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# CS255

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# CS 255 Business Requirements Document

Complete this template by replacing the bracketed text with the relevant information.

This template lays out all the different sections that you need to complete for Project One. Each section has guiding questions to prompt your thinking. These questions are meant to guide your initial responses to each area. You are encouraged to go beyond these questions using what you have learned in your readings. You will need to continually reference the interview transcript as you work to make sure that you are addressing your client’s needs. There is no required length for the final document. Instead, the goal is to complete each section based on your client’s needs.

**Tip:** You should respond in a bulleted list for each section. This will make your thoughts easier to reference when you move into the design phase for Project Two. One starter bullet has been provided for you in each section, but you will need to add more.

## 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?*

* Provide students with online practice material for driving tests and courses
* Create a place for students to access online practice exams
* Create a place for on-the-road trainings
* The client is Liam, the owner of DriverPass

### 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?*

* Adding security and accounts for each student and employee and restricted access using rights and roles
* Will need a notification system for DMV policy updates
* Create a web platform for sample driving tests
  + Exporting data to an outside source (Excel for example)
  + Data needing to be stored for the tests
    - A table for the following information: Lesson Time, Start Hour, End Hour, and Driver Comments
* Create a web platform for requesting on-the road trainings
  + Create a system to track reservation creation, cancelation, and modification
    - Tracking to know who modified the reservation last
    - Exporting an activity report
    - Tracking the driving instructor, time requested, and the vehicle
      * Note each lesson is two hours long and should not have overlapping times on a single driving instructor
      * Additional information that needs to be stored for reservations: their first name, last name, address, phone number, state, and their credit card number, expiration date, and security code
  + Package Tracking
    - Track which packages a user has, how many hours have been used, the total hours with the package, any roles given by the package, and any other bonus material provided by the package
    - Needs to be flexible to allow for modification of packages, additional packages, and removing packages (future goal)
    - Allow for disabling packages
    - Initially starting with three packages
      * Package One: Six hours in a car with a trainer
      * Package Two: Eight hours in a car with a trainer and an in-person lesson where we explain the DMV rules and policies
      * Package Three: Twelve hours in a car with a trainer, an in-person lesson where we explain the DMV rules and policies—plus access to our online class with all the content and material. The online class also includes practice tests
* Student information page (Role Restricted)
  + Will display a section for the Logo, the student’s Online Test Progress, the Personal Information for the student, a section for the driver’s notes, any special needs for the student, and a photo of both the driver and the student
* Roles
  + Full Access Account
  + IT Account – System maintenance, modifying it, etc.
  + Secretary Account – Make, cancel, and modify appointments

### 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 provide an online platform to students that grants access to online tests and request on-the-road trainings. Employees will be able to monitor a student’s progress and It will be able to adjust accounts and account access per individual.
* Timeline
  + Data Collection: January 22nd – February 4th
  + Use Case Diagrams: February 11th – February 18th
  + Build Activity Diagrams for Each Use Case: February 15th – March 9th
  + Research User Interface Designs: February 27th – March 7th
  + Build Class Diagram: March 1st – March 9th
  + Customer Feedback: March 11th
  + Interface: March 12th – March 24th
  + Database Tables Creation and Linking: March 24th – April 3rd
  + Build Business Logic: April 5th – April 27th
  + Test System April: 27th – May 7th
  + Deliver System: May 8th – May 9th
  + Sign-Off Meeting: May 9th – May 10th

## 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 system should be web-based to allow for scalability, speed, and accessibility. The system should respond quickly to a user’s request and should update fairly frequently to both allow for smother account creation and to display updates staff makes to the system.

#### 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 system should be able to run on any platform that has a functioning internet browser. Since the current intended system would be hosted in AWS, the backend would likely use a Mongo Database for the lambda functions to securely connect to and store a user’s data. A Lambda’s is a scalable function hosted by AWS that hold the business logic for a portion of the system.

#### 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?*

* There will be a key that is encrypted and sent to the AWS Lambda, the username will likely be an email that is not case-sensitive while the password is case-sensitive. The system can have monitoring set up through the AWS CDK of a lambda that sends an alarm to AWS CloudWatch. This will allow for metrics to be generated and alarms to be triggered. Common alarms are a threshold of connection errors, database response errors, and heavy latency alarms.

#### 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?*

* Adding, removing, and modifying will be a restricted permission that IT admin and upper management use to handle account issues. This permission will give access to a page to adjust a user’s information without letting any user modify information. Since the system will be through hosted through AWS, the Lambda functions of the base machine can be rolled over while a substitute machine processes the traffic that would otherwise be handled by the main machine. Since the whole application would be hosted on AWS it allows for these changes to be handled entirely by AWS and no modification would be required by the IT staff to the servers directly. The IT administrator would require access to modify users, driving updates, and other IT accounts. This would include the usernames and passwords for clients and staff.

#### 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?*

* The user is required to sign in with a username and password. All the data sent to and from the server and client, this can be verified by an IP authentication for internal accounts. In the case of a brute force hack the accounts will be set to prevent login attempts after 5 invalid attempts for 5 minutes and will be locked for incrementally longer times with each subsequent failed attempt. The user can have an email sent to them to reset their password by entering a valid email. Once the email is received the user clicks it and is sent to a password reset page.

### 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 validate user credentials when logging in.
* The system shall present an option to reset a user’s password by sending an email to an email existing in the database.
* The system shall encrypt any traffic between the client and the server.
* The system shall provide a user the ability to change their account information after a validated log in.
* The system shall allow a validated IT account to modify any user.
* The system shall give staff the ability to modify details about a student’s driving training.
* The system shall present the details of the driving training to the student.

### 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 needs to be scalable and quick since there is a potential for high traffic during peak time and minimal traffic outside of peak times.
* There are four types of users a student, a secretary, a driving instructor, an IT administrator, and an administrator.
* The users will need to:
  + Student – Log in to the interface, reset their password via an email, view their own account, modify their personal information, only view the training details, take trainings, and request appointments.
  + Secretary – Log in on a validated IP, reset their password via a work email, view their own account, modify their personal information, modify appointments, and schedule appointments.
  + Driving Instructor – Log in on a validated IP, reset their password via a work email, view their own account, modify their personal information, modify a student’s training details, modify trainings, and schedule appointments.
  + It Administrator – Log in on a validated IP, reset their password via a work email, view all non-administrator accounts, modify their personal information, modify student accounts, and modify staff member accounts.
  + Administrator – Log in on a validated IP, reset their password via a work email, view all accounts, and modify all accounts.
* The user will interact with the interface through web-browsers.

### 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?*

* The devices being connected to the service have a functioning internet connection and are on an internet browser.
* The user has access to a device that can access the internet.
* All employees will be accessing their accounts through a work computer or on a work network.

### 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 limitations on this project would be time, complexity, and budget.
  + Time – Due to there being no current infrastructure for the project, the foundation for modifying the project and connecting all the subservices would require a significant amount of time to develop.
  + Budget – Since the system would be hosted through cloud services, the system will draw money as used.
  + Complexity – Since there is to direct access to the servers, all data to and from a subservice will either be on an isolated network or encrypted.

### 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.*

