COMP3900 23T2

Computer Science/Information Technology Project

Project Title: Customer Relationship Management System (Project 10)

Group: Avenger

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Background

This proposal aims to detail a comprehensive approach to the development of a new Customer Relationship Management (CRM) platform, similar to products like Salesforce and HubSpot.

As organizations increase in size and complexity, so too does the task of managing clients. This is because larger organizations tend to split into specializations, or departments e.g. marketing, sales, consulting and delivery, which each engage customers at different stages of the customer journey. Each department requires specific customer data to deliver their services, and rely on other departments for this data. In many cases, without a structured and centralized approach to managing data, departments do not have access to accurate client information which impedes their ability to uphold commitments, provide consistent messaging and deliver their services. Such information may include previous engagements, key contacts, task deadlines and priority levels.

CRMs capture and centralize this data, which affords departments access to reliable client information without excessive communications with other areas of the business. CRMs also allow a company and its managers a clear view of how resources are being utilized, including accountability and productivity of personnel and departments. Popular existing solutions in the industry include Salesforce, HubSpot, Zoho and Pipedrive; each with different benefits and drawbacks.

Salesforce is the most customisable solution, offering code-level access and 1000s of third party integrations across all department functions for users to utilise (Salesforce, 2014). This comes with a major learning curve, given the multi-application structure, as well as a higher price-point. Hubspot is also highly customisable, but does not offer code-level access, nor as many third party integrations as Salesforce. HubSpot's UI is far more intuitive than Salesforce's, but is also highly priced when considering upgraded accesses (The Best CRM Software in 2022 | Zapier, n.d.).

Zoho and PipeDrive are two smaller-scale CRMs, which market themselves as lower price point solutions. Zoho offers a similar breadth of functionality as HubSpot, but with less customisation and capabilities (Pipedrive vs. Zoho: Which CRM Is Best? [2023] | Zapier, n.d.). Zoho's initial set up process is intensive, and even though it is considered intuitive once set up, there have been concerns expressed by users around the aesthetics of the UI (Pipedrive vs. Zoho: Which CRM Is Best? [2023] | Zapier, n.d.). Pipedrive's value proposition centers on a CRM solution that is focused mostly on the sales functionality as a way to differentiate itself from the other generalist solutions (OÜ, n.d.). However, it is not intuitive to use and has poor customisation.

Considering the current solutions, and their drawbacks, it seems that a unique value proposition for a new CRM, keeping in mind the cost and time constraints of this project, is best described as:

"A CRM which is sales-specialized, easy to set up, intuitive to use and affordable."

This avoids the high price point drawback found in larger-scale solutions, while addressing concerns by users around set-up and intuitive use found in smaller-scale solutions.

The remainder of this proposal details the user stories and sprints, interface and flow diagrams, and system architecture for the proposed CRM solution, and will include:

- Competitor analysis,
- Product backlog of user stories to describe 8 core functionalities,
- Defined start and end dates for all sprints, including a detailed look at the in-scope user stories for the first sprint,
- Storyboards illustrating the proposed CRM's functionality, including interface and flow diagrams,
- Diagrams detailing the presentation, business and data layers in the system, including a detailed description of the make-up of each layer,
- Discussion on the external factors which interact with the proposed CRM, and
- A table of the technologies and languages to be used in developing the proposed CRM

Finally, thank you for considering this proposal.

Competitor Analysis

The following is a competitor analysis of prominent CRM solutions in the market and seeks to identify major drawbacks, and hence opportunities, in current service offerings.

CRM Solution	**Salesforce**	**HubSpot**	**Zoho**	**Pipedrive**
Suitable for	Established medium to large organizations which value a high degree of customisation and integrations	Small to medium organizations looking to scale up quickly with intuitive UI	Small organizations which value affordability and easy contact management	Organizations looking for features that focus on sales
Services				
Sales reporting and forecasting	🟢	🟢	🟢	🟢
Contact & lead management	🟢	🟢	🟢	🟢
Customer support tools	🟢	🟢	🟢	🟢
Help Chatbot	🟢	🟢	🟢	🟢
Marketing management	🟢	🟢	🟡	🔴
Artificial Intelligence	🟢	🟢	🟡	🔴
Integration with 3rd party apps	🟢	🟡	🟡	🔴
Built-in automations	🟢	🟡	🔴	🔴

Customisation				
Gamification		Via Integration	Via Integration	Via Integration
Benefits	• Highly customisable with coding access • ‘Hold-your-hand’ onboarding • Large bank of third-party and native applications • High quality functionality across all business functions	• Customisable workflows and automation • Large bank of third-party and native applications • Intuitive interface and navigation • Small learning curve	• Very affordable pricing • Easy to use once set up	• Reasonably affordable pricing • Sales features are optimized for sales productivity
Drawbacks	• Major learning curve • Expensive • App-based features creates friction in using separate services • Not intuitive	• No coding access • Affordable free plan, expensive upgrade plan	• Difficult initial setup • Highly generalist • Poor user interface • Friction in customisation and integrations	• Not customisable • Not intuitive • Poor customisation • Limited integrations

User stories and Epics

1. Register and Login Epic - Sprint 1

The Register and Login epic aims to finish all the functionalities related to being able to register and login, as well as the recovery of passwords, password encryption and authentication. This is the first task our team aims to finish to be able to continue with the project.

Manager/staff register and login

Attach | Add a child issue | Link issue

Description

Overall Acceptance criteria:

- Users can create an account by providing their relevant information (such as name, email address, contact details, etc.).
- If the given email address during the registering processs is already in the system, send an error message.
- The password reset process should be secure and involve proper identity verification, such as sending a reset link to the user's registered email address.
- Registered managers and staff members can log in using their username and password credentials.
- The system should enforce password minimum length > 8, at least 1 upper case, 1 lower case and number for enhanced security. If the password does not match criteria, it will send an error message.

Child issues Order by ··· +

0% Done

AV-10	As a user, I want to register and log into the CRM system using username and password …	-	AC	TO DO
AV-12	As a user, if I forget my account details, I want to be able to recover them with my email.	-	AC	TO DO
AV-13	As a user, I want the website to ensure that my password is strong enough, so it reduces…	-		TO DO
AV-11	As a user, I want to be able to register an account with the platform if I do not currently …	-		TO DO
AV-4	Front end for the register page.	-	PJ	TO DO
AV-40	As a user, I want to be able to log into my account, so I can save my data and everything …	-		TO DO
AV-50	Front end for login page.	-	AB	TO DO
AV-52	Landing page front end	-	AB	TO DO

