# CS 255 Business Requirements Document Template

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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?*

* We design systems for various clients. This new client, DriverPass wants to provide students with access to online practice exams and on-the-road training to better prepare them for driving tests.

### 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 owner of DriverPass sees an opportunity in the market for training students for driving tests. He wants to improve how students learn driving. His proposed solution will allow students to take online classes and practice tests and provide on the road training if needed.

### 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 should be able to do the following
  + Be Web Based and run on the cloud since client does not have staff for server infrastructure
  + Allow Students to read about classes and tests provided (packages)
  + Allow the Student to sign up for a package and pay for it
  + Allow owner and staff to view reports about the system such as schedule for next day, students signed up etc. on both desktop or mobile device
  + Allow student and staff to communicate with each other
  + Audit log for reservations and any changes
  + Allow Students to make reservations (time and day). Allow staff to make the same reservation if student calls in on phone or visits office
  + Match Student class with a driver who is free or allow student to choose driver he has already used.
  + Allow owner and staff to view all driver schedules (Possibly edit schedules in case driver goes on leave, for example) and driver notes for a student
  + Allow owner and staff to view all student progress on courses
  + Have different levels of users
    - Student
      * Pay
      * Create and Modify appointments
    - Staff
      * Create and Modify appointments for students
      * View schedules of other staff and drivers
      * View own schedule
    - Owner & IT Officer
      * Do everything a staff does and,
      * manage access of staff and users (delete accounts and reset passwords)
      * View Audit logs
  + Be able to handle different types of packages and provide ability for owner and IT Officer to add and remove packages in the future
  + Get a notification when DMV rules are updated

## Requirements

### Nonfunctional Requirements

#### Performance Requirements

* *System runs off the web, on the cloud*
* *Regular backups need to be setup on the cloud infrastructure.*
* *Maintenance if any should be done on weekends to avoid disturbing weekday clients*
* *Each page should ideally load in < 1s on a decent broadband connection. This means each api request should serve within 200ms*
* *The overall webpage size should not be greater than 500mb for it to load in a reasonable amount of time*

#### Platform Constraints

* *Owner and Staff should be able to use the system from anywhere. They may not be able to modify or update the data unless online, the data they read may also be out of date*
* *We should use Amazon cloud services to host this project*

#### Accuracy and Precision

* *Ability for the data to be updated by multiple people, for example a customer may update their profile or appointment online themselves and then show up at a center to modify*
* Different users have different roles. We should check the login system to ensure the right privileges are checked before giving access. For example some course statuses may not be visible to the customer, especially temporary statuses.

#### Adaptability

* *Client wants to be able to add new training packages in the future – this may need custom developmental effort*
* *Clients wants to be able to turn off certain packages when no longer offered*
* *Client should be notified via an automated email whenever DMV has an update so the client’s content can be updated*

#### Security

* *Different users have different roles, authorization needs to respect those roles. A login system needs to be present which allows users to identify themselves and associations them with a role and rights corresponding to that role. Users will use username and password to login, their emails need to be stored and 2FA needs to be available.*
* *If a user forgets a password, we will use their email address to send a password reset link which will expire in 2 hours.*
* *Data exchange within the system components is secured by Amazon’s internal security mechanisms. We will use Amazon’s acls to secure the rights to access those systems. Super user rights and IT credentials will be store securely in our crypt systems and given to the client when our contract terminates*

### Functional Requirements

* The System shall provide information to users and students about classes, tests and packages provided in an easy to consume format
* The System shall provide the ability to the owner and his staff to manage the information presented to users and students about classes, tests and packages
* The System shall allow a user or customer to sign up for a package.
* The System shall allow a user or customer to reach out to customer support about questions they have.
* The System shall allow a user or a customer to pay for a package they signed up for.
* The System shall allow a user or a customer to cancel a package they signed up for and get a portion of their payment as a refund.
* The System shall allow the owner and staff to setup schedules for drivers
* The System shall allow the student to signup, or a staff to sign a student up for a driver during a time he is available
* The System shall allow modifications to appointments
* The System shall inform the driver about classes on his schedule
* The System shall allow the driver to take leave if needed and notify the owner with a high priority message (medium to be determined). The System shall then recommend changes to students schedules taking into account availability from other drivers or recommend rescheduling/cancelling classes.
* The System will keep an audit log of any schedule changes
* The System shall have different levels of users
  + - Student
      * Pay
      * Create and Modify appointments
    - Staff
      * Create and Modify appointments for students
      * View schedules of other staff and drivers
      * View own schedule
    - Drive
      * View Schedules
      * Grade Students
    - Owner & IT Officer
      * Do everything a staff does and,
      * manage access of staff and users (delete accounts and reset passwords)
      * View Audit logs
* The System shall allow owner and staff to stop students for registering for some packages
* The system shall notify the owner and staff when DMV rules change

### User Interface

* We will only build a web interface but it will be accessible on mobile browsers as well
* Different levels of users will be able to access different parts of the site
* We will use the react web framework to build the User Interface
* The site will have a limited logged out view and a more functional logged in view
  + The main goal of the logged out view is to encourage the user to sign up or login
* When a student is logged in they will be able to self-serve themselves and chat with customer support
* A staff will have much more access rights. They will be able to interact with student queries, setup appointment for students, view driver performance and schedules and do backend admin management of the site
* A driver will be able to view his schedule and input details about how students performed. Since he may need to do some of this during class, he will provided with an iPad and the user interface needs to be very simple to use.

### Assumptions

* *We are assuming that students and staff are technically savvy and have the latest browser versions.*
* *We are assuming that our contract with the client will continue and routine maintenance contract will be signed*
* *We are assuming payment processing will be done by a payment processor and so we are not building our own payment processing system*
* *We are assuming that we will be responsible for alerts that fire due to system problems and are not planning for user friendly alert management systems*

### Limitations

* This system will not scale to more than a thousand users accessing the system at the same time. We are not setting up any kind of horizontal scaling systems in our design. For example our design does not consider sharding and which keys to use for it
* We are setting up this system for users in the United States. If students access from other geos, network latency might be high
* Customer support queries are not realtime and we are using zendesk to support customer service
* The client does not have an IT staff and so we are responsible for alerts that are fired during problems in the system

### Gantt Chart

