Southern New Hampshire University

CS 255 Business Requirements Document

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 assist student drivers in passing their driving exams at the DMV by providing an online environment for them to take courses and practice tests on any device. Ease of access to education and user-friendly scheduling is what Liam, the owner of DriverPass wants to accomplish for his company.
- The client is the owner of DriverPass, Liam. Liam wants his software to allow users of his product to access current DMV study material (online/offline and on any mobile device) and book available vehicles and driving trainers for 2 hour on-the-road lessons.

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?

- Liam wants the product accessible online and offline from any device, whether it be on a PC or mobile device.
    - When modifying data, it can only be done online so that no duplicate information is made on different servers.
- The product is required to allow users to make appointments, cancel, and modify appointments online. The users must also have the option to set up appointments by calling the secretary of DriverPass or by visiting the office.
- Liam is also wanting to offer various training packages to his users and be able to modify them in future iterations of the software if the consultant company allows for that.
- It is also a requirement of the software to identify different rights and roles of various users.
    - The CEO, Liam for example needs full access over all accounts so that he can reset if someone forgets their password, restricting access to a former employee who no longer works at DriverPass and generate activity reports.
- The system should also be able to allow for a DriverPass employee to input basic customer data such as their: first name, last name, address, phone number, state, and their credit card number, expiration date, and security code.
- The software must also update regularly to comply with DMV changes to rules, policies, or sample questions. Liam should be able to receive notifications whenever the DMV makes an update.
- Liam wants his software to allow users to view their online test progress and show users' completed tasks.
- This project is to be fully functional over the cloud.
- As far as logging training sessions with students, Liam wants the user to be able to enter: Lesson Time, Start Hour, End Hour, and Driver Comments. This is going to be a large database of entries so there is expected to be multiple pages of this information.

- The user needs to be able to track their own progress in the courses they are enrolled in which includes their personal information.

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 successfully be able to educate student drivers on up-to-date DMV information by allowing them to take practice exams and participating in online courses, and allow for scheduling on-the-road training sessions over the cloud.
- The measurable tasks needed to be included in the system design to achieve this is:
    - Clearly Identifying product requirements through an initial meeting with the client. Liam (what we already did) and a second meeting for Liam's approval after extensive planning for use cases and overall design.
    - After that, building the product is the last step in the process.
        - We must allocate work appropriately to each member and manage time effectively to complete tasks in a timely manner per the schedule provided in the DriverPass Interview Transcript.

Requirements

Nonfunctional Requirements

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?

- Environments the system needs to run in:
    - Computers with a web browser
    - Mobile devices with a web browser
    - Accessible offline as well as over the cloud
- How fast the system should run
    - Unspecified; however, industry standard performance is recommended.
- The system should automatically update whenever the DMV releases new rules, policies, or sample questions.
    - The owner and IT officer should receive notifications whenever they have an update.

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 platforms the system should run on are:
    - Windows
    - Android
    - iOS
    - MacOS
    - Chrome OS
- The back end requires:
    - A centralized database for all users/members
    - A database for administrators
    - A database for scheduling
    - An updatable database for DMV curriculum

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?

- How I would distinguish between different users is by:
    - Their role (administrator, IT officer, secretary or user)
    - Their full name
    - User ID number
    - The date at which they became a member (for users who have the same name)
- The system should inform the admin of a problem whenever:
    - There is a rule, policy, or sample question change by the DMV
    - A user requests a password change
    - A reservation, cancellation, or modification has been made

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?

- Yes, changes to the user – whether to add, remove or modify – can be made without changing source code provided that a fully functional database was implemented to store user information, in addition to a user interface for the administrators to manage roles and add/or remove users.
- The system will adapt to platform updates by:
    - Allowing the software to be run on multiple resolutions (i.e. mobile devices and desktops)
    - Allowing the software to be hosted in the cloud
    - Having software compatibility on major web browsers such as Chrome, Firefox, and Safari.
- The type of access the IT admin needs is:

- User database access
- Scheduling database
- To be able to enable and disable training packages for users

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 requirements for users to log in are:
  - Access to either a mobile device or computer
  - Username
  - Password
- Securing the data exchange between the client and the server is by:
  - Utilizing HTTPs and TLS for transferring data/file between the client and server.
- If there is a "brute force" hacking attempt, the account should:
  - Lock out for a period of time if multiple failed login attempts have been made
  - Send an email to the associated user, notifying them of the attempted logins
  - Automatic notification to the administrator
- If the user forgets their password:
  - The users should have the option to reset their password via an email notification.

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 be able to send a notification to the administrator whenever a DMV policy or rule has been changed.
- The system shall allow users to add, remove and modify reservations online
- The system shall allow the administrator to generate excel reports online
- The system shall allow the administrator to block access to certain users
- The system shall allow the administrator to view user activity and generate report on it
- The system shall be able to allow the secretary to book a reservation after a phone call by the user
- The system shall be able to match a client with a driver with a specified time slot
- The system shall be able to let the administrator to disable training packages as he/she see fit
- The system shall be able to automatically update the curriculum when the DMV updates policies or rules

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 needs of the interface include:
    - the online test progress should:
        - show the tests the customer took
        - show what's in progress and the ones that the customer completed
        - say something like test name, time taken, score, and status
            - The status could be not taken, in progress, failed, or passed
        - show any comments the driver left as well as the times for the lessons
    - After each lesson, information about the lesson should be inputted into a table consisting of:
        - The lesson time
        - Start hour
        - End hour
        - Driver comments.
    - Visual indicators depicting for online test progress (i.e. progress bars and status icons)

- The different users for this interface include:
    - Clients/Customers
    - Administrators
    - IT Officers
    - Drivers

- The users should be able to perform the following through the interface:
    - Client/Customers
        - Verify user credentials for login
        - Request for a password reset
        - Add, remove, and modify a reservation
    - Administrators
        - Block user access to the software
        - View and manage test data
        - Enable and disable training packages
        - Generate user activity reports
    - IT Officers
        - Maintaining and modifying the system
    - Drivers
        - Make notes for drivers after each lesson
- The users will interact with the interface through:
    - A web browser (i.e. Firefox, Chrome, Safari, etc.)
    - A mobile device via a web browser or a mobile application

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?

- Things not specifically addressed in my design above:
    - Database back-up capability
    - A system for routine maintenance
    - Data privacy concerns
- Assumptions in my design about the users and the technology they have:
    - The user is digitally literate
    - The user utilizes a device that has minimum software capabilities
    - The user has access to a stable internet connection

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?

- Limitations I see in my system design:
    - Technology
        - The administrator requiring a developer to add or remove training modules
        - Platform compatibility and adaptability among mobile devices and computers
    - Resources
        - The users requiring a stable internet connection for up-to-date DMV study material
    - Budget
        - Additional financial means for future user-base expansion
            - Monthly cost for cloud-based databases
    - Time
        - The time required to training developers on new technologies and frameworks in future software iterations

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Gantt Chart