# Israel Stillman

Goran Trajkovski

CS-255 23EW2

# CS 255 Business Requirements Document Template

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

The purpose of this project is to develop an intuitive and resilient system for DriverPass. The client, DriverPass, aims to provide its users with a comprehensive and user-friendly tool that can be of use to new drivers that have a variety of different experience levels. To achieve this, the program will offer a wide range of learning programs to its users. These programs include:

* Access to online educational materials for tutoring
* Facilitation of in-person road test scheduling
* Provision of practice assessments to help students prepare for real-world scenarios

The main objective is to create a system that seamlessly integrates online resources with in-person testing and practice assessments, resulting in an uncomplicated and efficient learning tool for novice drivers.

### System Background

The system will provide an array of features and educational resources, functioning as a central platform that grants users access to all the necessary tools and guidance for successfully passing their in-person driver’s test.

* The system will serve as a comprehensive platform, offering users a convenient resource to acquire all essential skills needed to pass their in-person driver’s test.
* Cater to students with a diverse range of knowledge and skills, adapting to individual needs
* Prioritization of user-friendliness and seamless navigation
* The system will be consistently updated to align with the latest DMV standards
* Users will have the capability to create personalized accounts, providing access to various functions:
  + This includes making reservations, either online or over the phone
  + Accessing online tests
  + Accessing a library of online training materials
  + Purchase of driving packages available in 2-hour increments, which can be pre-purchased and scheduled

The system owner will possess administrative rights to efficiently oversee the platform and its available modules. These privileges include:

* Deactivating modules that are no longer needed
* Incorporating or adjusting modules to meet DMV standards
* The ability to restrict access for employees who no longer need system privileges
* Assigning privileges to employees who require them

### Objectives and Goals

The system analysis objectives provide the development team with clear direction and enable them to formulate a strategic approach for system development. These objectives define the intended outcomes of the DriverPass system and emphasize the crucial functionalities. The associated goals establish quantifiable benchmarks, aiding the development team in translating objectives into actionable tasks.

**Objective 1: Streamlined User Experience** – The initial objective is to guarantee that users encounter a seamless journey, spanning from account creation through to reservations and testing.

* Goal: Intuitive Account Creation
  + Measurable: Minimize the time users spend on creating accounts, indicating system efficiency.
  + Measurable: Gather user feedback post-account creation to identify areas for improvement.
* Goal: Simplified Reservation Process
  + Measurable: Monitor reservation time to assess system user-friendliness.
  + Measurable: Solicit user feedback on the reservation process to enhance efficiency.
* Goal: Integration of User Feedback
  + Measurable: Continuously gather, consolidate, and assess user feedback across all facets of the DriverPass system, ensuring an ongoing enhancement of the user experience.

**Objective 2: Student Progress Monitoring** – The second objective is to furnish students with a dependable means of assessing and monitoring their advancement through the learning modules, enabling them to keep tabs on their journey towards achieving their driving objectives.

* Goal: Maximize User Engagement in Progress Tracking
  + Measurable: Gauge the extent of user interaction with the progress tracking system. High engagement levels will signify the system's effectiveness. Monitoring user engagement will provide insights into the system's quality and comprehensiveness, while low engagement may suggest areas for improvement in user-friendliness and effectiveness.

**Objective 3: User Data Protection and Security Measures** – The third objective is to establish robust measures to safeguard user data privacy. Given that sensitive user information will be stored within user accounts, it is imperative to guarantee the privacy of both user and employee data within the system.

* Goal: Assure Data Security
  + Measurable: Conduct regular security assessments to verify the absence of any breaches or leaks pertaining to user and employee data. This will uphold a high standard of system security through ongoing checks and evaluations.

**Objective 4: Remote Accessibility Enhancement** – The fourth objective centers on the imperative for remote accessibility to offer flexibility and convenience to both students and employees.

* Goal: Streamlined Remote Access via mobile devices or desktop computers
  + Measurable: Reviewing user login patterns will provide insight into when and where users are accessing the system. An optimized system should exhibit relatively balanced user access between both mobile and desktop platforms.
  + Measurable: Soliciting feedback from students and employees about their preferred platform will offer further clarity on how and where users interact with the system.

**Objective 5: Scalability Enhancement** – The fifth objective centers on the system's capacity to adapt to changes in curriculum, either expanding or reducing as necessary. It must also remain current with evolving DMV standards.

* Goal: Agile Curriculum Management
  + Measurable: The primary aim of this goal is to ensure that the process of adding and removing curriculum is straightforward. This can be assessed by tracking the time it takes to upload and remove modules. A well-designed system should allow for quick additions (minutes) and swift removals (seconds).
  + Measurable: Assess the impact of newly added content on system performance. Does the system experience noticeable slowdowns when new packages are introduced? This evaluation will ensure that scalability does not compromise system efficiency.

## Requirements

### Nonfunctional Requirements

#### Performance Requirements

The DriverPass system must operate within a web-based environment to ensure accessibility from diverse devices and locations. This web-based setup will enable users to access the system whenever they have a stable internet connection.

