Snip Itz

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PROJECT PROPOSAL

Introduction:

Most of the calendars and planner apps available today only display a schedule that the user has manually prepared. Providing the user with an optimized itinerary does not provide any intelligent scheduling or schedule optimization functionality to help the user manage their day. We suggest creating an intelligent day planner application for our project, which offers an optimized schedule for the user, considering different limitations such as costs, appointment times, and the customer's stylist.

By creating software called Snip Itz, we will create a web-based application to help potential customers schedule appointments, learn more about the company, and have people engage with the Savvy Salon.

Issues:

Issues Savvy salon is having:

- When customers make an appointment and don't pick a specific stylist, they will get auto-assigned to the salon owner. This causes time conflicts and unfair commission opportunities.
- The owner has to spend at least an hour before work every day making sure all the appointments are set up and don't overlap.
- There is minimal use of the Facebook face and its features.
- They had a significant upfront cost with their application and now have to pay a monthly subscription fee.
- The customers can't cancel their appointments, and the owner has to go in manually and discard an appointment when canceled. There are a lot of problems that cause this business to lose time and money.

Business Value:

This web application would better fit the needs of hair salons attempting to schedule their appointments to optimize efficiency. This will allow new stylists to get more customers while allowing existing stylists to schedule with their known clients easily and allocate enough time depending on how long each appointment will take. Creating a web server for Savy with the features added will have a lot of customer engagement.

Deliverables:

- Provide an application that will give the daily schedule best to fit the needs of the stylist and client.
- Optimize work schedules by working with the new stylish and new clients into the schedule.
- Allocates enough time for each appointment to accommodate each client's needs.
- Provides users access to the schedule for those who need it and confirms when an appointment is made.

Solutions:

- Creating software that allows for more flexible scheduling
- Creating software that minimizes user interaction and input
- Creating software that is reliable and relevant to the customer needs
- Keeping personal brand and style unique and intact
- More user control through the owner
- More software uptime (not hosted by customer hardware)

Target Customers:

- Hair salons
- Any currently existing business requiring scheduling
- Individuals planning on starting a business which will require scheduling
- Businesses that need flexible scheduling
- Events requiring scheduling

Tool:

The following tools will be used to design the software.

1. HTML (Front-end) - The process of creating HTML and CSS for a website or web application so that a user can see and communicate with them directly is front-end web development, also known as client-side development.
   For that reason, we will use HTML to code the website.

2. CSS (Front-end) - With an emphasis on form, CSS stands for Cascading Style Sheets. HTML is used to structure a web page that describes headlines and paragraphs and enables images, videos, and other media to be inserted.
   For that reason, we will use CSS to style the website.

3. Java (Back-end) - For most back-end development projects, including those involving big data and Android development, Java is used as the server-side language. Desktop, other mobile, sports, and numerical computing often use Java. We will be using Java spring as well, which is Spring is a Java framework for businesses. It was intended to simplify Java EE's development and make developers more efficient. To facilitate good software coding practices and speed up development time, Spring uses Inversion of Control and Dependency Injection.

   For that reason, we will use Java for desktop computing.

4. MySQL (Database) - MySQL is a SQL-Structured Query Language-based relational database management framework. The program is used for various purposes, including data warehousing, e-commerce, and logging applications. However, the most common use of MySQL is for a web database. Then we will use an API, which is low-level access, using either the classic MySQL protocol or the X Protocol, to MySQL tools. You can link and execute MySQL statements from another language or environment using connectors and APIs. For that reason, we will use MySQL to log in data applications in the web database.

Cost:

We will be using the AWS server for hosting the project since it's a $0 cost to keep the server running within a certain amount of data limit. AWS comprises so many different products and services for cloud computing. Servers, storage, networking, remote computing, email, mobile creation, and security are all supported by the highly profitable Amazon division.

Software Features:

- Being able to schedule an appointment as a request rather than automatically creating the appointment without confirmation of the stylist.
-
- Having a drop-down menu of all the stylists and no preference will be auto-assigned to the most available stylist.
-
- Visual display of a calendar with unrestricted hours of each stylist.
-
- Being able to customize the display and interface for user ability.

- Sending text/ email confirmation to the stylist when a customer requests an appointment.

The Team:

We have two people working on the back-end, and we have one person working on the front-end and another on the database. One of the back-ends also has databases, and the other in the front-end. It will be easy for us to communicate and divide work, making the process organized and simple.

Simron Dhali:
Major is Information system development
Minor in Business Administration. Strengths are the following:
Database using MySQL | Front end using HTML | Project management

Alex Haag:
Major: Computer Information Systems
Database using MySQL | backend using Java | Front end using HTML

Ryan Menas: Strengths are Java, system modeling, project management
Major: Information Systems Development/Analyst Minor in Business Admin

Carter Trowitch: Backend using java, helping with ideas for the front
Major: Information Systems Development/Analyst

STUDY REPORT

Project Scope Identification:

This project aims to provide a system for Savvy Hair Gallery & Spa that will schedule clients autonomously and efficiently. The system must be easy to use and allow for future customization. The goal is to provide a hands-free system to allow more time spent working with clients and less time fixing schedules.

Clients will create appointments online and cancel or alter their appointments through the website. Clients will choose specific employees or ‘no preference,’ which will default to a chosen employee. Appointments will automatically assign accurate duration timings to allow enough time for each appointment to finishing.

System Overview:

- The system (Snip Itz) will allow scheduling appointments online.
- The system will show the currently filled and available schedule
- The system will allow selection of specific employee or no preference
- The system will assign owner selected employee if ‘no preference’ is chosen
- The system will send out a confirmation message (not specified)
- The system will implement front end HTML, CSS, JavaScript, and PHP
- The system will implement backend Java and MySQL
- The system will implement a relational database to store employees, clients, appointments.

Current system background:

Currently, Savvy Salon uses Facebook as their main website and shows all its offers on its page. Both pictures of customers and prices of different services can be found on their Facebook page. In terms of scheduling appointments, this can be done through Salon Iris, the current scheduling software, although it has issues and the Salon has gone back to making all booking by hand. The Salon has to pay a subscription to use the service, and there are a lot of things that make it challenging to use, such as

- When customers make an appointment and don’t pick a specific stylist, they will get auto assigned to the salon owner. This causes time conflicts and unfair commission opportunities.
- The owner has to spend at least an hour before work everyday making sure all the appointments are set up and don't overlap.
- There is minimal use of the Facebook page and its features.
- They had a significant upfront cost with their application and now have to pay a monthly subscription fee.
- The customers can’t cancel their appointments. The owner has to go in manually and discard an appointment when canceled. There are a lot of problems that cause this business to lose time and money.

Objectives:

We wish to make a system that will combine the needs of a website to showcase their offers, such as the way their Facebook does and allow the customer to schedule from the website while fixing some of the main issues that Salon Iris has.

Scope:

To complete the task, we will find out how the issues brought to our attention could be solved or improved,d and the overall system will be improved. First, we will have to schedule another meeting with Kelly Knecht to get a final idea of our new system’s wanted.

To come away with a complete setup of what we need, we need to consider aAmongConstraintsThe concepts. We will ask what issues need to be fixed. We will then see what new things we could add to make a better system and see what she approves of, and those will be added to our final schedule.

Operational policies and constraints:

The policies we have created revolve around the roles we have set for each member at the start of this project. Each member has been assigned a section of the project and is responsible for that part. We will discuss what we are working on during our meetings and are expected to complete the work we take on each week. This itself is also a constraint because some members have more experience than others in certain areas. With that being said, we are students, and this project will have to be designed to be completed before the end of the semester. So time will play a factor in our current knowledge of how to design a system.

Description of current system/situation:

Facebook is the current website, and Salon Iris is the scheduling software as previously described. Both have significant issues previously stated that we could improve upon.

Users or involved personnel:

The users involved in the website would be the stylist, the customers, and the administrators.

Support concept:

- Fundamentals of Web Development
- Author(s): Randy Connolly; Ricardo Hoar
- Publisher: Pearson Education
- Year: 2017
- ISBN: 0134481267, 9780134481265
- Facebook: https://www.facebook.com/SavvyHairGalleryandSpa
- Salon Iris: https://info.gartnerdigitalmarkets.com/salon-iris-gdm-lp/?utm_source=capterra&utm_medium=listing&utm_term=%2Blink2&utm_campaign=cap_listing

Justification for and nature of changes:

Creating software that allows for more flexible scheduling, some appointments will take longer than others to complete. Depending on what the customer selects, it will create an appointment that will give enough time for the employee to finish. Having a sound scheduling system for a salon is essential because one appointment that runs longer could potentially mess up the rest of the day.