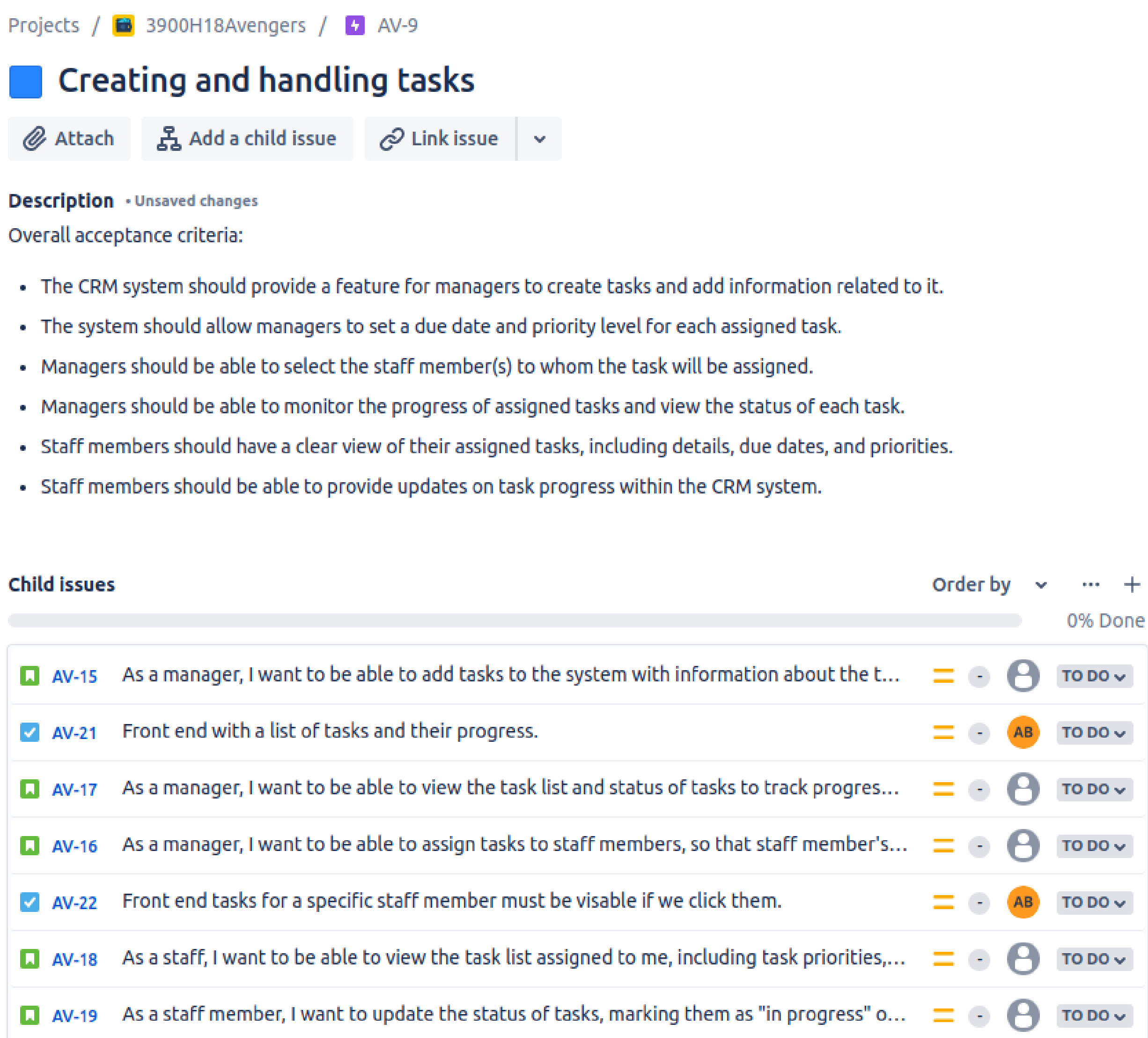
https://3900h18avengers.atlassian.net/browse/AV-3

Related User stories

User story	Acceptance criteria
As a user, I want to register and log into the CRM system using username and password credentials to ensure that my access details are secure.	Users can create an account by providing their relevant information (such as name, email address, contact details).
As a user, I want to be able to register an account with the platform if I do not currently have one.	Users can create an account by providing their relevant information (such as name, email address, contact details, etc.). Also if the email address is already in the system send an error message.
As a user, if I forget my account details, I want to be able to recover them with my email.	The password reset process should be secure and involve proper identity verification, such as sending a reset link to the user's registered email address.
As a user, I want to be able to log into my account, to access my uniquely saved data and account information.	Registered managers and staff members can log in using their username and the right password credentials.
As a user, I want the website to ensure that my password is strong enough, so it reduces the risk of getting my account stolen.	The system should enforce password minimum length > 8, at least 1 upper case, 1 lower case and number for enhanced security. If the password does not match criteria, it will send an error message.

2. Creating and Handling Tasks Epic - Sprint 1

The Creating and Handling Tasks epic aims to enable managers to create and assign detailed tasks, which is one of the core functionalities of Avengers CRM system. Also aims to provide an intuitive interface for users to view and modify tasks.
This is the second and final epic for Sprint 1. Salesync's goal is to present these two epics during the week 5 demo.


Projects / 3900H18Avengers / AV-9

Creating and handling tasks

Attach | Add a child issue | Link issue

Description • Unsaved changes

Overall acceptance criteria:

- The CRM system should provide a feature for managers to create tasks and add information related to it.
- The system should allow managers to set a due date and priority level for each assigned task.
- Managers should be able to select the staff member(s) to whom the task will be assigned.
- Managers should be able to monitor the progress of assigned tasks and view the status of each task.
- Staff members should have a clear view of their assigned tasks, including details, due dates, and priorities.
- Staff members should be able to provide updates on task progress within the CRM system.

Child issues Order by

0% Done

AV-15	As a manager, I want to be able to add tasks to the system with information about the t...	-		TO DO
AV-21	Front end with a list of tasks and their progress.	-	AB	TO DO
AV-17	As a manager, I want to be able to view the task list and status of tasks to track progres...	-		TO DO
AV-16	As a manager, I want to be able to assign tasks to staff members, so that staff member's...	-		TO DO
AV-22	Front end tasks for a specific staff member must be visable if we click them.	-	AB	TO DO
AV-18	As a staff, I want to be able to view the task list assigned to me, including task priorities,...	-		TO DO
AV-19	As a staff member, I want to update the status of tasks, marking them as "in progress" o...	-		TO DO

