# DriverPass Business Requirements Document

## System Components and Design

### Purpose

The purpose of this project is to build a learning system for our client, DriverPass. Liam, the owner of DriverPass, would like to offer customers a means of training for their driving exams at the DMV through online courses, practice tests, and on-the-road driving lessons. This learning system that Liam has in mind for DriverPass would allow students to create a profile with their information, register for online classes, make appointments for on-the-road driving lessons after choosing for various price packages, and even take practice tests that update regularly based on the DMV’s current policies. On the backend, DriverPass will need administrative access to the system with privileges such as the ability to track users with activity reports, full control of all accounts, and the capability to modify appointments created by students. This DriverPass system must be based in the cloud at the client’s request since they would like to access data online at any time—from anywhere—and download reports for offline analysis through programs like Excel.

### System Background

The system that DriverPass would like to build for future customers is one that offers the convenience and flexibility of online learning with practice tools and in-car driving lessons. Based on a trio of different price packages, the student will gain different levels of driving education and resources. Amongst those aiming to get their driver’s license someday, there are problems with a lack of driving schools in the market and the number of drivers who ultimately fail their driver’s tests due to a lack of training. DriverPass would like to address this problem with this new DriverPass learning system. Components that the client would like to see in their new system include online courses, practice tests with progress statistics readily available, a place for information to be updated, driving lesson reservations in three different packages, administrative access for specific members of their team, and the ability to do all of these things on any computer or mobile device.

### Objectives and Goals

The objective of DriverPass is to provide tools and resources to prepare for driving exams. These tools/resources include online lessons, practice tests, on-the-road driving lessons (with the option to pick up and drop off students), and regular updates from the DMV database with updates policies as well as updated sample questions to study. When students make progress in their lessons and tests, DriverPass would like to provide them real-time updates to reflect their progress. In the end, the ultimate goal of DriverPass is to address the gap in the market that exists between individuals who need a driver’s license and individuals who struggle to pass the exam necessary to get a driver’s license. When it comes to the functions of the system, the following bullets provide a brief overview of what a student should be able to do upon logging into the DriverPass system. This hypothetical student is assumed to have all privileges based on the highest package being offered:

* Sign up
* Sign in
* Reset forgotten password through an automated system
* Update profile with photo and personal information
* Select from one the three packages
* Take online classes
* Take practice tests
* Leave comments on classes and tests
* Receive statistics on test scores and test times
* Receive a progress report on the main screen
* Reserve a two-hour driving lesson at a determined pick up/drop off location
* Receive information about chosen driver (including driver’s photo)

For members of the team, the following functions will need to be added:

* Liam: Track activity of users
* Liam: Download user activities into an Excel spreadsheet
* Liam: Download error logs
* Ian: Add, modify, and remove user accounts
* Ian: Modify user passwords
* Secretary: Add, modify, and remove appointments
* Secretary: Add and modify profile/account information

## Requirements

### Nonfunctional Requirements

#### Performance Requirements

This system needs to run in a cloud-based environment. Ian, the IT officer of DriverPass, has requested a more hands-off role in the technical aspects of the system, and would prefer if a third-party is responsible for backup or security. When it comes to updates, the DriverPass system will need to be updated each time the DMV adds new policies, rules, and sample questions. Speed is essential when it comes to online lessons and exams; therefore, a minimal design is recommended to not only lessen the burden of the system as it loads different modules and downloads data from the cloud, but to also offer a distraction-free environment for students to learn in. In summary:

* DriverPass system will be stored and operated via the cloud
* A third-party will handle backup and security measures
* Encrypt user accounts to protect private information (recommendation)
* Updates from DMV should also be updated to DriverPass as soon as available
* Loading times should be minimized to avoid disrupting students as they take online courses and practice tests
* Promote a minimal, distraction-free design with little to no ads, excessive pop-ups, flashing animations, etc. (recommendation)