Savvy salon currently uses a paid third-party application for scheduling. This doesn't work as planned for the salon. The owner has to go into work at least an hour before work to make sure all the appointments line up and manually fill them out. This is a hassle that can be avoided with Snip Itz. Since the salon uses a third party, they lose all the branding and their style of Savvy Salon. Working closely with the owner to create a website that will perfectly fit her needs and designing it to the appropriate standards will better promote the salon.

Description of needed changes:

Snip Itz is a software that will have a complete working website design connected to a database that will save all the customer information. Being able to schedule appointments, cancel appointments, browse the menu, and look at previous work makes a user-friendly website for the customers and employees and navigate quickly and efficiently while cutting out human correction. These are all necessities to do a successful business.

Priorities among the changes:

Creating the website and getting all features working is a must. After all, features are implemented in the website, we will move to the backend, where it will then store all the information for all the customers. Being able to see the schedule of appointments and the staff. The most important part of this website is to schedule appointments

Changes considered but not included:

The payment method will allow customers to pay for a service before they get it done. Exporting the appointments created from the website to an excel document where the owner could review and post for the employees to see.

Assumptions and constraints:

Snip Itz will be built using HTML, PHP and MySQL for the database. No team has any experience using PHP, so everyone learns from multiple resources that we found helpful. Looking at this website, there will be no monthly subscription fee that the owner will have to pay, more uptime and usability opportunities. The website will be very user-friendly and will be efficient and reliable. We are saving savvy salon time and money with the wonderful Snip Itz.

The concept for a new or modified system:

- Background: We would make a website that would display the content on Facebook to allow customers to browse the different offers and schedule an appointment like they would based on the Salon Iris but fixing some of the different issues the stylists experience.
- Objectives: We would like to create a system that would act as the website and allow a customer to schedule an appointment in the same place. To display some examples of

the stylists work and price points. Next we would like to bring more information about the stylists in an info section about the salon. Finally, we would let them schedule their appointment and allocate the proper amount of time based on their purchasing service.

- Scope: In order to complete the project we would need to make the website showcase the services provided, allow the customer to schedule an appointment, and fit in with the proper design and deliverables set after we meet with Kelly Knecht. Each week, we would work to build the website and our knowledge of PHP to complete our tasks based on our set schedule.
- Operational policies and constraints: The policies we have created revolve around the roles we have set for each member at the start of this project. Each member has been assigned a section of the project to work on and is responsible for that part. This itself is also a constraint because some members have more experience than others in certain areas.

  With that being said, we are students, and this project will have to be designed to be completed before the end of the semester. So time will play a factor along with our current knowledge of how to design a system.

- Description of current system/situation: The new system is currently set up in HTML, and we are working on adding PHP to connect it with a database. We have gotten ahead on the website's look and design and have learned PHP to complete the second step.
- Users or involved personnel: The users involved in the website would be the stylist, the customers, and the administrators.

Operational Scenarios:

1. Events
   - Create new stylist (employee)
   - Create new appointment
   - Client alters appointment
   - Client cancels appointment
   - Confirmation request
   - Appointment has been confirmed
2. Actions
   - Appointment has been created
   - Appointment has been altered
   - Appointment has been canceled
   - A confirmation request has been sent to the client
3. Stimuli
   - Client enters required information
   - Client submits a request for scheduling
   - Client submits appointment alteration request
   - Client confirms appointment
4. Information

When clients seek a new appointment, they will go to the website. There they will be able to see company information and employee information. There they will be able to schedule an appointment. After required fields are filled (name, contact, time, type of appointment, etc.) they will submit the form. A confirmation request is sent to client contact information. After the client confirms the appointment update employee schedule with client information.

Owner and relevant employee will be able to view and alter client appointment information if needed. The system will also implement a “designated” employee. The chosen employee will receive all appointment requests that do not specify a specific employee. Since the stylists work on commission this was requested by the owner since she has a large returning customer base. She would like to allow other employees to get new ‘walk-in’ customers to develop their own returning customer base

5. Interactions

The clients will be able to schedule their own appointments online without having to call or walk in. They will be able to alter or change their appointment online without contact or confirmation from business or owner.

Summary of impacts:

- Operations impacts: Snip Itz will provide the Salon with a user friendly website where they can make appointments, look at the menu and see pictures. This website is designed to run on aws servers storing all the customers names along with the hair stylists of their choice. The cost for the aws serves will be next to nothing as the free servers should be sufficient for the needs of this salon.

- Organizational impacts: Snip Itz will provide a very user friendly to the customer along with the employees, by creating a website with all the needs of the salon. The layout will be simple with different tabs for the menu, pictures and contact information, very easy to navigate. Having a centralized website that customers can book and browse the menu will grow her business and open her opportunities.

- Impacts during development: Snip Itz will provide a great marketing resource and user friendly website that will build off of her only source of marketing which is facebook. Everything she does goes through facebook and then has to manually hand written every morning. Snip Itz will make it easier for the customer and a lot easier for the owner, taking away the hours a day spent writing and figuring out the schedule for the day/week. Designing the website specifically for her salon and making it customizable to her unique business. Having a place where customers can go for everything while taking out the manual appointments is a must for the owner.

Analysis of the proposed system:

We are creating a website for our client. Our client only has a facebook page and she used to have a website but because of the company she chose it through the cost was too high to manage for the website to be up and running 24/7.

- Summary of advantages: No cost for server. For a new account you get around 73 hours which will be equivalent to 12 months of free AWS RDS. We will be using db.t3.micro for our MySql database. For db.t3.micro it's $0.0017 per hour, but mentioned earlier since we will be making our first new account it will be free for 73 hours.

- Marketing expanding: Our client has only a facebook page and with the technology world we live in now it is easier to have a website to have more interaction. We have created a Google Analytics account to have when we launch the website to track the amount of audience flow we have on the website. With the client having a website it will increase the marketing of her saloon by web. Some audiences do not have facebook but have internet to search websites on the internet.

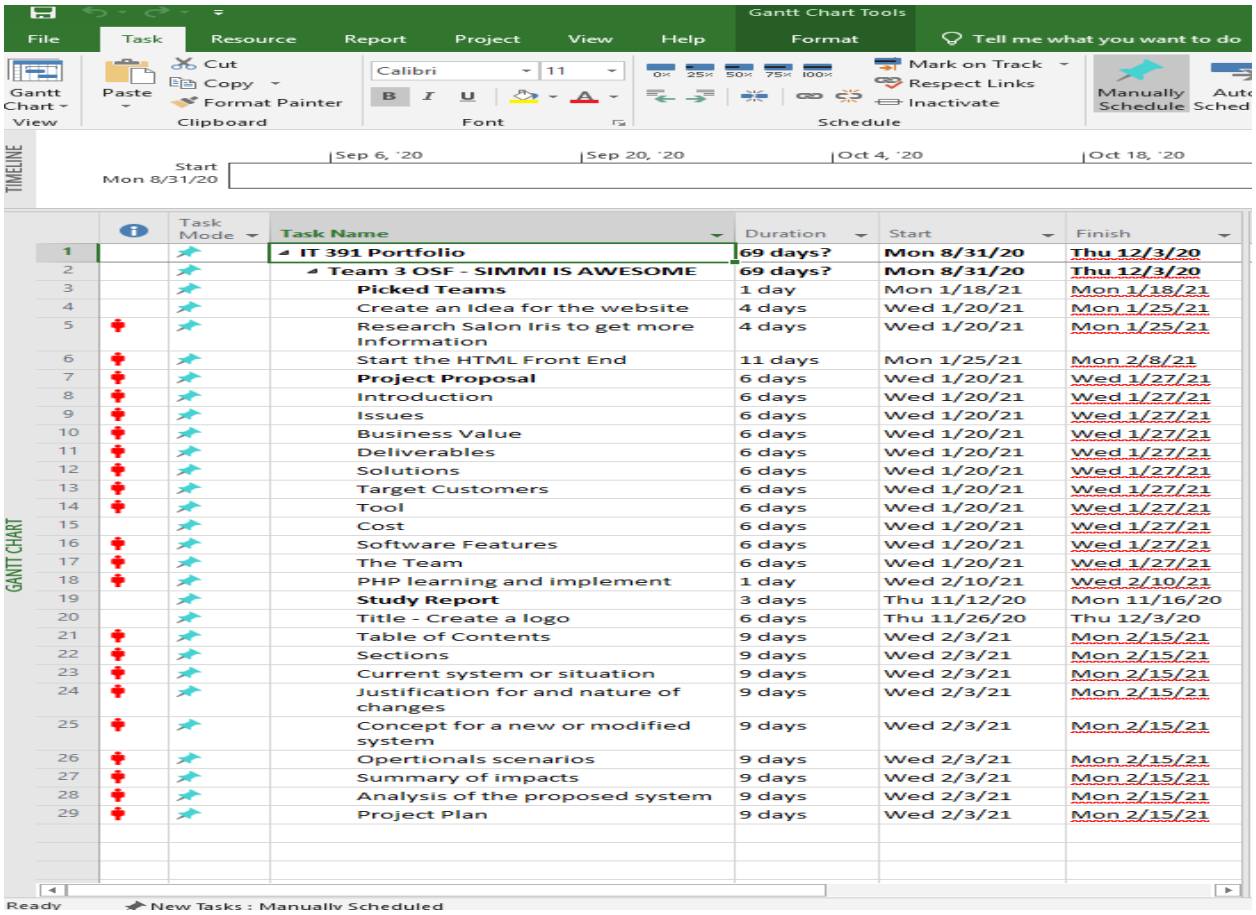
- Customer engagement: As mentioned earlier we created a Google analytics account to track any audience flow within the wbite. Also since our client only had a facebook page the only customer engagement was on the phone. With more features we can create an automatic scheduling on the website and a link to zoom one of the stylists before coming in for a service. This creates more engagement with the clients company and the customer.

