Southern New Hampshire University

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 Client is a new start up called DriverPass.
- The purpose of this project is to develop a fully integrated system to help students prepare for and pass DMV driving tests by consolidating all available training resources into one place.
- The overall goal is to consolidate everything a driver in training might need to avoid failing their test at the DMV.
- The system will need to provide a way for customer registration, scheduling tests, progress tracking and instructor integration so they can update progress along the way.
- When all these systems are combined, the solution will fill the gap Liam believes there is in the market and help improve the pass rate of first-time drivers.

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?

- There is a high failure rate for DMV driving tests and the market lacks a fully featured system for driver training. DriverPass is a solution to this problem.
- We need to handle customer registration, which includes storing all personal details, contact information, payment details, stored locations and any other details which might differ from client to client.
- We need roles for registration, which include, but are not limited to: Customers, Secretary, Trainer, and administrative roles.
- We need a package selection when the user signs up. This will include 3 options: Six hours in a car with a trainer, 8 hours in a car with a trainer and in person lessons going over DMV rules and policies, and 12 hours in a car with a trainer with all the benefits of the 8 hour lesson plus access to online classes with practice tests. All lessons are split into separate 2 hour training sessions.
- There are a total of 10 cars with drivers, we need a system to disable packages as DriverPass sees fit so users cannot register for them.
- We need a scheduling system for driving lessons which will allow trainers to be assigned to customers by both secretaries and customers. The ability to Book, Modify, and Cancel appointments is to be included.
- We need the ability to track customer progress in online tests
- Trainers need to be able to record notes and lesson times for any students they train.
- The entire system, including all data access and editing, needs to be cloud based with the ability to download reports and any corresponding info for offline viewing. This cloud-based service will have all the backups and security provided by our firm.
- DMV integration through API or a system to manually update new rules and regulations and push updates to administrative users. If any practice questions need to be updated, we will inform the trainees.

- A frontend which will include online learning through classes and practice tests, the above-mentioned scheduling system, user login and automatic password reset, trainer and student photos, the visual display of progress and any notes left by a trainer, and activity tracking for any changes made to scheduling and user information updates like new addresses for pickups or meeting locations.

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?

- We will split all the functionalities into different sections and hook them up into the User interface the customer has assigned us to design.
- Customer registration and Profile: Following the registration form requirements we will store and display all customer details. Name, Address, contact information, Payment information, Pickup and Drop off information, Special needs note, and photos.
- Online Learning and Testing: If the user has the package assigned, they will gain access to all online lessons and practice tests. The system will record and display test names, time taken, attempts made, score, and status of the test (Not taken, In Progress, Passed, Failed).
- Appointment Scheduling: Customers or Secretaries can Book, View, Modify, and cancel the 2-hour driving lessons. They will be given a calendar with 2-hour slots and will only be able to book slots with available drivers. The system will automatically pair customers with trainers.
- Package management: Administrator roles can create, edit and completely disable all the training packages created.
- Access Control through roles: The system will authenticate and restrict certain functionality depending on the role. This will ensure users can only perform authorized actions while interacting with the system.
- Reporting and Export of Data: The system will generate files readable in Excel detailing activity reports which will include reservation changes and any other metrics they wish to add for offline use by users that have the proper role.
- DMV Compliance: The system can update based off changes from the DMV and trigger notifications to administrators.
- Activity Tracking: The system will log certain user actions, like reservation changes, with user ID, timestamps, and the changes made to any logged user actions.
- Password reset: The users will be able to reset their password automatically through the system with a secure password reset system that authenticates through their email.
- User Interface: Liam's sketch will be adhered to when displaying student information, online test progress selection, the driver notes table, driver photo, student photo, and the logo.

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 will run off a cloud-based system on the web.
- Although the client did not mention a specific performance benchmark, the system needs to be responsive
- The system should be updated whenever the DMV updates any rules, policies or sample questions.

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 run on all platforms and major browsers
- All backups and security responsibilities will be taken care of by the cloud provider.
- The system's backend will require a database to store all data
- The system will be cloud-based

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?