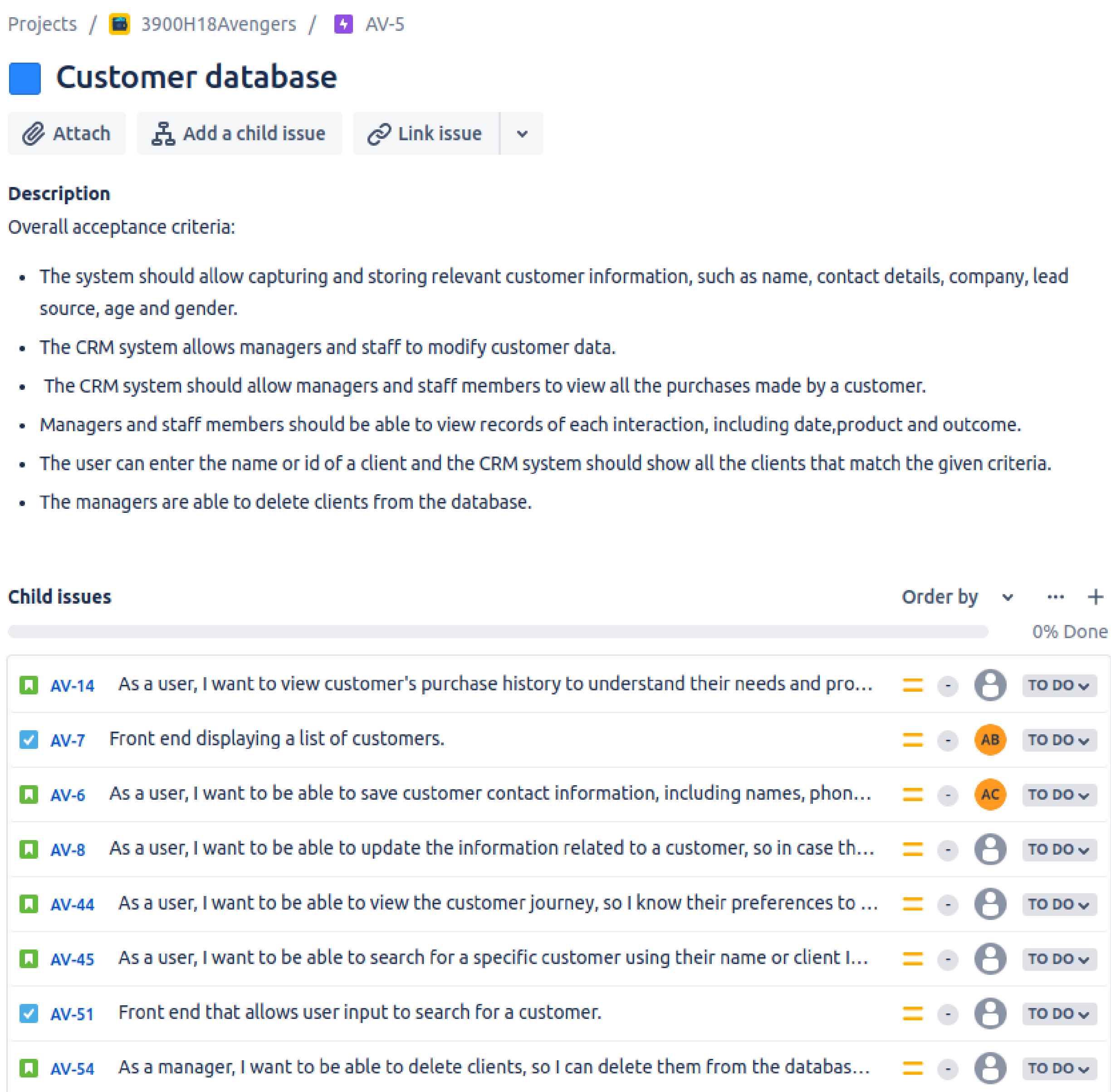
https://3900h18avengers.atlassian.net/browse/AV-9

Related User stories

User story	Acceptance criteria
As a manager, I want to be able to add tasks to the system with information about the task such as deadline, priority level and description, so the staff knows what has to be done.	1.The CRM system should provide a feature for managers to create tasks and add information related to it. 2.The system should allow managers to set a due date and priority level for each assigned task.
As a manager, I want to be able to assign tasks to staff members, so that staff member's know which tasks they are accountable for	Managers should be able to select the staff member(s) to whom the task will be assigned.
As a manager, I want to be able to view the task list and status of tasks to track progress and allocate resources effectively.	Managers should be able to monitor the progress of assigned tasks and view the status of each task.
As a staff member, I want to be able to view the task list assigned to me, including task priorities, deadlines, and descriptions, to ensure timely completion of work.	Staff members should have a clear view of their assigned tasks, including details, due dates, and priorities.
As a staff member, I want to update the status of tasks, marking them as "in progress" or "completed," to share progress with the manager.	Staff members should be able to provide updates on task progress within the CRM system.

3. Customer Database Epic - Sprint 2

The main goal of the Customer Database epic will be to introduce a customer database to keep relevant data of their customers, so they can easily access information related to each of the customers. On top of that, Salesync also plans to use customer purchase history and demographics to allow companies to make better business decisions. This epic will be part of our second sprint which will be presented during Demo B.


Projects / 3900H18Avengers / AV-5

Customer database

Attach | Add a child issue | Link issue

Description

Overall acceptance criteria:

- The system should allow capturing and storing relevant customer information, such as name, contact details, company, lead source, age and gender.
- The CRM system allows managers and staff to modify customer data.
- The CRM system should allow managers and staff members to view all the purchases made by a customer.
- Managers and staff members should be able to view records of each interaction, including date,product and outcome.
- The user can enter the name or id of a client and the CRM system should show all the clients that match the given criteria.
- The managers are able to delete clients from the database.

Child issues Order by

0% Done

AV-14	As a user, I want to view customer's purchase history to understand their needs and pro…	-		TO DO
AV-7	Front end displaying a list of customers.	-	AB	TO DO
AV-6	As a user, I want to be able to save customer contact information, including names, phon…	-	AC	TO DO
AV-8	As a user, I want to be able to update the information related to a customer, so in case th…	-		TO DO
AV-44	As a user, I want to be able to view the customer journey, so I know their preferences to …	-		TO DO
AV-45	As a user, I want to be able to search for a specific customer using their name or client I…	-		TO DO
AV-51	Front end that allows user input to search for a customer.	-		TO DO
AV-54	As a manager, I want to be able to delete clients, so I can delete them from the databas…	-		TO DO

https://3900h18avengers.atlassian.net/browse/AV-5

Related User Stories

User story	Acceptance criteria
As a user, I want to be able to save customer contact information, including names, phone numbers, and email addresses, to follow up and maintain customer relationships.	The system should allow capturing and storing relevant customer information, such as name, contact details, company, lead source, age and gender.
As a user, I want to be able to update the information related to a customer, so in case the information changes the company will be able to keep data up to date.	The CRM system allows managers and staff to modify customer data.
As a user, I want to view customer's purchase history to understand their needs and provide personalized service.	The CRM system should allow managers and staff members to view all the purchases made by a customer.
As a user, I want to be able to view the customer journey, so I know their preferences to adapt my sales approach.	Managers and staff members should be able to view records of each interaction, including date,product and outcome.
As a user, I want to be able to search for a specific customer using their name or client Id, so I save time by not having to search in the customers list one by one.	The user can enter the name or id of a client and the CRM system should show all the clients that match the given criteria
As a manager, I want to be able to delete clients, so I can delete them from the database if the client is no longer relevant to the company	The managers are able to delete clients from the database.