- Summary of disadvantages/limitation: Cost will be higher after certain storage limit. After 12 months when the free trial is over, db.t3.micro will charge $0.544 per hour which is around $5 per month. With more features and customer engagement we would have to create a database that can handle all the data going through and that requires a lot of storage which will cost money.

- Alternatives and trade-offs considered: Creating a mobile application. If the client likes the web application and the according to what happens with Google Analytics, if website is catching more customer engagement and is doing better, to advance the company and its marketing and customer engagement, one consideration is we can create a mobile application where customers can create an account and schedule an appointment through the mobile application.

Project Plan:

- Gantt Chart



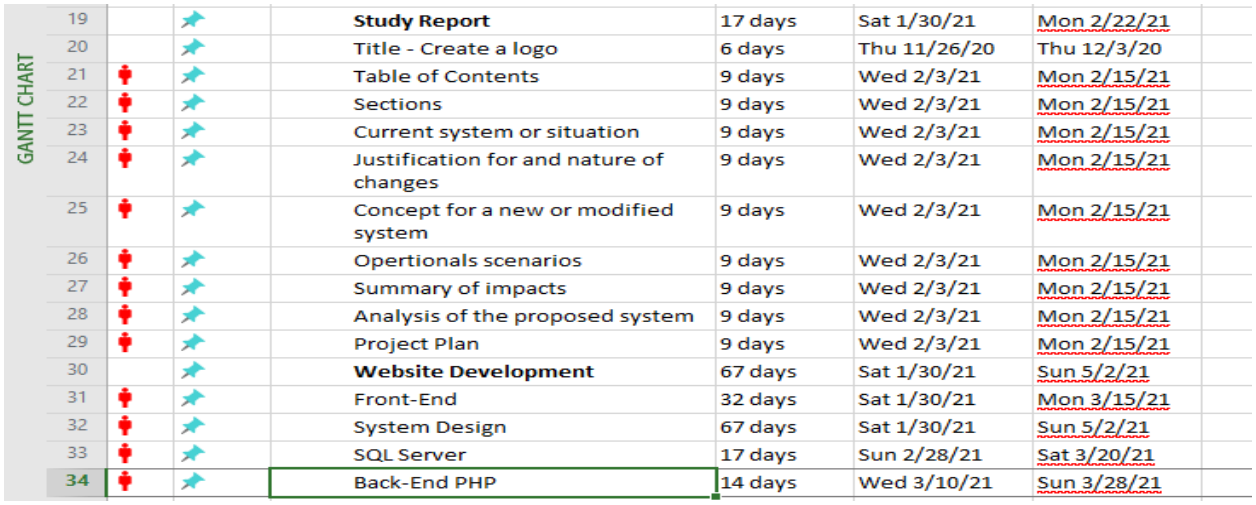


Figure 1

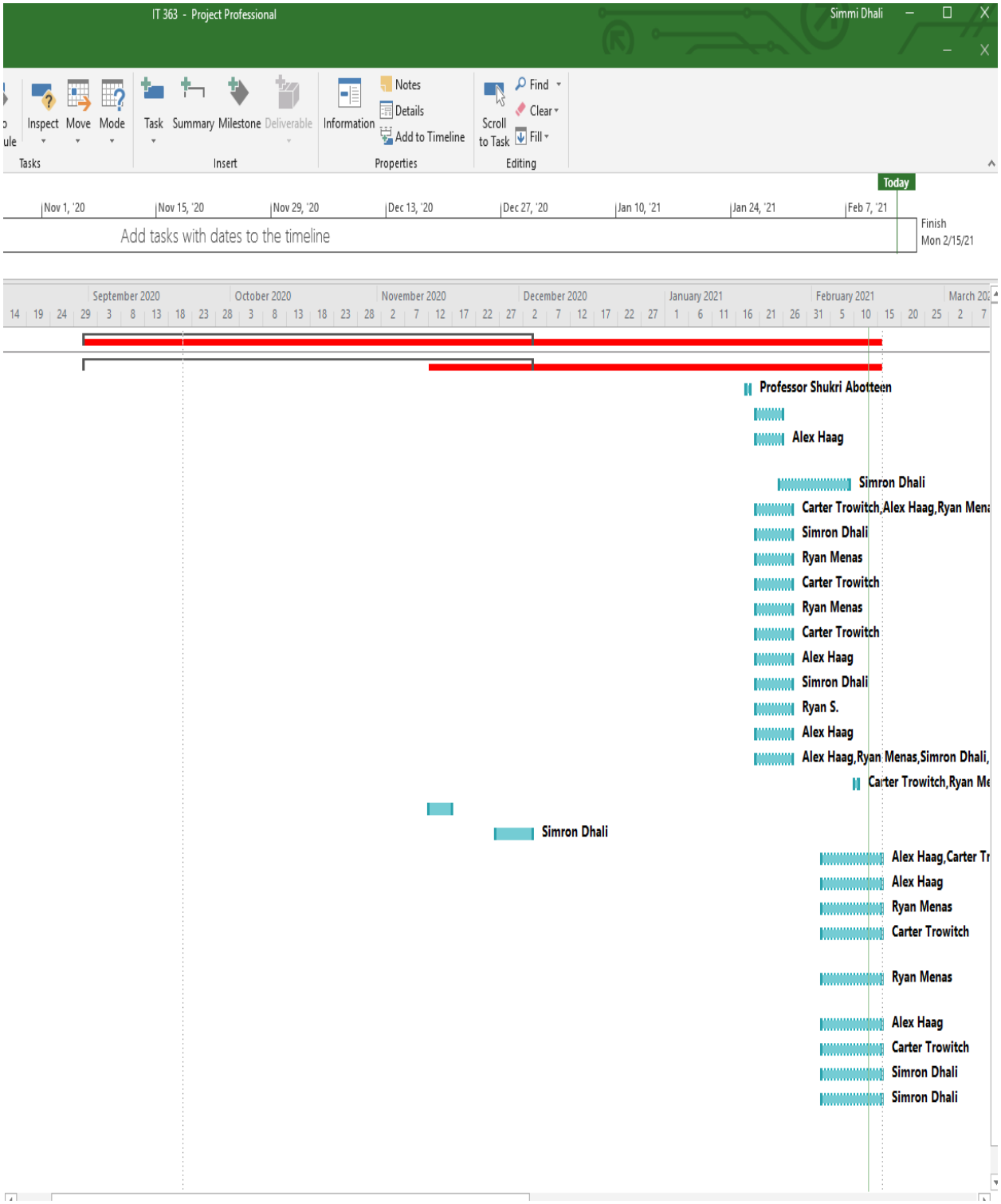

IT 363 - Project Professional
Simmi Dhali
Inspect
Move
Mode
Task
Summary
Milestone
Deliverable
Information
Notes
Details
Add to Timeline
Scroll to Task
Find
Clear
Fill
Tasks
Insert
Properties
Editing
Today
Nov 1, '20
Nov 15, '20
Nov 29, '20
Dec 13, '20
Dec 27, '20
Jan 10, '21
Jan 24, '21
Feb 7, '21
Add tasks with dates to the timeline
Finish
Mon 2/15/21
September 2020
October 2020
November 2020
December 2020
January 2021
February 2021
Professor Shukri Abotteen
Alex Haag
Simron Dhali
Carter Trowitch,Alex Haag,Ryan Mena
Simron Dhali
Ryan Menas
Carter Trowitch
Ryan Menas
Carter Trowitch
Alex Haag
Simron Dhali
Ryan S.
Alex Haag
Alex Haag,Ryan Menas,Simron Dhali,
Carter Trowitch,Ryan Me
Simron Dhali
Alex Haag,Carter Tr
Alex Haag
Ryan Menas
Carter Trowitch
Ryan Menas
Alex Haag
Carter Trowitch
Simron Dhali
Simron Dhali

