The application may need to be redesigned in the future by a developer to keep material up to date with UX trends.

### 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.*