4. Products Inventory Epic - Sprint 2

The Products Inventory epic aims to create a product inventory which will allow companies to have easy access to all data related to the company's products. This inventory will also allow us to easily keep track of the sales made and which products were involved, as well as having access to the available stock of any product. This epic will be presented during Demo B

Products Inventory database

Attach Add a child issue Link issue

Description

Overall acceptance criteria:

- When the company starts selling a new product, the manager should be able to add it to the products inventory, along with all required information.
- The CRM system should provide a product catalog where managers can add, edit, and organize the company's products.
- When a user enters the name or id of a product the CRM system provides real-time information about the product.
- When creating a product or having an existing one, we should be able to choose whether the product is digital or physical.
- The list of products should show the stock left for physical products.
- The CRM system should capture and track product sales data, including quantities sold, revenue generated, and other relevant metrics.
- The managers are able to delete products from the database.

Child issues Order by

0% Done

AV-28	As a user, I want to be able to classify products depending on whether the product is ph…	=	-	TO DO
AV-24	As a user, I want to be able to see the availability of the products, so I know what is curr…	=	-	TO DO
AV-23	As a user, I want to get detailed information about a product when I search for them, so …	=	-	TO DO
AV-25	As a user, I want to be able to add company products into an inventory database, so the …	=	-	TO DO
AV-46	As a user, I want to be able to change the details of a product, so I can update the produ…	=	-	TO DO
AV-53	As a user, I want to get the sales performance information of specific products when I s…	=	-	TO DO
AV-55	As a manager, I want to be able to delete products from the inventory, so if the compan…	=	-	TO DO
AV-56	Front-end for the products inventory		-	TO DO

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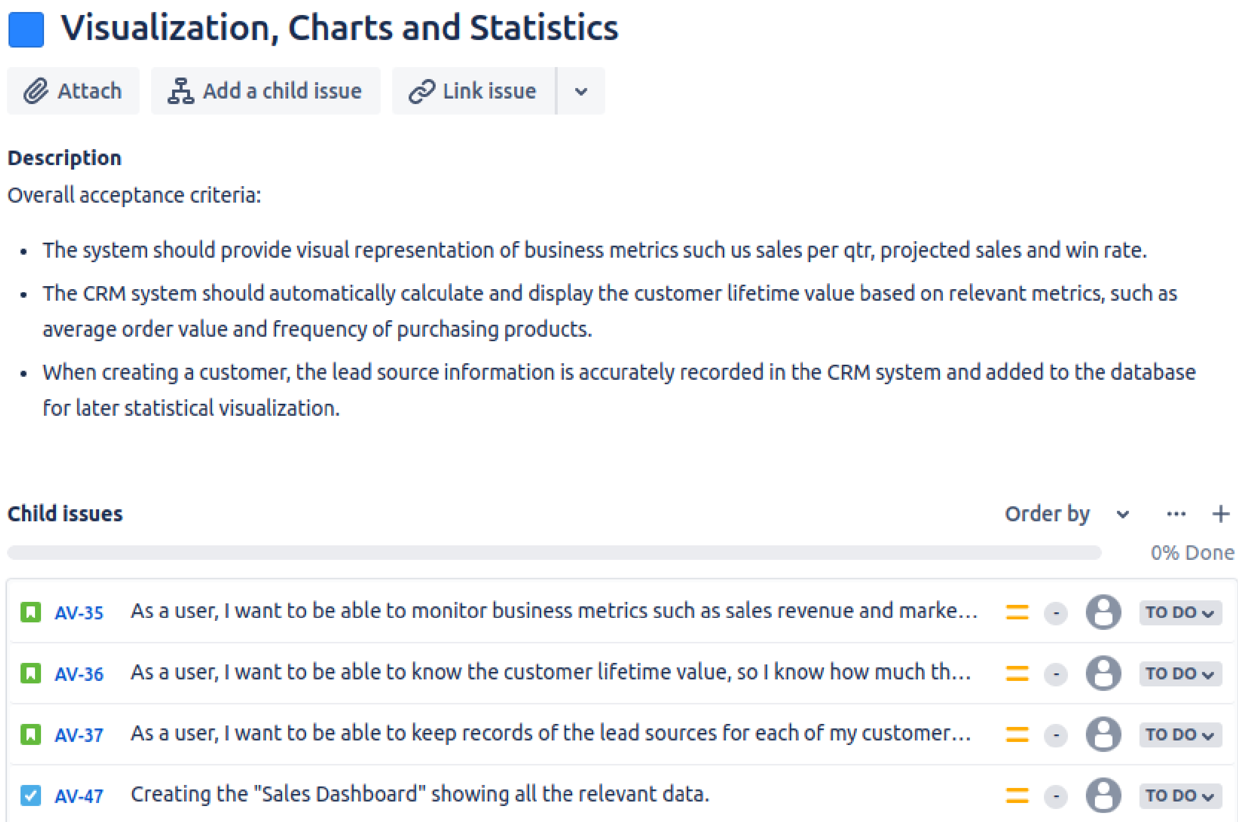
Related User Stories

User story	Acceptance criteria
As a user, I want to be able to add company products into an inventory database, so the company can keep track of them easily.	When the company starts selling a new product, the manager should be able to add it to the product's inventory, along with all required information.
As a user, I want to be able to change the details of a product, so I can update the product's information without having to delete it.	The CRM system should provide a product catalog where managers can add, edit, and organize the company's products.
As a user, I want to be able to see the availability of the products, so I know what is currently in stock.	The list of products should show the stock left for physical products.
As a user, I want to be able to classify products depending on whether the product is physical or digital. So I will be able to know if I need to take in consideration the available stock when making a sale.	When creating a product or having an existing one, we should be able to choose whether the product is digital or physical.
As a user, I want to get the sales performance information of specific products when I search for them, so I know what products are performing well and where the company can improve.	The CRM system should capture and track product sales data, including quantities sold, revenue generated, and other relevant metrics.
As a user, I want to get detailed information about a product when I search for them, so I can be more efficient when using the product inventory.	When a user enters the name or id of a product the CRM system provides real-time information about the product.
As a manager, I want to be able to delete products from the inventory, so if the company stops selling a certain product I will be able to delete it.	The managers are able to delete products from the database.

5. Charts and Statistics Epic - Sprint 2

The Charts and Statistics Epic's goal is to provide companies with automated and understandable key statistics about the company's overall performance. All the major charts will be placed on one page and it will allow all the users of Salesync to have insights into sales per quarter, projected sales and win rate. This is the final epic for sprint 2 and will be presented during Demo B



Visualization, Charts and Statistics

Attach | Add a child issue | Link issue

Description

Overall acceptance criteria:

- The system should provide visual representation of business metrics such us sales per qtr, projected sales and win rate.
- The CRM system should automatically calculate and display the customer lifetime value based on relevant metrics, such as average order value and frequency of purchasing products.
- When creating a customer, the lead source information is accurately recorded in the CRM system and added to the database for later statistical visualization.