Figure 2

Dates and explanation:

The graphy you see above is called a Gantt chart. A Gantt chart is a type of bar chart that shows a schedule of projects, named after its inventor, Henry Gantt, who developed such a chart between 1910 and 1915. The dependence relationships between operations and the current schedule status are also seen in modern Gantt graphs. To create one there are many ways to do so. The most generic and common way is to use the Microsoft project application. Microsoft Project is a software application for project management developed and marketed by Microsoft. It is designed to help a project manager create a plan, allocate resources, monitor progress, manage the budget, and evaluate workloads.

We have been tracking what we have been doing from the start of each day. We also have assigned each task to a specific person given. For example, for the “Study Report,” you can see that there are multiple tasks given, such as “introduction, issues, business value, etc.” We first created a date for when the project is started or given and when it’s due after creating that will automatically give us the number of days we have until it’s due. After putting all the tasks given and giving dates to the tasks, we assigned the task to specific people. For example, we started and made an essential website to see if our client likes how it looks or if there is anything our client would like to change. Since we have four people in our group, it is important to realize each person’s strengths and weaknesses. For creating a layout of an essential website for the client to see, Alex Haag and Simron Dhali were assigned to that specific task since their strengths are HTML and creating an essential model website.

Let us dig deeper into what we have in our Project. Cell 4 to 6 was the first two weeks of class, and our Professor was assigned by creating the teams, and the rest was assigned to all four of our team members, Alex Haag, Simron Dhali, Ryan Menas, and Carter Trowitch. After that, you can see the task “Start the HTML Front End,” assigned to Alex Haag and Sirmon Dhali. This task was given for Alex and Simron to create a basic layout of a website to see if the client likes it and add and take out whatever is needed. Then our first project in the class, called “Project Proposal,” started on Wednesday, January 10, 2021, and underneath it were topics that needed to be written in document form. This was due on Wednesday, January 27, 2021. Each topic was equally distributed to each team member by how comfortable they were and their knowledge on the topic, as shown in figure 2.

If we continue and look at the next project called the “Study Report,” you can see more topics underneath it. Same as the other project, each topic was equally distributed to each team member by how comfortable they were and their knowledge on the topic, as shown in figure 2. If you look specifically at the table of content, you can see that it was assigned to all team members. As we put in our information, we decided that depending on what page, we will put in the information needed in the table of the content section. According to the Gantt chart and Microsoft Project data, we are on track. We have created a basic website layout for our clients to see what they want to improve, take out, etc. We created and finished one project called Project Proposal, and we are on track to finish our second project called the Study Report.

Notes:

- Abbreviations

AWS	Amazon Web Services
MySQL	Structured Query Language
RDS	Relational Database Service
HTML	Hypertext Markup Language
PHP	Personal Home Page
CSS	Cascading Style Sheets

Table 1

- Glossary

PHP	A PHP interpreter, implemented as a module, a daemon, or a Common Gateway Interface (CGI) executable typically processes code on a web server.
HTML	A structured method for labeling text files is to achieve font, color, image, and hyperlink effects on World Wide Web pages.
Gantt Chart	A graph displaying a sequence of horizontal lines shows the quantity of work performed or output performed for certain periods compared to the quantity scheduled for specific periods.
Microsoft Project	It is software for project management designed for project managers to control their projects.
Google Analytics	Google Analytics works by incorporating a JavaScript code block into the website's sites. This JavaScript code references a JavaScript file that then executes the monitoring procedure for Analytics when users visit a page on your website.

Deliverables	A tangible or intangible good or service produced as a result of a project is intended to be delivered to a customer. A deliverable could be a report, a document, a software product, a server upgrade or any other building block of an overall project.

Table 2

SYSTEM REQUIREMENTS

Purpose:

The purpose of this system is to provide an easy to use and efficient means of managing schedules for commission-based employees (specifically hair stylists). The system will allow flexible scheduling methods, including automatic scheduling and request-based scheduling. The

system will also include a remotely hosted website which will be the interface for all of these operations.

Sponsor:

The sponsor for this project is Kelly Knecht, owner of Savvy Hair Gallery and Spa. The mission statement is to "*Keep Stylists Behind the Chair*." The goal is to minimize the amount of time the employees or owner must take to set, rearrange, or fix schedules giving them more time with clients and allowing more appointments to be made each day.

Scope:

- The system will hold schedules for employees to fill
- The system will allow clients to make appointments online
- The system will allow clients to cancel appointments online
- The system will allow employees of owners to manage schedules
- The system will apply a relevant time block for appointments
- The system will allow for breaks and time off in the schedule
- The system will allow all users to access using the website
- The system will allow certain employees to receive 'walk-in' clients
- The system will allow clients to select preferred employee
- The system will select employees if none are preferred
- The system will allow for the creation of employee accounts
- The system will allow for the creation of customer accounts
- The system will send out a confirmation email before an appointment has been set

User Characteristics:

Users will be the owner (head stylist) who will have universal privilege over all functions within the system—the employees (stylists) will have administrative privileges over their schedules. Lastly, there will be customers who will create accounts and schedule appointments for themselves. Customers will request a time slot, and the stylist or owner will confirm it. Then. We, a confirmation message will be sent to the customer to set the appointment.

Size Constraint:

This system will use a front-end website and back-end PHP to communicate with a server that will hold all the owner, employee, customer, and schedule information. The size of this directly correlates to the price of running this system. We estimate that to maintain th Ais software with the current customer base. It will cost approximately $30 a month. This may vary because currently they have one location.

Use case diagrams:

Figure 3

Initiator	Goal	Participants	Name
Customer	Pick the service that they request from the salon (ex: hair cut, hair coloring)	Database, PHP, front end	Choose Service
Customer	Pick the stylist that they would like to perform the service.	Database, PHP, front end, Choose Service	Choose Stylist for an,appointment
Customer	Pick the date and the	Database, PHP, front	Choose date and

	time frame to have their appointment.	end, Choose Service, Choose Stylist for an appointment	time
Customer	When they complete all the previous requirements they will put a request for an appointment to be made.	Database, PHP, front end, Choose Service, Choose Stylist for appointment, choose date and time	Send appointment request
Customer	This is where the appointment will either be accepted with a confirmation or denied and sent back to the start.	Database, php, front end, Choose Service, Choose Stylist for an appointment, choose date and time, Send appointment request	Accept and Confirm request/ Deny request.
Customer	The customer can view different stylist biographies/ about pages	Front end	View stylist biography
Customer	The customer can view different stylist works previously done	Front end	View work examples
Customer	This is where a customer can put a question, and it will be sent to Kelly's email	Front end	Ask a question
Stylist	This is where the stylist can view what appointments they have made	Database, PHP, front end	View their schedule
Stylist	This is where the stylist can set what times are available to be scheduled for an appointment	Database, PHP, front end	set their schedule
Stylist	This is where the stylist can add an appointment to their schedule	Database, PHP, front end, view their schedule	create appointment
Stylist	This is where the	Database,	delete appointment

	stylist can delete an appointment from their schedule	PHPessential, front end, view their schedule	
Head Stylist	This is the supervisor role that can see all of the other stylist schedules	Database, php, front end	View all schedules
Head Stylist	This is where the stylist can add an appointment to any schedule	Database, php, front end, view their schedule	create appointment
Head Stylist	This is where the stylist can delete an appointment to any schedule	Database, php, front end, view their schedule	delete appointment

Table 3

Class Diagrams:

In object-oriented modeling, class diagrams are the most important component. They are used to display the various objects in a system and their characteristics, operations, and interrelationships. In particular ways, classes are linked to one another. Relationships in class diagrams, in particular, include various kinds of logical connections. Let us go more in-depth.