- The system will distinguish between different users based on their role.
- Different roles will have different permissions applicable to their use-case
- The system will store and track user actions so any changes can be audited in the future such as who made a reservation/cancelled or modified their reservation.
- The system will provide reports that detail any user changes and inform the correct role of the changes that have been made.
- The system will inform administrators of DMV updates
- The system will handle case-sensitivity where applicable. Passwords need to be case-sensitive, but most other fields can remain case-insensitive.

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 system needs to allow administrators to add, remove, modify user accounts without requiring code changes
- The system needs to allow administrators to disable training packages without making code changes.
- The cloud-provider we select will handle all platform updates, backups, and security updates ensuring minimal technical problems as requested.
- The administrator needs full access rights to the system to handle user accounts, maintenance overviews, modifying any packages and their accompanying lessons/tests, and DMV updates.

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 system requires users to log in with a username and password
- The cloud-based provider will provide a secure connection between the client and the server
- The system will allow users to automatically reset their password without intervention from administrators
- The system will securely implement role-based rights and access for all the roles DriverPass requires.
- We will work with the cloud-based provider to ensure we are protected from brute-force attempts

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 allow customers to create an account for online access.
- The system shall provide a customer registration that gets their first name, last name, address, phone number, payment information, and drop-off location
- The system shall allow customers to reset passwords automatically.
- The system shall enable customers to book 2-hour driver lesson blocks
- The system shall enable customers to view, modify, or cancel their driving lesson appointments.
- The system shall allow secretaries to make, view, modify, and cancel driving lesson blocks.
- The system shall allow the selection of three initial driving lesson packages during the initial user signup.
- The system shall manage and assign all available drivers to their scheduled driving lessons
- The system shall track which driver is matched to each user's lesson block
- The system shall provide access to online classes and the practice tests if they have the third full package
- The system shall record and display test progress that includes the status of the test, name of test, time taken, and the score.
- The system shall allow training to record notes and lesson times for students
- The system shall generate activity reports
- The system shall provide data access and editing to all roles that have access to this functionality
- The system shall allow reports to be downloaded for offline use.
- The system shall maintain a connection to the DMV to receive updates on new rules, policies, and sample questions.
- The system shall update the administrative role of any DMV updates
- The system shall allow administrative roles to have full access to manage accounts, send reset passwords links manually, and blocking user accounts if necessary.
- The system shall allow administrators to disable training packages if the slots reach capacity.

- The system shall store and display the accompanying student information (name, address, contact info, payment info, pickup and drop-off location, any special needs, and a photo of them.

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 user interface will be modelled from Liam's sketch and any updates to the user interface should be approved by Liam.
- The interface will be hosted by the cloud-based provider we select
- Customers will need an interface to register for DriverPass, log in to DriverPass, View test progress, access the scheduling system for driving lesson blocks, access class content and practice tests if they have the third package.
- Secretaries will need an interface to sign up new users and schedule their driving blocks for them that includes the ability to view, modify, and cancel driving blocks on behalf of the customer.
- Drivers will need an interface to view their scheduled appointments and provide lesson notes and the accompanying time that lesson took place at.
- Administrators need an interface to control all administrative functions such as full account access w/ the ability to modify user accounts, disabling training packages, generating and viewing activity reports for Customers, and viewing any DMV updates.
- Liam needs an interface that provides an overview of all aspects of DriverPass. These functionalities will primarily focus on tracking the actions of the administration role as well as the ability to access the administration role interfaces and responsibilities.

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?

- We assume that we will have access to an API that provides us with DMV updates.
- We also assume that this system will be hosted by a cloud-based provider who can handle hosting, backups, and all security for DriverPass.
- We also assume that payment processing will be handled by a third-party payment provider such as Square.
- We also assume that Liam has provided us with the most up-to-date version of his UI sketch.
- We also assume that DriverPass will provide all the content for the website, and we are just making the framework.
- We assume that all users are aware that a stable internet connection is required to use DriverPass.

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?

- Any new lesson packages will have to be manually added through code as there is not an interface to directly add another.
- Any changes to the scope of the system will change the agreed upon schedule shown below in the Gantt chart
- The system can only be accessed while online, but certain things like offline data reports can be viewed offline.
- The Ui/UX team oversees the overall look of the DriverPass website, but the sketch is very basic. They should loop in Liam through the development process to make sure the direction they are taking aligns with his vision.

Gantt Chart