Child issues Order by

0% Done

AV-35	As a user, I want to be able to monitor business metrics such as sales revenue and marke…	-	TO DO
AV-36	As a user, I want to be able to know the customer lifetime value, so I know how much th…	-	TO DO
AV-37	As a user, I want to be able to keep records of the lead sources for each of my customer…	-	TO DO
AV-47	Creating the "Sales Dashboard" showing all the relevant data.	-	TO DO

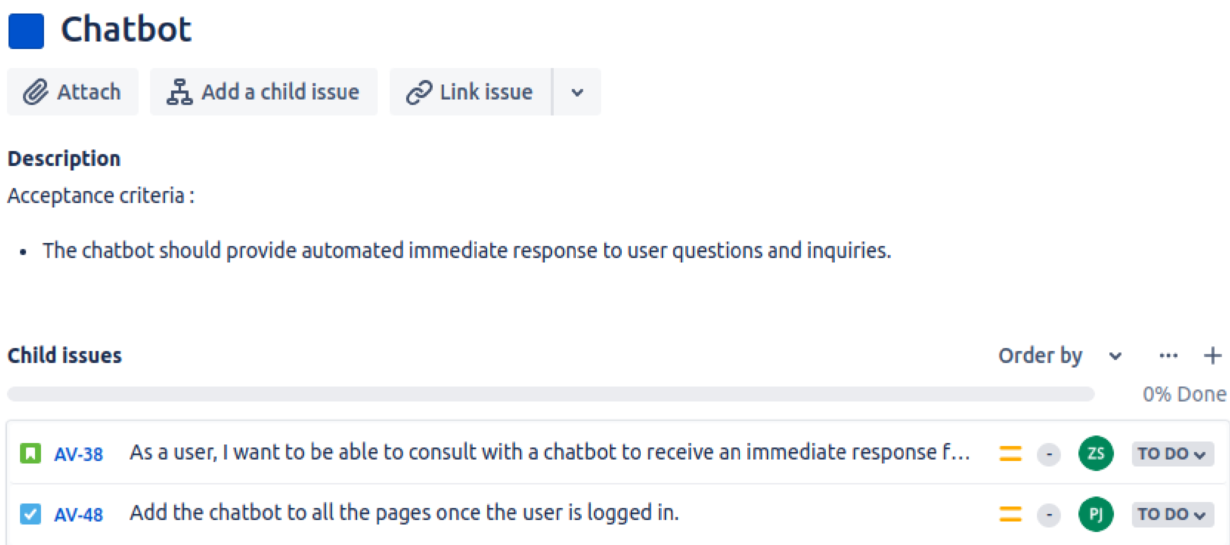
https://3900h18avengers.atlassian.net/browse/AV-34

Related User Stories

User story	Acceptance criteria
As a user, I want to be able to monitor business metrics such as sales revenue and market share to evaluate performance and make strategic decisions.	The system should provide visual representation of business metrics such us sales per qtr, projected sales and win rate.
As a user, I want to be able to know the customer lifetime value, so I know how much the company should be willing to pay per customer acquisition.	The CRM system should automatically calculate and display the customer lifetime value based on relevant metrics, such as average order value and frequency of purchasing products
As a user, I want to be able to keep records of the lead sources for each of my customers, so I can analyze what marketing strategy suits my company	When creating a customer, the lead source information is accurately recorded in the CRM system and added to the database for later statistical visualization

6. Chatbot Epic (Novel functionality) - Sprint 3

The Chatbot epic aims to implement a chatbot which helps users with their quick questions at any given time. This will be implemented using an API and will be presented during the Demo B.



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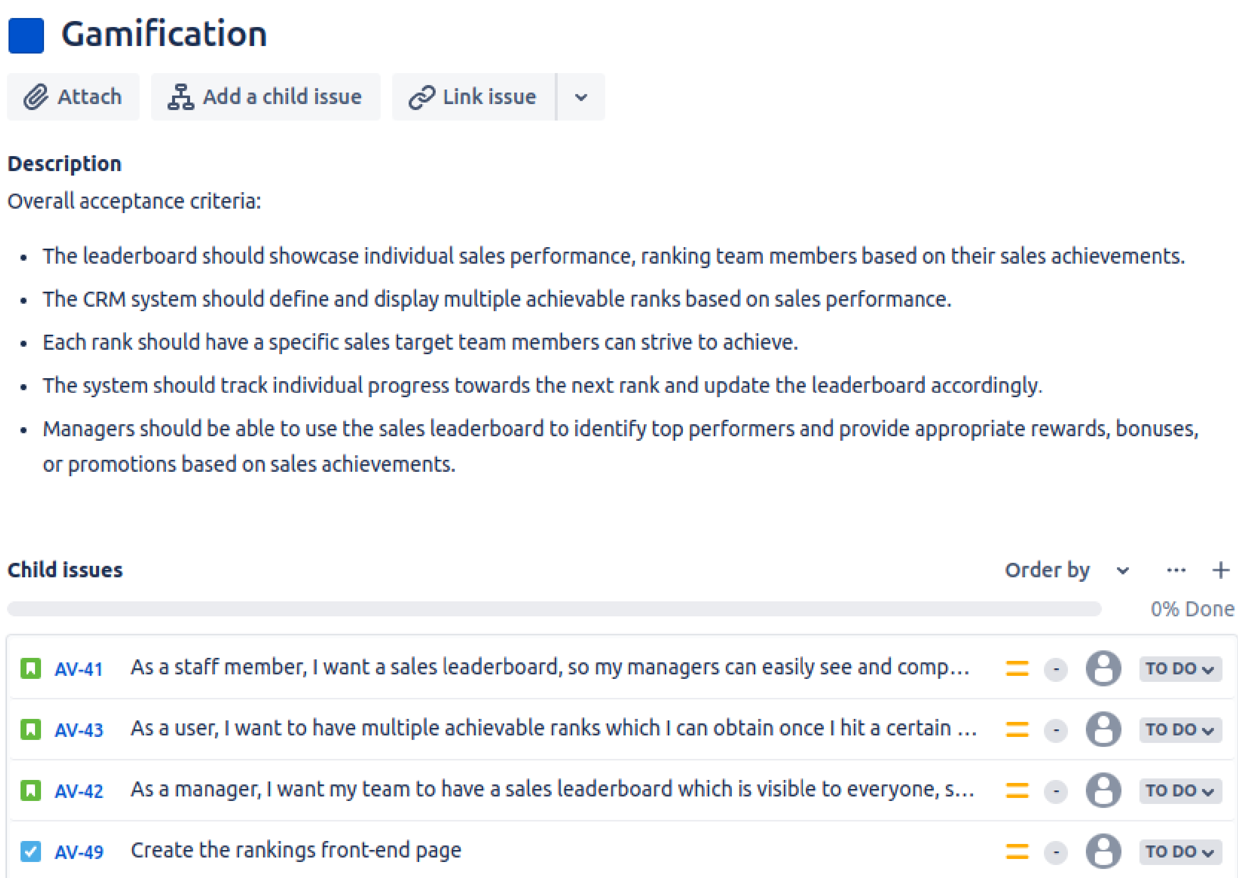
Related User Stories

User story	Acceptance criteria
As a user, I want to be able to consult with a chatbot to receive an immediate response for help and troubleshooting information	The chatbot should provide automated immediate response to user questions and inquiries.