- Association: is a broad term that refers to any logical relationship or connection between classes. Customers and stores, for example, could be connected.

- Directed Association: A-line with an arrowhead represents a directional connection. The arrowhead represents a container-contained directional flow.

- Reflexive Association: This happens when a class has several tasks or obligations. A stylist, eyebrow expert, nail artist, or waxer, for example, is a member of the salon staff. If the stylist handles the waxer, there may be a managed partnership in two examples of the same class.

- Multiplicity: When the cardinality of one class concerning another is represented, is the active logical association. One fleet, for example, may include multiple salons, with each salon containing zero to many customers. The notation 0..* stands for "zero to many."

- Aggregation: refers to the formation of a specific class due to the aggregated or constructed as a collection of other classes. The class "salon," for example, is made up of one or more clients and other materials. The contained classes in the aggregation are not overly reliant on the container's lifecycle. Clients, for example, will continue to be clients even though the salon is closed. Draw a line from the parent class to the toddler class with a diamond shape near the parent class to illustrate aggregation in a diagram.

- Composition: The composition relationship resembles the aggregation relationship in many ways, except for its primary goal of stressing the contained class's reliance on the container class's life cycle. That is, when the container class is demolished, the contained class is obliterated as well. The side pocket of a shoulder bag will also vanish once the shoulder bag is destroyed. A directional line connecting the two classes in a UML diagram, with a filled diamond shape adjacent to the container class and the directional arrow to the contained class, illustrates a composition relationship.

Class Diagrams-Class:

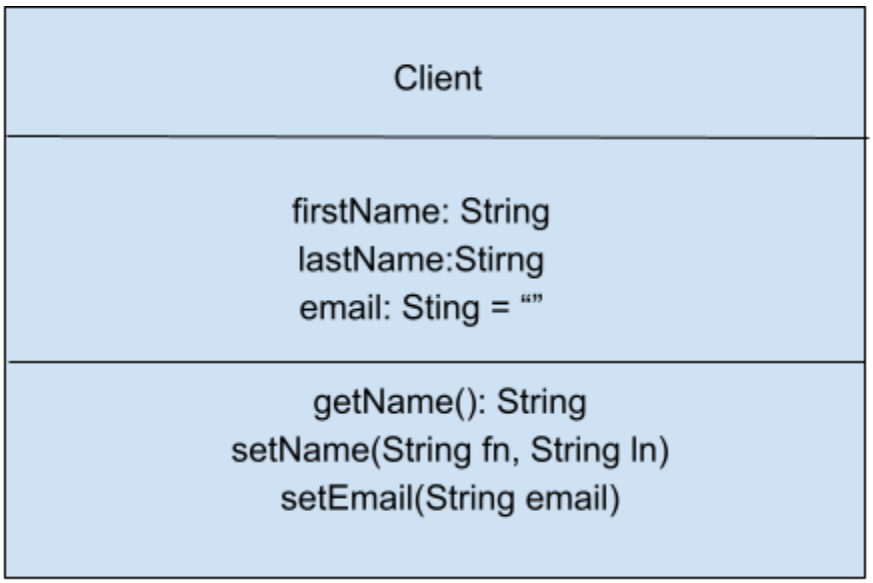
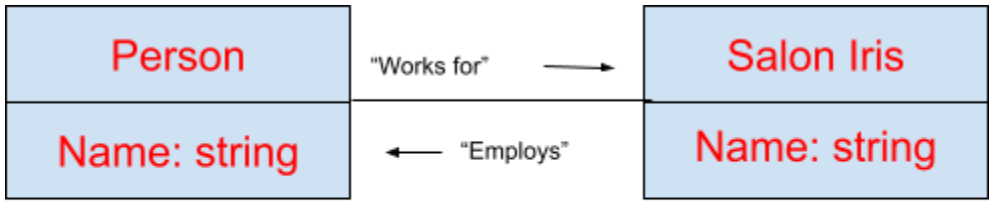


Figure 4

Class Diagrams-Association (Class Diagram):



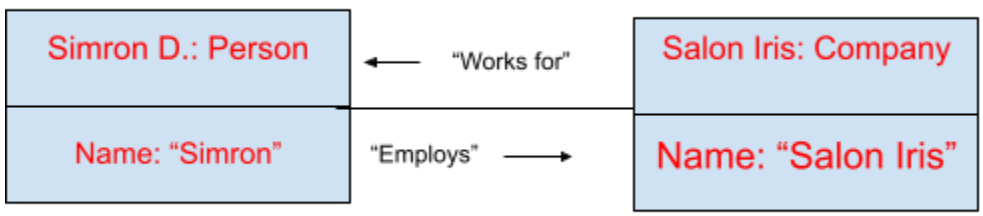


Figure 5

Class Diagrams-Multiplicity:

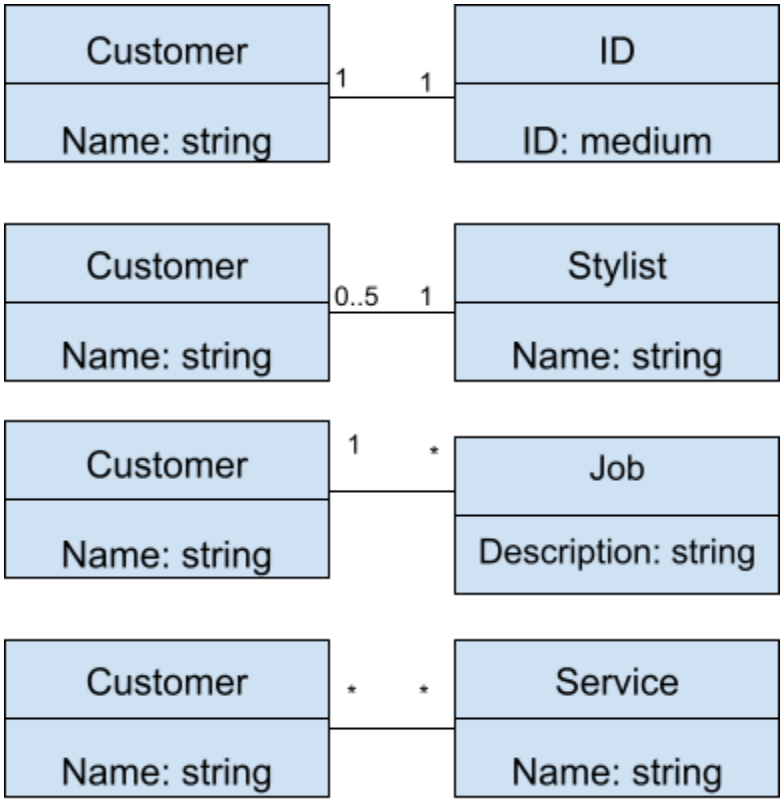


Figure 6

Class Diagrams-Composition and Aggregation:

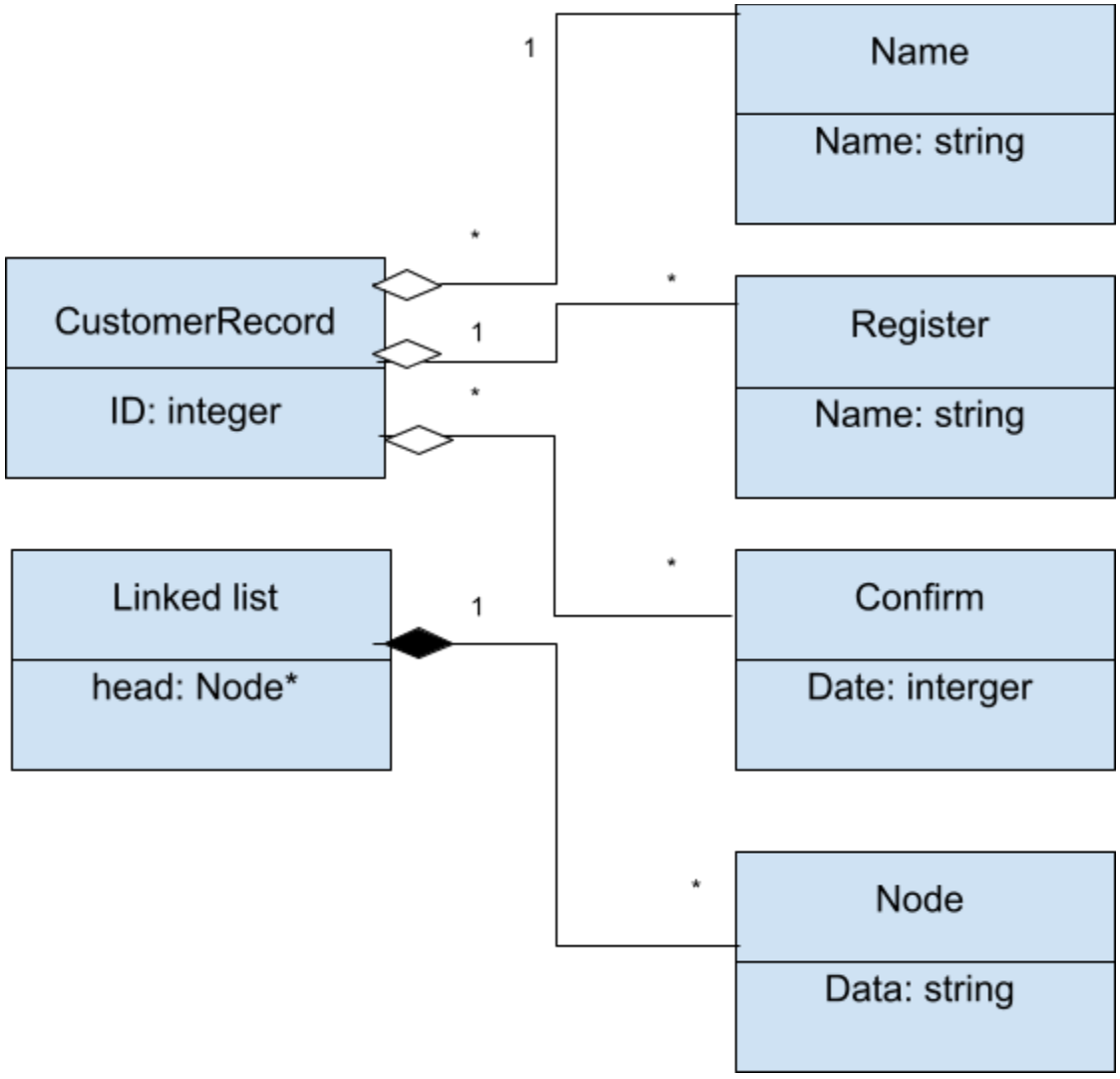


Figure 7

Class Diagram-Final:

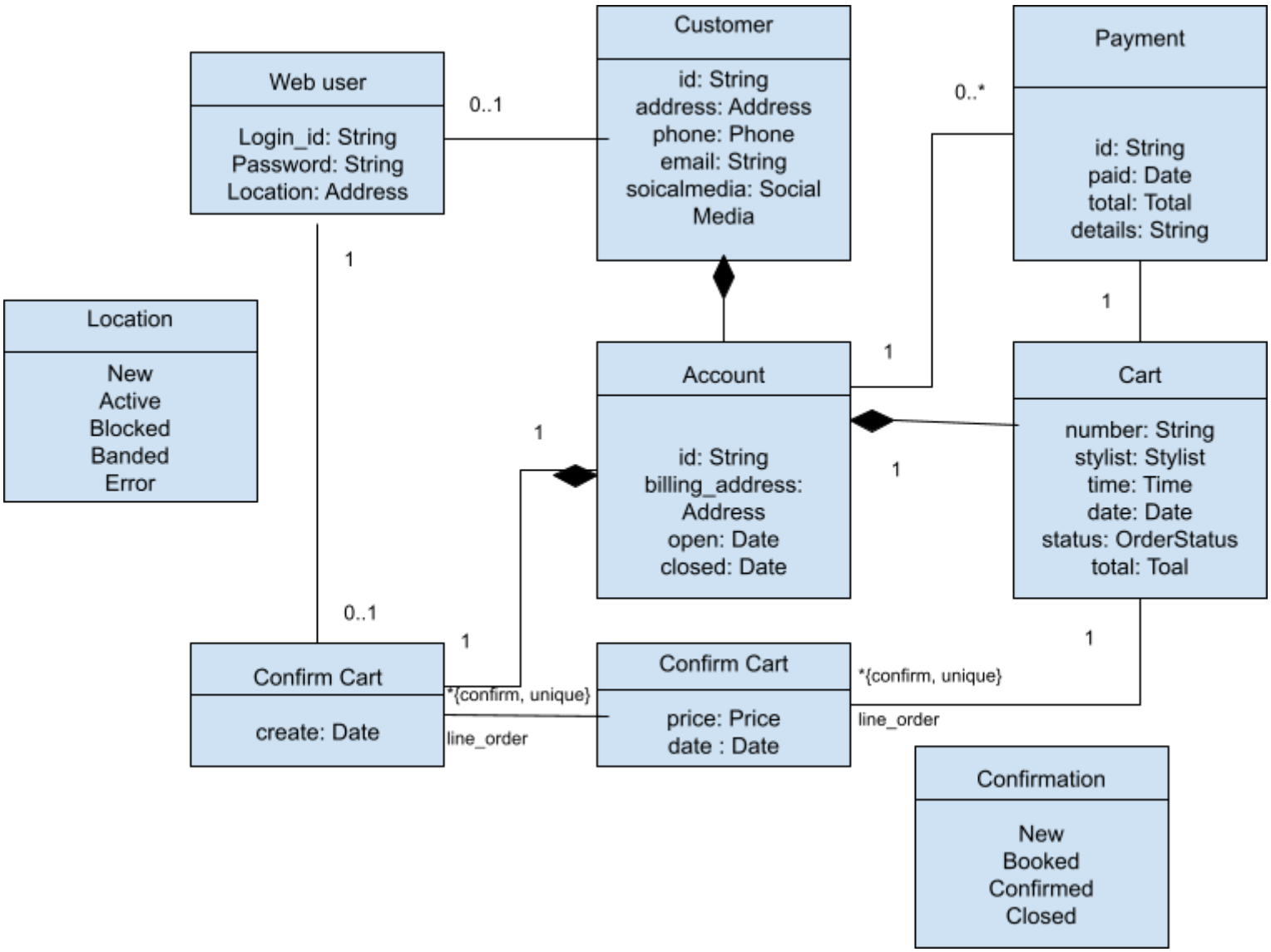


Figure 8

Activity Diagrams:

Another crucial behavioral diagram in the UML diagram is the activity diagram, which illustrates dynamic aspects of the system. An activity diagram is a more advanced version of a flow chart that depicts the flow of information from one activity to the next. At various levels of abstraction, activity diagrams explain how activities are coordinated to provide a service.

Typically, some operations are required to complete an event, mainly when the operation is intended to accomplish several things that necessitate coordination or how the events in a single-use case relate to one another, particularly in use cases where activities overlap coordination is required. It can also model how a group of use cases work together to represent business workflows.

Now let's talk about action. It's a habit that's broken down into one or more steps. Activities are a network of nodes with edges connecting them. Action nodes, control nodes, and object nodes are all possible. Action nodes represent some action. Control nodes represent the control flow of activity. Object nodes are used to classify the objects used within a given activity. Edges are used to depict a flow of execution or a route. The activities begin at the first node and end at the last node.

Now talking about abstraction in an activity diagram, a dependence between model components that expresses the same idea at various levels of abstraction or different perspectives is known as an abstraction relationship. Several diagrams, including use-case, class, and component diagrams, can bring abstraction relationships to a model.

The activity diagrams serve the same underlying purposes as the other four diagrams. It depicts the system's dynamic behavior. The other four diagrams illustrate message flow from one object to the next, while the activity diagram shows message flow from one activity to another. The activity diagram will be used to model the system's activity flow. Multiple technologies may be used in a single application. These systems are often captured in an activity diagram, representing the flow from one system to the next.

