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SNHU CS-255 System Analysis and Design

5-2 Project One Submission: Business Requirements

DriverPass Interview and System Components and Design

# 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?*

* The client is DrivePass (owner: Liam), wants to build a system that will provide training to students that are learning how to drive a vehicle.
* Students should be able to take online classes on the system.
* Students should be able to practice tests online on the system.
* Company needs an on-the-road training program through a reservation system online.

### 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?*

* DrivePass sees a void in the market in the form of not having enough training for students as they take their driver exams and wants a system that will assist in training and allowing resources for those students that use Drive Pass’s system.
* DrivePass wants the ability to access the system from computers and mobile devices. So, remote connectivity and cloud resources will be examined for use.
* Off-line reports for DrivePass such as Excel reports need to be able to be downloaded and viewed off-line for senior management.
* Security is set with users’ permission, set by Ian (IT officer at DrivePass). Currently Ian has full access.
* Tracking user activity regarding who made a reservation with a time stamp.
* DrivePass would also like to know who cancels a reservation.
* DrivePass wants to know who modified the reservation last.
* A printed activity report is needed to show all activity on the reservation system that will assist senior management with daily functions and decision making.
* Students need to be able to create an account and reservations and access web content for DrivePass.
* Online ability for students to make reservations with DrivePass for driving lessons. This should be done by the students from their online account. Note DrivePass does have a phone service to call for reservations too and an office location for students to visit.
* The students should be able to make the appointments, cancel them, and/or modify the appointments online from their online accounts in our system.
* Identifying the driver and the customers that are scheduled to have a lesson for that lesson. The users need to be matched with the driving instructor, the time for the lesson, and the car information such as make, model, and year.
* DrivePass currently has three packages: NOTE: Each driving session is 2 hours long.
  + - Package1: 6 Hours with a driving trainer, (3 Sessions).
    - Package2: 8 Hours with a driving trainer, plus in-person lessons about DMV rules and policies. (4 sessions).
    - Package3: 12 Hours with a driving trainer, plus in-person lessons about DMV rules and policies. Along with full access to online classes and practice exams. (6 sessions)
* DrivePass has asked for the ability to disable a package if management does not want customers to register for it.
* Registration Form information:
  + First Name
  + Last Name
  + Address
  + Phone Number
  + State
  + Credit Card Number
  + Expiration Date
  + Security Code
  + Pick-up Location for Student
  + Drop-off Location for Student
* Students should be able to input registration form information from their online account.
* Password resents and control should be in-place for all users’ accounts in the system.
* Compliance with DMV laws and regulations, keeping up with the DMV. Connect with DMV to receive notifications about new rules, policies, and sample questions.
* Interface build: Needs multiple pages to show registration form information, contact page and a page for DrivePass to access to get students information to contact them, so name and phone number.
* DrivePass wants to run web applications in the cloud, while backup and security are taken care of.

### 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?*

* First the system or web application will be able to have the ability to add new members to the system and allow them to make an account online so they can request services and pass information. Measured by how many students have accounts in the system at any given time.
* Next, students or application members will be able to make reservations with a drive instructor and currently the student has three packages to choose from, see package details above in system background. The number of reservations from students will allow the business to measure those features.
* The students will also have access to online classes and practice exams that will assist them in driving training. Some packages come with these features. The number of times a student uses or enrolls in an online class or practice exam can be measured.
* The system will allow DrivePass to have access to the system from computers and mobile devices, while also making certain documents downloadable for off-line work such as Excel documents.
* DrivePass will be able to view all activity on an account and reservations and that data will be able to be printed for senior management.
* Notifications sent from the DMV will help the company stay current with the laws and regulations on the road, along with practice questions.
* In conclusion we have a front-end environment such as a DrivePass web application that will be used by students to make an account, request/book a training session, take classes, and practice exams. And a back-end environment that will be used by IT and DrivePass employees that have access to correct the data and allow for multiple pages online to be used. Employees will be able to have access to the web application, so they know which drivers (students) they are instructing, the schedule, which package that the students have picked, other driver notes, and can access the web application from multiple devices even mobile.