7. Gamification Epic (Novel functionality) - Sprint 3

This epic will introduce gamification into the system. This is a functionality that most of the other CRM systems do not have by default. However, we decided to add it to the system since there can be multiple user stories that proves how this functionality will be highly valuable for the CRM system. Gamification has two major features, one is the leaderboard which will be public for all workers and will show the users and their sales this quarter. The feature of gamification epic will be implementing “Ranks” which will be further explained in the acceptance criteria of the user stories.



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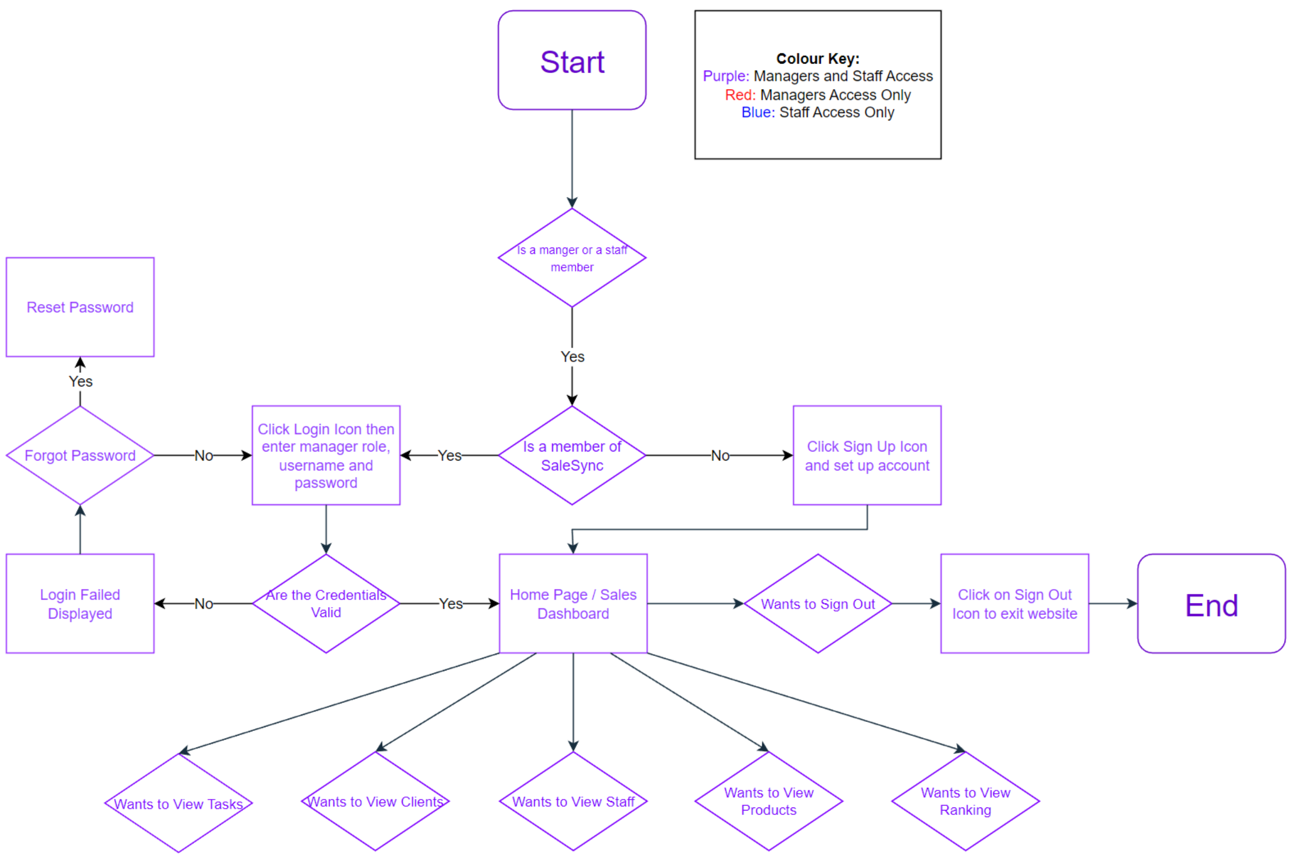
Related User Stories

User story	Acceptance criteria
As a manager, I want my team to have a sales leaderboard which is visible to everyone, so it motivates them to be more competitive and increase their performance.	The leaderboard should showcase individual sales performance, ranking team members based on their sales achievements.
As a user, I want to have multiple achievable ranks which I can obtain once I hit a certain amount in sales, such that I can have short term performance goals.	1. The CRM system should define and display multiple achievable ranks based on sales performance. 2. Each rank should have a specific sales target team members can strive to achieve. 3. The system should track individual progress towards the next rank and update the leaderboard accordingly.
As a staff member, I want a sales leaderboard, so my managers can easily see and compare my performance with others. And then they will be able to give bonuses or promotions to those who deserve it.	Managers should be able to use the sales leaderboard to identify top performers and provide appropriate rewards, bonuses, or promotions based on sales achievements.