#### Platform Constraints

DriverPass will need to run from the web—more specifically, the cloud. This means that DriverPass will need to be compatible with all web browsers including the browsers on mobile devices. Since mobile devices do not always possess the same loading capabilities as a computer, a mobile-friendly version of DriverPass will need to be created. In essence:

* DriverPass will operate from a cloud server
* The DriverPass system will be web-based
* The system will need to be operable from popular web browsers such as Google Chrome, Microsoft Edge, Internet Explorer, Mozilla Firefox, Safari, etc.
* A mobile-version of DriverPass will need to be considered for mobile devices that offers the same benefits under a simplified, easy-to-load design

#### Accuracy and Precision

DriverPass will have users that fall under one of four roles. As a side note, each time a user logs in their role will be validated based on the registration and sign-in information tied to that role:

* Administrator: The admin will have the unique ability to monitor all users and their activities in the DriverPass system, and download/upload this information using a spreadsheet program like Excel. On top of these unique abilities, the admin should also have the same privileges at the IT Officer, secretary, and user since Liam (the owner) will be managing the entire business both online and offline.
* IT Officer – The IT officer is essentially responsible for the accessibility of all accounts, and will ultimately dictate who is allowed to enter the system and what the standard user is allowed to do. In order to perform this task, the IT officer (Ian) will need access to all user accounts as well as the ability to add accounts, remove accounts, modify accounts, and change passwords in the event that a user cannot log in. If security determines that there will be limited login attempts in a given length of time, then Ian should have the ability to modify or remove this penalty once a user verifies their account information.
* Secretary: The secretary role at DriverPass typically requires an individual to collect information on a customer and use that information set up appointments. To perform this same task online, users in the secretary role will require the ability to add, modify, and remove the information and appointments of customers wishing to become a part of DriverPass as students.
* Student: The term “customer” and “student” are essentially interchangeable. This role describes anyone who is paying DriverPass for lessons to improve their odds of passing the DMV driving exam. Every student should have the ability to register for an account, add their personal information (and photo) to their profile, purchase one of the three packages, take online courses (if purchased), utilize resources (if purchased), take practice tests (if purchases), and reserve driving lessons (at two-hours per session).

When it comes to system errors, administrators should have access to reports that track when errors occurred and what certain users were doing at the time that the system malfunctioned. This will aid to pinpoint the root of the problem.

#### Adaptability

Ian, the IT officer for DriverPass, would like full control of all user accounts. As an IT officer, he should be able to add, modify, and remove users whenever he deems it necessary. In a future update, Liam would like the DriverPass system to grant him the flexibility to add, disable, and remove packages for students. He was informed by Sam that a developer or a system analyst will need to add and remove the modules created for these packages since there is no system in place that would allow non-developers to make these changes. If it is possible to make this change for Liam then it should be considered since leaving these package changes in his hands will relieve the workload of IT.

Finally, it was mentioned that the client would prefer a cloud-based host that will handle most of the technological aspects of running DriverPass such has backup and security. Updates should also be handed to a third-party that manages their database on the cloud to continue this request for minimal technical work. Communication will need to be opened between the company hosting the DriverPass database on the cloud, the client, and/or our team to determine how often these updates will take place and how it should be conveyed to students who may need to adjust their schedules around these updates. To summarize:

* The IT officer will make changes to users when necessary.
* The IT officer needs access to all user accounts.
* A possible future update is granting a means for Liam/administrator to change the different price packages without altering the system’s code itself.
* DriverPass would prefer a third-party to handle regular updates.
* The system must update each time the DMV updates their roles and policies.