Optimal performance is essential to provide users with a seamless and responsive experience. It's crucial to achieve swift page loading times and minimize latency when users request data from the website. This is particularly critical when students are making reservations or attempting to access educational resources.

Regular updates are imperative to keep the system current and compliant with prevailing DMV standards and regulations. The system should undergo updates at least every quarter (every four months) to promptly adapt to evolving driving requirements or revised driver testing procedures. This approach will guarantee that students always have access to the most current information.

#### Platform Constraints

The system should be designed without a specific platform dependency, as it will be accessed from various platforms including Windows, Apple, and mobile operating systems. This platform independence ensures broader accessibility, regardless of the device used.

To facilitate essential system functions, a database is imperative. This includes managing user account information, handling reservations, and storing curriculum data. By employing a well-organized database structure, the DriverPass system can efficiently retrieve and maintain the integrity of stored data. Leveraging effective database querying techniques will enhance data storage and retrieval, resulting in a more seamless user experience. Additionally, we can implement access controls to bolster data security. Techniques such as user authentication and data encryption can be employed to safeguard data privacy, all achievable through a robust database.

#### Accuracy and Precision

We will differentiate between users by assigning unique user IDs to each account upon creation. This ensures that no two users share the same ID. User IDs will be generated sequentially, guaranteeing their distinctiveness. Student accounts will have '-1' appended to their ID, indicating their status, while administrator accounts will have '-0' to signify their role. These IDs will remain hidden from users and will be linked to the selected username during account creation. Case sensitivity during login will be enforced to prevent unauthorized access due to variations in letter casing when users create their usernames.

Immediate error notifications to administrators are crucial for promptly identifying and resolving issues. Notifying the system administrator without delay allows for swift problem resolution, reducing system downtime and minimizing security risks.

The IT administrator for DriverPass requires elevated access for system configuration, module management, user account administration, routine maintenance, security measures implementation (such as encryption protocols and firewall rules), troubleshooting, platform compatibility checks, and issue resolution. These permissions enable the admin to configure system settings, oversee modules aligning with DMV standards, manage user accounts, conduct routine maintenance, ensure security protocols, diagnose and resolve system issues promptly, and assess platform compatibility across different devices and operating systems, ensuring the system's optimal functioning, security, and compliance.

#### Adaptability

The system will be designed to empower non-developer administrators to efficiently manage user accounts without the need for code modifications. This functionality will be facilitated through an intuitive administrator's dashboard, granting administrators the ability to add, remove, or update user accounts. This includes the flexibility to adjust system privileges for users as employees join or depart from the company.

The system will be intentionally engineered to seamlessly adapt to platform updates, ensuring compatibility across all platforms. This adaptability will be achieved through rigorous system version control and incremental updates. In the event of a platform update, modules within the system can be adjusted or updated as needed, mitigating the risk of incompatibility and safeguarding system performance.

IT administrators will be endowed with specific system privileges, encompassing tasks such as system configuration, module management, and user account administration. This level of access empowers administrators to perform routine maintenance, reset passwords, manage user privileges, and fine-tune modules.

#### Security

To gain access, users are required to input their distinctive username and password. Each username must stand alone, as it corresponds to a unique user ID consisting of numerical characters with a suffix of either '-1' for students or '-0' for administrators. The system owner, endowed with special privileges, possesses the initial user ID, designed to be easily recognizable by virtue of its minimal numerical value (e.g., user ID# 000001 signifies the system owner). Both usernames and passwords are case-sensitive to ensure accurate association with the respective user ID. Passwords must adhere to specific complexity criteria, including minimum length and the inclusion of a special character. During the account creation process, students and administrators alike will establish a series of security questions to facilitate password recovery.

In order to establish a secure conduit for data exchange between the client and server, robust data encryption protocols will be implemented. This guarantees that data is transmitted securely and confidentially. Integration of HTTPS (Hypertext Transfer Protocol Secure), an industry-standard safeguard for confidential data transmission over the internet, will be employed, aligning with widespread industry practices.

As a deterrent against brute force hacking endeavors, the system will enact temporary account lockouts after a series of consecutive incorrect password attempts. Notifications will be dispatched to both the system owner and the account owner seeking access. The administrator will receive information regarding the username and user ID of the account under scrutiny, while the student will be promptly notified of a potential security breach via email.

In the event of a forgotten password, users must furnish accurate responses to the security questions they set during the account creation process. Once successfully authenticated through these security queries, they will be granted access to initiate the password reset procedure.

### Functional Requirements

**Password Authentication:**

* The system shall require users to provide a unique username and password for login, both of which are case sensitive.
* The system shall ensure that passwords meet complexity criteria.
* The system shall allow users to set up security questions for password reset, requiring correct answers for the reset process.

**Account Creation/Management:**

* The system shall facilitate account creation with unique email addresses and usernames. Each account shall be assigned a distinct user ID, incrementally generated and differentiated by -1 for students and -0 for administrators.
* The system shall assign roles and privileges based on account type, enabling administrators to manage accounts without code alterations, reset passwords, and manage privileges.
* The system shall track the time of account creation for process refinement.