## 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 DriverPass application will need to run in a cloud environment because backup and security needs to have minimal problems for the small staff at DriverPass. A web-based application that lives mostly on the cloud will support DriverPass needs driver training program. The cloud provider will provide a layer of security, and an easy set up to create back ups and more storage options.
* The system should be relatively fast and respond quickly when a user requests a new account, information about the training or accessing the contact page to contact the business. For example, when the customers are accessing the system for the first time, they might want to visit multiple pages to learn more about the business or learn about the different packages DriverPass offers, so having pages load quickly will support the new users on the system.
* The system should be maintained every time a bug or technical issue is found in the system. Every month the system should be maintained and updated when necessary. New security issues are found every day and security patches will be used to fix security bugs. Since the DriverPass will be running mostly on a cloud environment, applying updates to the system and all the applications that live in the cloud environment will ensure that the system is running at top performance. Last, the system should be updated anytime the business or other stakeholders request a change to the application, the change could be a new feature, updated look, and/or new security measures in place.

#### 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 use Linux as the platform to run the system because Linux offers open-source development, flexibility, and scalability for when the business grows. There is a learning curve for working with Linux because it uses the terminal more often but there are many resources on the internet that would help with almost any task.
* The platform will be able to reach each user that has access to the internet because the system will live mostly on a cloud network. The web-based application will be a website, but it operates on cloud technology, meaning each user will be able to access the application if they have internet. Even mobile users will be able to access the application and request training right from their phone.
* DriverPass will need a database to hold employee and customer information in-house using a physical hard drive. It’s a good idea to store sensitive information such as employee records and customers records in-house and not in a cloud environment. The rest of the back-end requirements will be supported by the host of the cloud environment.

#### 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?*

* For the associates the user roles and permissions are already set in place and the roles and permissions will stay the same for the staff at DriverPass. For example, Ian the IT officer is permitted with all roles and permission because his job requires him to maintain the entire system. But one of the staff members that is a driving instructor, would always have access to the client’s name and pick/drop off locations, which could be another page.
* Each student will create an account online that will give them access to request driver lessons, contact the business, make payment, or find information about the business and driving.
* The inputs should be case-sensitive for the employees at DriverPass but not for the customers, except for password criteria. The customers are not trained in using the systems, meaning the system should be easy for the customer to use. The employees are trained in using the system, so making their input case-sensitive will improve accuracy.
* The system should inform the admin of a problem right away. Even when a new customer makes a profile a notification should be sent to the admin and other departments informing them about the new account. Problems in the application need to be handled in the right way and informing the admin right off the bat will support the business in a better way.

#### 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 user accounts will be able to be added, removed, and modified without changing code. But only the packages that the business offers will be able to be removed. Packages will not be able to be updated, added, or modified without a developer or system analyst.
* The system will adapt to platform updates with ease because the system is mostly running on a cloud environment. Cloud technologies provide updates and update adaptability a easier process that will require minimal work on the IT side.
* The IT admin will need full access to the system and training on the system. The training will consist of learning how the system works, how to provide maintenance, and where to start when trouble shooting.

#### 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 need a username and password to login to their accounts. The user will create these credentials once they create their account for DriverPass. In the future a 2-step verification could enhance security to a new level.
* To secure the connection of the data exchange between the client and server we will use protocols such as Secure Sockets Layer (SSL) or Transport Layer Security (TLS).
* The SSL protocol is a client/server protocol and according to author Oppliger it will provide “authentication, connection confidentiality services and connection integrity service”. (Oppliger. Pg.22).
* For TLS protocol is a bit newer and provides the same benefits while also adding a few protocols to help keep the connection between the client and the server. Those additional benefits focus on the vulnerabilities that exist in SSL. For example, an HTTPS request will be encrypted which in turn will make the data exchange between the client and servers more secure.
* If an account has a brute force hacking attempt, the system will lock the account for security reasons and a notification will be sent to the admin and the owner of DriverPass. Once the account is locked out, the account information needs to be recorded and reported to a cybercrime organization such as the FBL. The System should be checked from top to bottom and requires every user to log back in their accounts. Once information is recorded and reported, the account should be removed and taken offline. Password training and suggestions will be provided to the account holder that was involved in the brute force.
* If a user forgets their password, a link supporting this will be provided on the login account page. The link will go to another page where the user will need to answer a few questions about why they need a password change and a few other Identification steps will be in place. The user will be required to answer account questions that they set up during the creation of their accounts. This will help with identifying why the user needs a password up and who the user is.