#### Security

In order to login, the user will need to use the information they created upon registration and have the system validate it. One way to secure the connection between client and server is to offer encryption and/or another layer of validation (ex: sending text messages with randomly generated codes to enter on top of password). In order to protect against hackers, the system should lock the account after a set number of failed attempts to log in. When a student is locked out of an account, the administrator should receive an update in tracking report, and the IT officer should have the ability to unlock the account once the student verifies that it was an innocent error and not the work of a hacker. If the user forgets their password, DriverPass would like an automated process set in place to have the customer reset it. Ian, the IT officer, would also like the privilege on his account to change passwords; therefore, customers should be able to also rely on IT technicians like Ian if the automated forgotten password process fails. In short:

* The cloud-based service that will host DriverPass will handle security.
* The system will validate login credentials at each attempt to login in.
* If a password is forgotten, an automated process should guide the user to reset their password (via security questions, email verification, etc.)
* In the event that the automated process fails, the IT Officer has the privilege to reset the password manually.
* The IT Officer will have the power to remove accounts of users who no longer work for DriverPass to prevent any unauthorized access.
* The administrator will be notified in user tracking reports of user activities which will assist in spotting unusual behavior from malicious hackers.

### Functional Requirements

DriverPass has several functional requirements that they would like to see in their system. These requirements are as follows:

* The system shall allow user account creation
* The system shall have automated password resets when user forgets password
* The system shall verify credentials when logging in
* The system shall display progress of online courses
* The system shall allow the purchase of three driving lesson package
* The system shall allow the administrator the right to track user changes
* The system shall allow the administrator the right to download reports on users
* The system shall allow the IT officer the right to modify all user accounts
* The system shall allow the IT officer the right to modify user passwords
* The system shall allow secretaries the right to modify user appointments
* The system shall allow secretaries the right to modify user personal information

### User Interface

The DriverPass interface will have change based on the role of the user who is logged in. Administrators will have the ability to track and download reports about the other users; IT officers will have the ability to add, remove, and modify user accounts and user passwords; secretaries will have the ability to add, remove, and modify appointments and student information; students/customers will have the ability to modify information about themselves, make appointments, reserve driving lessons, purchase one of three lesson packages, and take online classes, do practice tests, and use online resources based on the package that they purchase. Since DriverPass would like a web-based, cloud-hosted system, users will have to access the system from an internet browser. The different roles and how they will interact with the DriverPass system will be as follows:

* Administrator: At the moment, the only administrator is Liam. Liam would like the administrative privileges of tracking the activities of all users, modifying the different packages for driving lessons, and the ability to download activity logs from the DriverPass in order to work on updates online and offline. These logs should be in an Excel-friendly spreadsheet. As an admin, Liam should have the same privileges as the IT officer, secretary, and users.
* IT Officer: At the moment, the only IT officer is Ian. Ian would like the ability to update, modify, add, and remove user accounts. In the event that a user needs a password chance, Ian would also like the ability to perform that task (along with an automated process that will do something like email a reset link to users who request it). As an IT officer, Ian should have the same privileges as secretaries and users in order to run tests on these accounts.
* Secretary: At the DriverPass office, the secretary there is responsible for accepting visits and calls from customers who would like to make appointments. The secretary should have these same privileges online. Additionally, the ability to fill out an input form with student information should also be granted to the secretary in the event that they must add
* Students: All students should have the ability to sign up for a DriverPass account, add their personal information to their profile, make appointments, cancel appointments, update appointments, and purchase reservations for on-the-road driving lessons online.

When it comes to the visual appearance of the DriverPass interface, the clients provided a diagram of what students should see during the course of taking their online lessons and practice tests. Here is the diagram as well as an overview of what should be done:

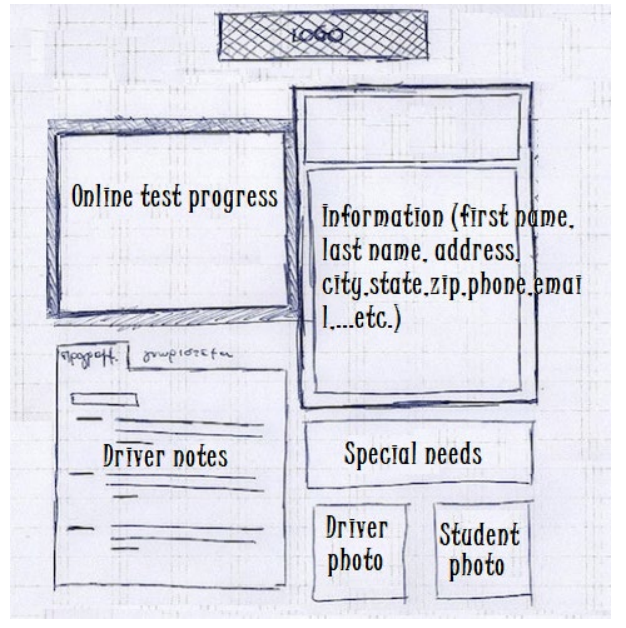


Figure : sketched by Liam of DriverPass

* At the **top of the page** should have the DriverPass logo.
* To the **upper left side**, there should be a progress summary of online tests that include information about the test name, the amount of time taken, the test score, and the test status (ex: not taken, in progress, failed, passes).
* To the **lower left side**, there should be driver notes. Driver notes will be a four-column diagram that uses column names (from left to right): “Lesson Time”, “Start Hour”, “End Hour”, and “Drive Comments”.
* To the **upper right side**, there should be a table with demographic information about the student that includes first name, last name, address, city, state, zip code, phone number, email address, etc.
* The **lower right side** should have three pieces of information available: special needs related to the student, a photo beneath the special needs section of the driver assigned to the student’s driving lessons, and a photo next to the driver photo of the student.

### Assumptions

Based on the discussion that we had about the client and their goals for the DriverPass system, we were not only able to pinpoint what the system should do but also observe things about the system that could lead to minor or major inconveniences once everything is up and running. These assumptions are meant to be considered rather than solved—neither in the immediate future nor ever if that is the decision of the client:

* Since DrivePass will operate from the web, there is an assumption that all users will have access to the internet.
* Driver pass will run on the cloud; therefore, there is an assumption that the cloud network will not be down. Also, there is currently no protocol in place to deal with any planned or unplanned downtimes. The assumption is that there is a notification system in place by the company hosting DriverPass that will notify users of when the site will be down or a means of informing users when DriverPass will return in the event that it is being restored after an unexpected failure in the system or cloud.
* Another assumption is that all users will understand how to navigate the DriverPass system. At the moment, there are no plans to add a tutorial for students, or perhaps a site map to layout where to find information that they are searching for.
* At the moment, there are ten drivers and ten cars available for driving lessons. Once DriverPass gains more students, there will be limits to how many students can have on-the-road lessons. If students will be placed on a waiting list, then it may be helpful to implement a system that navigates around this waiting list, keeps students informed of the wait time, and provides real-time updates to their place in the queue for an available driver and car for their lessons.

### Limitations

In terms of limitations, there is currently no known plan to address users with disabilities. Liam has sketched an area where special needs related to the driving student will be listed, but in terms of making adjustments to the system for students who struggle disabilities that can hinder their ability to learn have not been planned at this time. Without internet access, users will not be able to access their account or lessons. It was also mentioned to Liam that any updates he makes offline in his reports will need to be uploaded when the system is online to avoid data duplication. Here is a concise list of obstacles that the system and clients might face:

* The system will not offer system-wide adjustments to students with visual, audio, physical, learning, etc. disabilities (or at least not yet).
* The system will not function without internet access.
* The system will not update any changes made offline.
* The system will not function if the cloud server is down.
* The system will not function while system maintenance is being done.

### Gantt Chart

The chart below address how our team will tackle different stages of developing the DriverPass system, who will tackle each state of development, and how long it will take to complete each stage. Based on the Gantt Chart, our team will need roughly two months to deliver the project to DriverPass as an operable system.

