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CS-255 Systems Analysis and Design

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# 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?*

* The purpose of this project is to create a system for the company DriverPass that will provide training and learning materials for student drivers.
* Liam, the owner of Driver Pass, would like this System to be used by DriverPass’s customers (student drivers) to allow them to get training for their drivers tests at the DMV. The system will allow them to get in person driving training in addition to online materials, online learning sessions and tests so that they can study and practice for their drivers’ tests. The system will also be accessed and maintained by the employees 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?*

* DriverPass will be a system that is used for both online learning and practical driving lessons. Students will be able to schedule their in-person driving tests through the system. They will also be able to access study materials, online learning sessions, and practice exams through the DriverPass System. Student progress and driving lesson information can be tracked by both the DriverPass employees and the students themselves.
* DriverPass seeks to fill a void in the market in terms of training for student drivers and for their drivers tests at Local DMVs.
* A high level overview of the key components of the DriverPass system are
  + Online classes and practice tests
  + On the road training
  + Access to the DriverPass system Data from anywhere
  + Scheduling and reservation of in person driving lessons
  + Online test progression and tracking

### 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 the System is completed a student driver should be able to use the DriverPass system to
  + Access all learning material
  + Take online DMV learning courses
  + Take online practice DMV exams
  + Track their Exam progress within the System
  + Book driving appointments
* The DriverPass employees will need access to this information so that they can help the students schedule their in person driving lessons as well as monitor their progress.
* Student Exam progress will be accessed through the DriverPass system and their progress is explicitly shown

## 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 needs to be able to run on two different environments. Those being,
  + Web based (Windows and macOS)
  + Mobile app (Apple iOS and Android OS)
* The System should be able to run without lag and downtime at a reasonable speed. It will not require much processing power so this should not be an issue. It should be updated monthly to insure that teaching materials stay relevant to current state driving laws and to ensure that routine maintenance can be rolled out so that the website stays functional.

#### 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?*

* There are four platforms that should be able to run the system. Those being,
  + Windows
  + macOS
  + Android OS
  + Apple iOS
* The system will of course need a web-based framework. It will also require a database to contain the user information for both customer user accounts and employee admin accounts and proper tools to maintain this database. The system will need to have user authentication and authorization tools. In addition, it will need to contain tools for media display as well version control.

#### 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?*

* All users will be required to login in to use the DriverPass system which will determine what capabilities that user has. Customer/student accounts will be able to access all learning materials such as readings, videos, practice tests as well as scheduling for in person driving practice. While the administrative employee users will be able to access all these features in addition to maintenance features and the ability to update the system with new content. Ideally the system should inform the admin as quickly as possible, but we also want to look into bug user bug reporting.

#### 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?*

* The admin user accounts will be able to add, remove and modify features without changing code. For example, if a customer user account does not have access to specific materials the user admin accounts will be able to grant them permissions to see these study materials. The admin users will also be able to create new user accounts and remove user accounts, in the event that an account is no longer in use. Platform updates will be rolled out once a month or in the event of any state law changes so that the users can stay up to date with current laws and regulations for their state. The IT admin needs access to all user accounts and all systems functions as they are the lead administrator for the system.

#### 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 will use their email address as their login and create a password of their choice. Optionally they can use two factor authentication to secure their account further. The exchange of data from the client and server will be encrypted and server authentication will be validated to ensure the user is connected securely. This will ensure that the user’s personal information or payment information will not be stolen. If a user gets there password wrong several times in a row(IE 7+) they will be locked out of their account. They will then need to use the “forgot password” function so that they can reset their password. The forgot password function will send an email to the user’s associated email address and they will then follow the necessary steps to reset their password.

### 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 display a prompt for the user to log into their account.
* The system shall require that the user enter their username and password and verify these credentials while logging in.
* The system shall show the user their dashboard, which should display the following,
  + Online test progress
  + Driver notes
  + Student information
  + Student special requirements
  + Driver photo
  + Student photo
* The system shall display pertinent learning materials for the student’s state.
* The system shall allow the student to take practice exams, calculate which answers are correct and display these results in the online test progress page.
* The system shall allow the student to schedule driving times with a driving instructor.
* The system shall require the user to click through the webpage or tap through the app to navigate the DriverPass system.

### 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 will have the following functions,
  + Login screen
  + Home page which displays,
    - Online test progress
    - Driver notes
    - Student information
    - Student special requirements
    - Driver photo
    - Student photo
  + Online testing materials
  + In-person driving lesson scheduling page
  + Driver to student contact page to discuss past or upcoming lessons
  + Driving instructor notes page
* There will be three types of users, The student user, the driving instructor user, and the administrator user. The student user will have access to all the normal/student DriverPass functions described previously. The driving instructor user will have access to all the same functions in addition to the ability to add instructor notes on the student’s page to help them improve their driving. They will also have access to scheduling functions for the student in person driving lessons. Finally the administrator user will have access to all of these functions so that they can test them and fix any bugs. They will also be able to update the system and remove any non-essential functions through access to the systems code. All users should be able to access these same functions(except access to the source code for administrators) via their mobile device although the layout will be different. Functions will operate in a similar manor except instead of clicking they will tap their phone screens.

### 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?*

* In the description above, it is assumed that the system will function without latency, that each page will load quicky, that there will be no system downtime. It assumed that this will be the case on both the mobile app for iPhone and Android as well as on a Windows or Apple computer. Other operating systems will not be supported but we expect these 4 will cover the vast majority of users.

### 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?*

* We want to ensure that the system is operational on our deadline of May 10th. To ensure that we do this we will need to follow the timeline laid out for us as strictly as possible. This means that all teams working on the system have the necessary resources to continue with development. Of course, we will need to stay in the designated budget as we develop. As far as technological limitations we want to make sure that all user interaction comes through the servers created for the DriverPass system.

### 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.*

Please see the chart on the following page below. The chart was rotated so that it could be enlarged and read. I’ve also attached a link to the PDF as well as a link to the chart on lucid.app.

<https://lucid.app/documents/embedded/7cfff7ee-0c83-4870-bdd2-dd2b548627dc?invitationId=inv_53cc0015-c8ed-4c68-9cea-ebac3bc8e048#>