### 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 users to create user accounts following an account requirement document such as characters limits and password requirements.
* The system shall validate user credentials when logging in by allowing the user to input their username and password that matches their accounts.
* The system shall allow the user to change their password using a link page that will ask the user questions and provide the change in passwords.
* The system shall allow user/customer the ability to take online classes for driving.
* The system shall have a page where users can practice online tests.
* The system shall save reports offline, such as excel documents, so senior management can read the reports.
* The system shall provide tracking for reservations page, such as the user identification about who cancels reservations and who modifies any reservations.
* The system shall allow a print option to record the activity on the system as a printable report.
* The system shall be able to allow users to make reservations online through their account.
* The system shall have a packages page where the user will be able to pick which kind of training they want, and once picked it will go into a shopping cart.
* The system shall be able to identify the drive the customer is scheduled to go out with on a training session, both parties need to be tracked and reported on in an activity report.
* The system shall receive updates from the DMV about new laws, policies, and sample questions.
* The system shall show the user their online test progress as a test bar with a percentage.
* The system shall have a section on the web page that will provide the user with notes from the instructor to review later.
* The system shall have the training driver picture and the students’ picture on the users’ accounts to verify who the person is for safety.

### 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 have a main account page that will have online test progress information, driver notes, information about the student, a note on special needs and a photo of the driver and student.
* The progress should also show what has been completed, it will start with the name of the student, the time it was taken, the score and/or the status of the test. The driver notes would be connected to the lesson in question too.
* Another page will house the registration and account creation for the users who access the system. Registration below:
  + First name
  + Last name
  + Address
  + Phone number
  + State
  + Credit card number
  + Expiration date
  + Security code
  + Pick-up location
  + Drop-off location
* The different users are students who need driving lessons, admin users who maintain the system and employee staff at DriverPass (managers, trainers).
* The students will need to be able to take online classes, practice tests and request services such as reservations from the interface. First the students will be able to create their accounts from the interface by selecting the create an account link. Then the students will be able to access their user account and select packages for training, take online tests and find other information about DMV and driving instructions.
* The drivers who train the students will be able to look and see who their client is for the 2-hour driving session, along with the pickup and drop off locations. The driver will also be able to input driver notes for the students to access. This part of the interface will support the drivers with basic information about the student.
* The admin will be working from the back end and cloud technologies to update, modify or delete information in the system. The admin might have a basic employee page that might house information about the job and links to reports about the system.
* The user will interact with the system using a mobile phone, stand alone computers, tablets, or any device that allows internet and web page interaction.

### 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?*

* An important assumption is that we assume that DriverPass has knowledge in cloud computing and scaling the business. Scaling the business to size because if the company grows then DriverPass will need to scale up resources to support increased customer requests. Also, cloud computing knowledge is important because most of the system will live in a cloud-based technology platform.
* Another assumption is that the DriverPass admin has knowledge in back-end work and databases because we suggest that DriverPass store employee records and customer information in-house to prevent any leaks of sensitive information.
* We also have an assumption that DriverPass has options to promote the business, either making ads, maybe a video as an ad or other ways to market the business.

### 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?*

* Budget was not discussed, and no dollar amount was put into place, so that is our first limitation for the system. The budget is important because that is our operating money to hire developers/system analyst, buy software and tools.
* One limitation of working with Linux is that there is a learning curve and admins will need additional training to work in the Linux OS systems. Cloud technology works great with Linux and so do databases that store employee and customer records.

### 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.*

A screenshot of a gantt chart

Description automatically generated

References

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