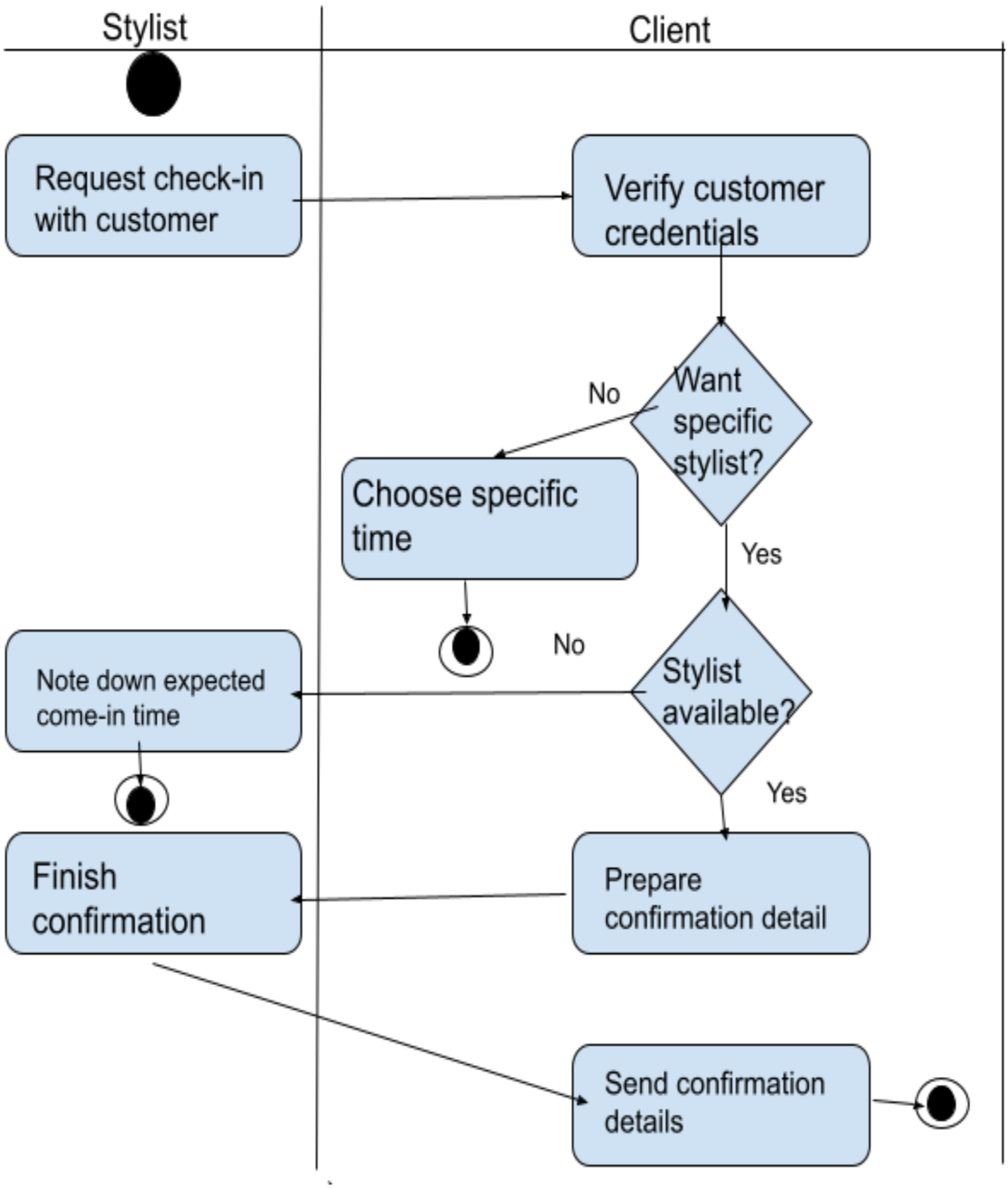

Stylist
Client
Request check-in with customer
Verify customer credentials
Want specific stylist?
No
Yes
Choose specific time
No
Stylist available?
Note down expected come-in time
Yes
Finish confirmation
Prepare confirmation detail
Send confirmation details

Figure 9

Sequence Diagrams:

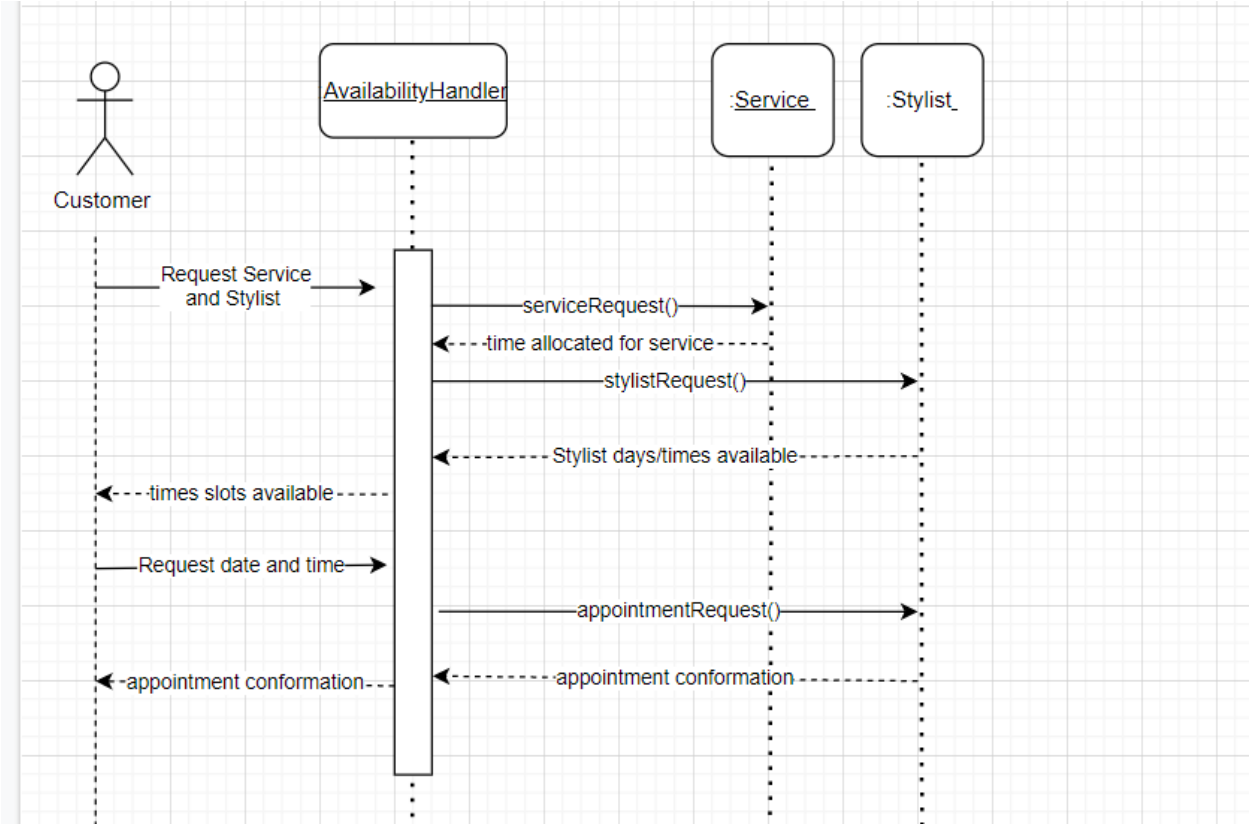


Figure 10

A Sequence Diagram is a dynamic view of the system that shows the flow of messages when creating an appointment.

Plan of work:

This State Machine Diagram shows how appointments will be checked and requested. Appointments will be put in through a request and then processed by the employee to be approved or declined. They choose the specific stylist to see their calendar, then add an appointment at a specific time/ day. First, the customer will be asked to choose a stylist. Then after one has been chosen they will be taken to their calendar. The calendar will show all the available times the stylist is available and will then put a request in for the appointment that best fits best. The appointments are based on the average time to complete the appointment, as some take longer depending on the person. Once the stylist confirms or denies the request, the customer will receive a receipt.