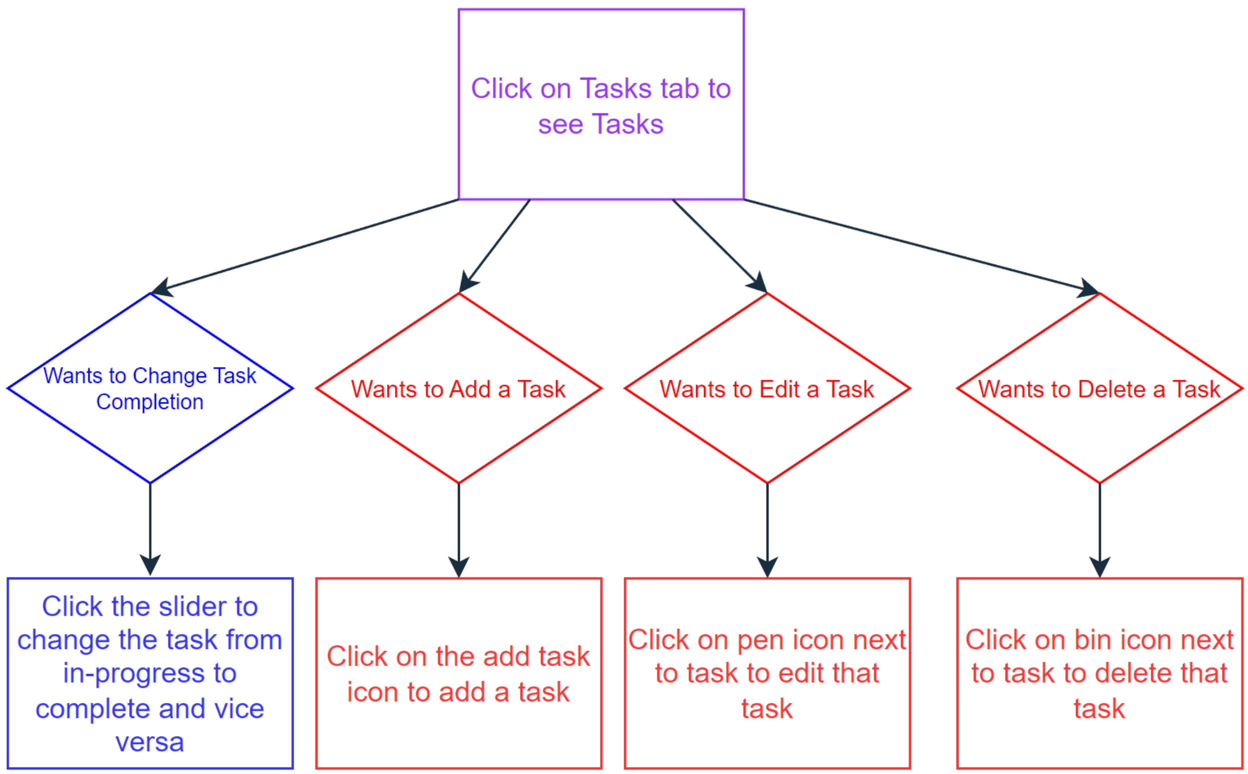
User Flow Diagram

The diagrams below represent the user flow from the sign up process to implement tasks, clients, staff and products for both managers and staff as well as viewing the rankings of employees and staff based on number of sales, and how to access the chatbot for assistance. The user interface aims to allow managers and staff to enter their account as easily as possible and to be able to switch from viewing tasks, clients, staff and products to help monitor the progress and state of their business as easily as possible. It addresses the three design principles of meeting user needs, having clear usability and accessibility. User needs are met as Salesync addresses the needs of a CRM platform, usability is met through a minimalistic design with clear icons and accessibility is improved through large buttons, which help those who have difficulty in seeing small objects.

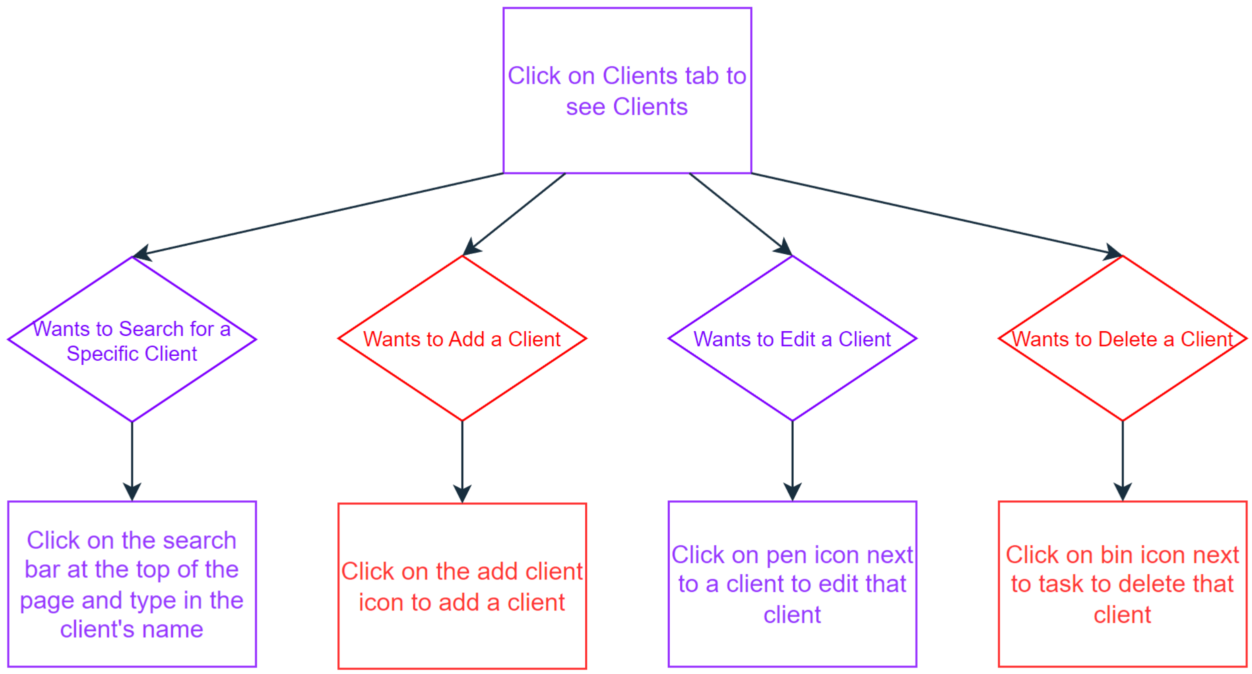
Salesync opens with the landing page, asking the user to login or sign up, where a user can either sign up as a staff member or as a manager. After logging in / signing up the user will be placed on the home page / sales dashboard. On the left hand side the tabs of tasks, clients, staff, products and my ranking will be available to both managers and staff, except the staff tab which is only accessible to clients.



