# 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?*

DriverPass, our new client, wants to create a system that:

* Trains students for the department of motor vehicle (DMV) driving test
* Provides online classes and practice tests
* Provides ability to book appointments online for on-the-road training

### 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?*

DriverPass wants the system to be able to:

* Improve the success rate of DMV driving tests
* Run as a web-based application
* Have data accessible anywhere through the cloud
* Be made secure and automatically, regularly backup the data
* Allow input from:
  + Users on the contact page
  + Trainers on the driver notes page
  + Administrators on all pages
* Let users access data offline by downloading it or access it online
* Let administrators reset passwords or block former employees’ access
* Let administrators know who made, canceled, or modified a reservation with printable activity reports
* Let administrators track which user is matched up with a certain driver, time, and car
* Remain flexible so a developer or system analyst can customize the available user packages
* Let administrators disable packages
* Connect to the DMV to get updates on new rules, policies, or sample questions. DriverPass would receive a notification when this happens

The different components needed for the system include:

* A user interface, which includes:
  + A main page with the user’s information, test progress, and driver notes
  + A contact page
  + A messaging page
  + A driver notes page
  + An appointment page to make, modify, and cancel user appointments
  + A user profile page
  + A page to edit the user profile
  + A page to advertise the available user packages
  + A checkout page
* A database

### 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?*

When completed, the DriverPass system should allow users and administrators to:

* Navigate through a well-designed interface
* Register new users
* Book driving sessions
* Check a user’s progress
* Stay up to date with news from the DMV

The measurable tasks that need to be included in the system design include:

* Creating use case diagrams
* Building activity diagrams for each use case
* Researching user interface designs
* Building a class diagram
* Getting DriverPass’s approval on the above
* Building the interface
* Linking the database to the interface
* Building the business logic
* Testing the system
* Delivering the system
* Completing the sign-off meeting

## Requirements

### Nonfunctional Requirements

*In this section, I will detail the different nonfunctional requirements for the DriverPass system. This includes what 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 system must:

* Run as a web-based application over the cloud
* Support users across the nation with a response time of 5 seconds or less on any major desktop browser or LTE connection
* Be backed up every night when, on average, the least users are on to ensure that up-to-date data is accessible anywhere

#### 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 DriverPass system must:

* Run on Alpine Linux
* Include a Redis database linked to the interface

#### Accuracy and Precision

*How will the system distinguish between different users?* *Is the input case-sensitive? When should the system inform the admin of a problem?*

The DriverPass system must:

* Distinguish between different groups of users. Each group will have a predetermined set of privileges and actions that a user in that group can take, such as:
  + Administrators can reset passwords or block former employees’ access
  + Administrators may know who made, canceled, or modified a reservation and print activity reports
  + Instructors may leave driver notes and create, edit, and delete appointments with a specific car and a specific student
  + Users may pick a DriverPass package and request driver appointments
* Limit user input and alert administrators when, for example:
  + There are too many requests in a short period of time
  + The user tries to input abnormal text, such as PHP or JavaScript

#### Adaptability

*Can I 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 DriverPass system must:

* Be modular and changeable. Administrators must be able to add, remove, and modify elements of each page, either permanently or temporarily, without changing the code
* Adapt to each DMV driving law, policy, and sample question update received from the DMV

#### Security

*What is required for the user to log in? How can I 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?*

The DriverPass system must:

* Allow users to attempt to login three times every hour. The system will alert administrators when there are many login attempts in a short period of time
* Alert the user when there have been many failed login attempts with their account username
* Alert administrators when there is suspicious or abnormal user activity
* Conceal user password input and other sensitive user data
* Encrypt all its data

### Functional Requirements

*Using the information from the scenario, these are the different functions the system will provide.*

The DriverPass system shall:

* Show users the landing page when they navigate to the domain root and show the appropriate user interface when they navigate to other pages
* Present the user with many options, including:
  + View online test progress and driving hour progress
  + View, edit, and delete their user profile
  + View driver notes
* Sign out any user that is inactive for thirty minutes
* Alert administrators when:
  + There is suspicious user activity
  + There are updates from the DMV

### 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 DriverPass user interface must:

* Display the appropriate page to the user
* Display the appropriate information depending on if the user belongs to the customer, instructor, or administrator group
* Allow the user to take certain actions depending on their group privileges. See “Accuracy and Precision” for more details
* Accept input from the mouse and keyboard or from touchscreen events
* Communicate with the user via the display and audio

### Assumptions

*What things were not specifically addressed in your design above? What assumptions am I making in my design about the users or the technology they have?*

The DriverPass system assumes that:

* The customer is a legal resident of the United States and passed a vision test and is therefore eligible to earn a driver’s license
* The instructor is a certified driving instructor in the United States
* Electricity or a charged mobile device is available at the user’s location
* Internet is available 24/7 for the system to communicate with the DMV

### Limitations

*Any system will naturally have limitations. What limitations are in my system design? What limitations do I have as far as resources, time, budget, or technology?*

The DriverPass system:

* Is not voice activated
* Will stop functioning if the server loses electricity
* Will lose some functionality if data is lost or if a third party service is not available
* Will not be up to date on driving laws, policies, and practice questions if connection to the DMV is lost

### Gantt Chart

*The following is a screenshot of the GANTT chart that I created with Lucidchart. It meets the plan described by the characters in the interview.*