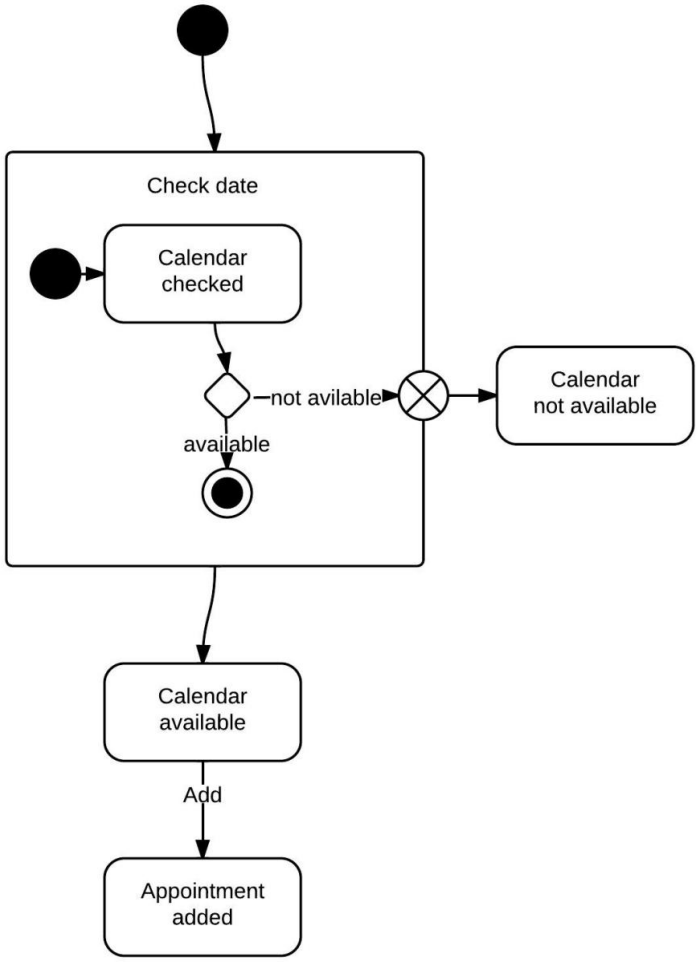


Figure 11

SYSTEM DESIGN

System architectural design (Data Design):

The database we used was MySQL relational database. We used MySQL Workbench as the GUI and MySQL command-line client. The database stores a small amount of data as it is only related to the assignment of appointments to a schedule (for each employee - there are only a few for this business) and basic customer information (a simple login system to reduce future user interaction). The database has been normalized to 3N, removing any dependencies and drawn out using ER Assist software.

Below is the Normalization → 3N

EMPLOYEE

empNo_ Key	empFirst Name	empLast Name	empPhone	empEmail	empDept Name	*empPayroll_ID*	empAddress

EMPLOYEE_PAYROLL

empPayroll_ID	ssn

APPOINTMENT

appt_Key	appt_Date	appt_Dept	appt_Time

CUSTOMER

cust_Key	cust_Usn	cust_Pwd	cust_First Name	cust_LastName	cust_Phone	cust_Email

SCHEDULE

schedule_Key	clock_In	clock_Out	available_Time	taken_Time

PRODUCT

product_Key	product_Name	product_Price

Figure 12

Below is the Entity-Relationship Diagram (ERD → UML Equivalent)

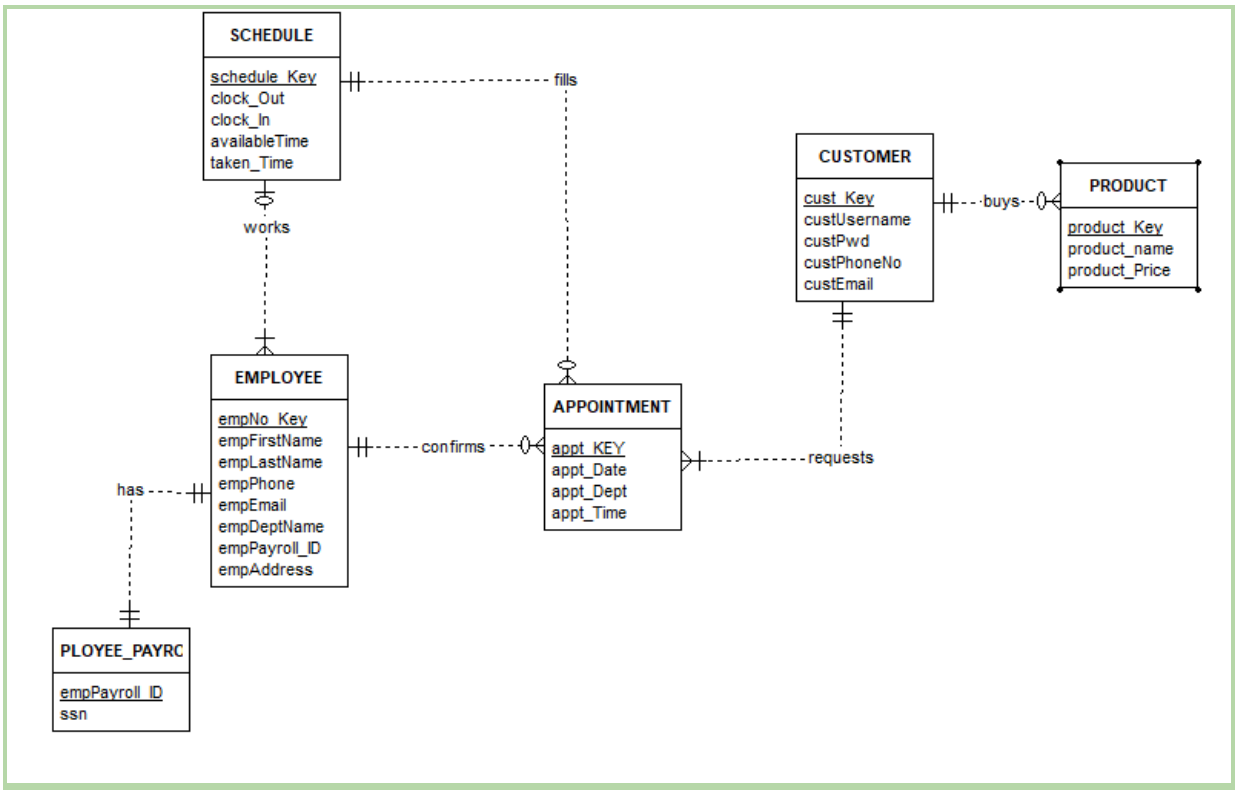


Figure 13

Process/Behavioral Design:

Unit design decisions, if any, such as algorithms to be used, if not previously selected If the software unit consists of or contains procedural commands (such as menu selections in a database management system (DBMS) for defining forms and reports, online DBMS queries for database access and manipulation, input to a graphical user interface (GUI) builder for automated code generation, commands to the operating system, or shell scripts), a list of the procedural commands and reference to user manuals or other documents that explain them.

I use PHP to store variables with user input and SQL scripts to store the data into the database.

Functional Design:

When a user wants to schedule an appointment, they would:

- Click on the type of appointment they would like to have.
- They will see a new section to choose the stylist they want and is available for that service.
- Next, a new section for choosing the date and time for the appointment is created.
- The user will be taken to a page telling them either that the appointment was created and confirmed or it was denied and to send another request at different times.

When a user wants to see who is on staff/past work:

- Click on the bio section, which takes to a different page that shows all the stylists with a picture and short biography.
- Click on the work examples tab bringing them to a page with many pictures of previous work done by different stylists.

When a user needs to ask a question:

- Go to the bottom of the page to box and add email addresses to the line.
- The user will type a message in the box, which will be sent to either the head stylist's account or their email address.

When a stylist needs to login/ see their schedule:

- They will enter a username and password.
- This will bring them to a page to view their schedule.
- From here, a stylist can add an appointment themselves or delete an appointment.
- They will see the updated version after the adjustment is made.

When a stylist wants to set/change the hours they are available:

- The user would click on set schedule, taking them to the page to change their schedule.
- The user can set specific times they are available for an appointment and then submit the changed hours.
- They will see the new availability when they go back to their schedule.

When the head stylist wants to view all schedules:

- They would go to their schedule screen.

- Select who they want to view and cycle between all the employees.

Screen Prototype:

- External Interface Design: Functional specifications include external interface requirements. They're crucial in embedded systems. They also describe how the product can interact with other elements. There are many types of interfaces you may need, including Communication between users, hardware, and software.

- External interfaces are those that external users interact with, such as clients, suppliers, etc. As shown in the diagram, what would be shown is the menu of all the necessary and available Services. You can also see that we have a place where they can book the services they want.

- External Interface Formats: The service menu showed all the service is available in an organized fashion. The booking showed the primary services, and you get to choose the time and the stylist you choose for that availability.

- Internal Screens: Internal users are members of a company's management team and other employees who use financial data to administer and operate the company. They are employees of the corporation who make business decisions. In our scenario, internal users are the one that interacts with the employees, management, etc. For example, when a client or customer book a service, it will confirm the employee/stylist. This client has booked this time and this date for this specific service.

Dialogues:

As noted above, dialogues are usually pop-ups or Independence sub Windows to provide notices outside the central review. In our scenario, When a client books a service, a pop-up window will come up that a confirmation has been sent. After the client gets the confirmation, it will send the client an email. On the back and it will also send a stylist a confirmation on their email that someone has booked a service at this time on this date.

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