**Curriculum Engagement/Management:**

* The system shall manage curriculum by providing online curriculum for new drivers, structured into modules.
* The system shall empower administrators to update, add, or remove module bins to meet DMV standards.
* The system shall track student progress, allowing review of scores and incorrect answers and enabling revisits to completed modules for further study.

**Scheduling Reservations:**

* The system shall enable users to schedule road tests by specifying date and time.
* The system shall display available slots while greying out unavailable ones, recording appointments for administrative review, and ensuring a user-friendly and efficient scheduling process.

**Platform Compatibility:**

* The system shall ensure a seamless user experience across multiple platforms and adapt to platform updates for ongoing compatibility.
* The system shall have the ability to update or remove individual modules with platform updates.

**System and Account Security:**

* The system shall uphold data transfer encryption using industry-standard protocols like HTTPS.
* The system shall detect brute force hacking attempts, leading to account lockout after consecutive failed attempts. It shall then provide immediate notification to administrators and automatic emails to users.
* The system shall offer a password recovery process for forgotten passwords, requiring security question answers. Additionally, it shall monitor user login activity.

### User Interface

The interface for the DriverPass system will be tailored based on the type of account logged in. Given that students and administrators have distinct roles and privileges, it is imperative to design separate user interfaces to cater to their specific needs and functionalities within the system.

**Student Interface:**

* The student interface is tailored for learning, practice tests, scheduling, progress tracking, and profile management.
* It is designed to be responsive across computers and mobile devices.

The interface includes the following main sections:

* + **Learning Modules**
    - Module 1
      * Resources
      * Quiz
    - Module 2
    - Module 3...
  + **Practice Tests**
    - Module 1
    - Module 2
    - Module 3...
  + **Schedule a Road Test**
    - Schedule new road test
    - View scheduled road tests
    - View previous road tests
  + **Check Your Progress**
  + **Edit Your Profile**
    - Update Email Address
    - Update Phone Number
    - Change Password
    - Change Payment Method

This layout ensures a consistent user experience across platforms, with each functionality accessible through tabs. Learning modules cover essential driving topics, concluding with quizzes. Practice tests correspond to module content. Road test scheduling and viewing options are provided. Users can also update their profiles with associated information.

**Administrator Interface:**

* Designed for monitoring user accounts, managing account activity, overseeing student progress, and handling reservations.
* Designed to be accessible on both work computers and mobile devices.

Layout:

* + **Manage User Accounts:**
    - Student Accounts
      * Reset Password
      * Check Student Progress
      * View scheduled appointments
    - Administrator Accounts (System Owner Only)
      * Reset Password
      * Assign system privileges
      * Account Deactivation
    - Suspend or deactivate new or existing administrative accounts
    - User Communication
      * Send notifications or messages to users.
  + **Manage Learning Modules: (System Owner Only)**
    - Add Module
    - Remove Module
    - Alter Existing Modules
  + **System Reports:**
    - Logging
      * Record user activities
      * Monitor user engagement with specific system functions
    - Generate reports for user account activity
    - Print logs
  + **Reservations and Scheduling**
    - View scheduled driving tests
    - Remove scheduled driving test
    - Add driving test

This layout empowers administrators to efficiently manage both student and other administrator accounts. It provides options for module management and system reports for user activity. Additionally, it facilitates the oversight of scheduled road tests and enables adjustments if needed. The UI is designed for ease of navigation, including mobile accessibility with nested tabs.

### Assumptions

**New User Coaching:**

* An onboarding process should be considered to guide new users through the system, ensuring they understand and navigate it effectively.

**Stable Internet Connection:**

* Acknowledging that the system relies on a stable internet connection, alternative solutions should be explored for users with intermittent or limited internet access.

**Accessibility for Users with Disabilities:**

* It's essential to ensure the system is accessible to all users, including those with disabilities. Implementing accessibility features and compliance with relevant guidelines should be considered.

**Engagement with User Feedback:**

* Encouraging user interaction with feedback tools is vital for continuous improvement. Strategies for encouraging and incentivizing user feedback should be explored.

**Data Accuracy:**

* While it's assumed users provide accurate information, implementing validation checks and potentially employing verification processes can help ensure data accuracy.

These considerations will enhance the usability, accessibility, and reliability of the DriverPass system.

### Limitations

**Timeline:**

* The project has a fixed timeline of 15 weeks for completion, which sets the time frame for development, testing, and implementation.

**Web Browser Changes:**

* Anticipating changes to web browsers is challenging. The project team should stay updated with industry trends and be prepared to adapt the front-end accordingly.

**Limited Control over DMVs:**

* The system must interact with DMVs, which are external entities beyond the project's control. It's important to plan for potential changes or variations in their systems.

**Frontend Compatibility:**

* The front-end design must be broadly compatible with all major web browsers. This ensures a consistent user experience across different platforms and devices.

These factors will need to be carefully managed and considered throughout the development process to ensure the successful completion and functionality of the DriverPass system.

### Gantt Chart