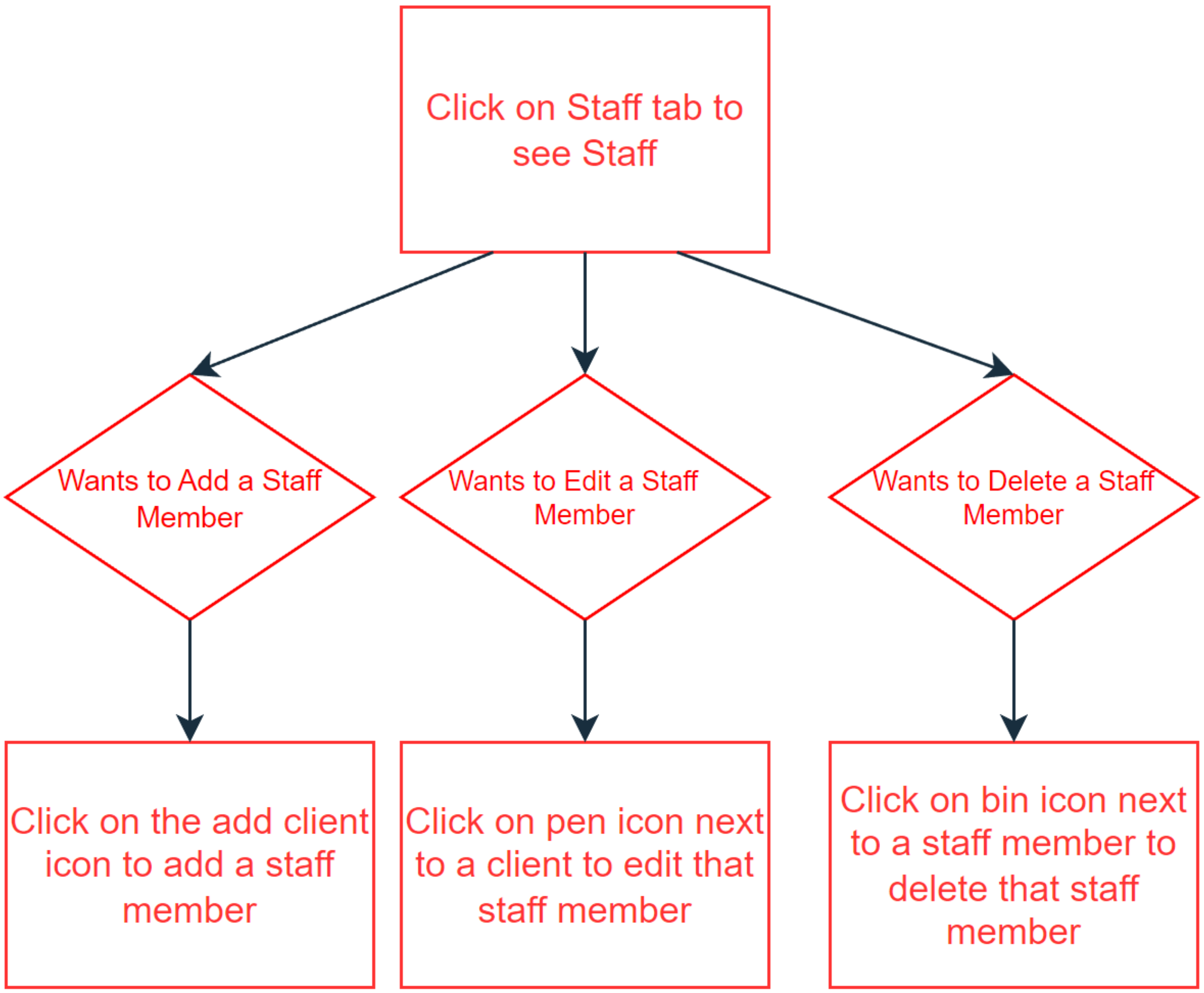
After clicking on the tasks tab, the tasks will be presented. From these only staff can change the completion of them through a slider of denoting a task from being in progress to complete and vice versa, the visibility of this slider and its obvious nature increasing usability. Managers only also have the option to add a task. This is done through pressing the add task button on the top right hand corner of the page. The large icon and text supporting this button makes its purpose obvious and improves usability. Also for managers only, a pen icon and bin icon is placed on the right next to each task, which allows a task to be edited and deleted respectively. The pen icon clearly evident editability whilst the bin icon represents deletion, making usability easier for staff.



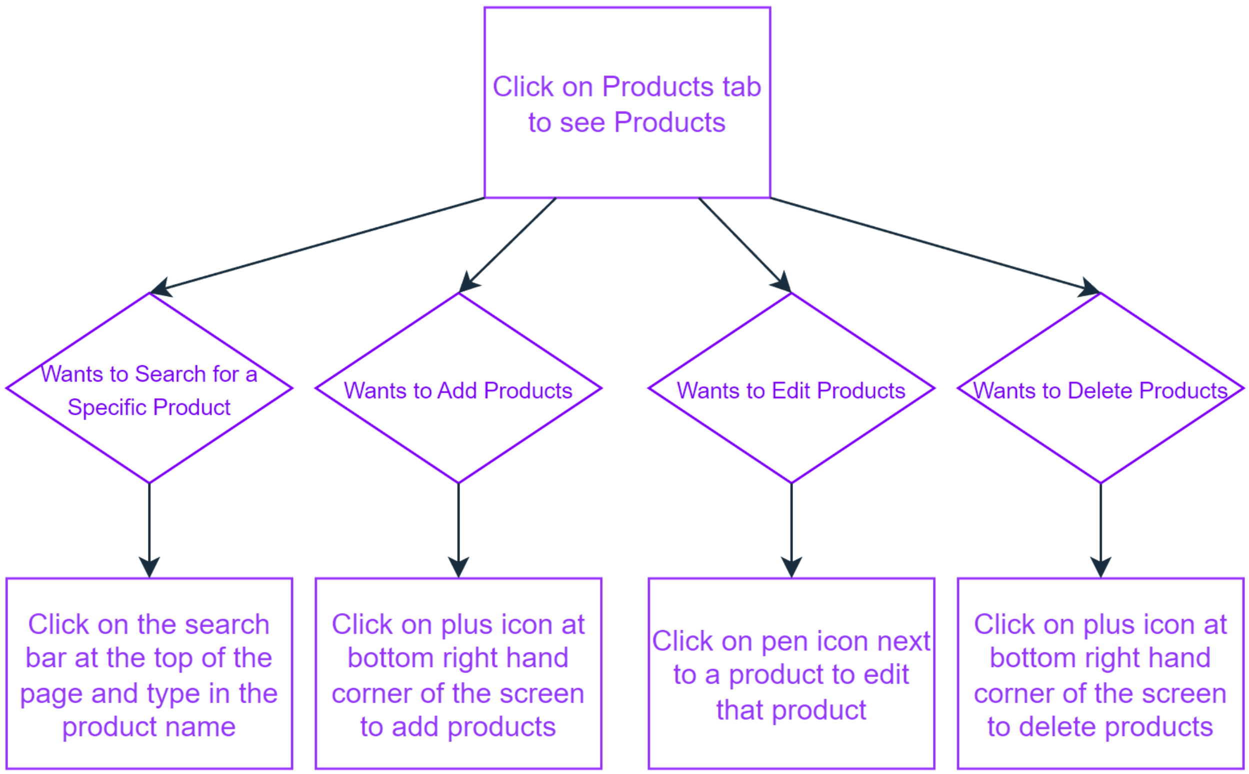
After clicking on the clients tab, the client list will be displayed. Here client's names, values, pending values, the next task due for them and the name of the staff member assigned to them will be displayed. Managers can add, delete or edit clients whilst staff can only edit clients. Adding a client is completed through clicking the large add client button in the top right corner of the page whilst editing and deleting clients is completed through clicking the pen and bin icon to the right of the client respectively. The use of these icons improve usability as the pen clearly signifies editing ability, the bin clearly signifies deletion and the 'Add Client' button states its purpose.



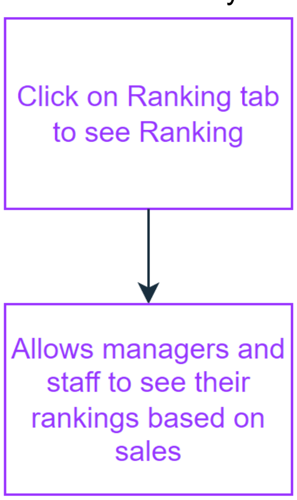
Only managers can access the staff tab. When a staff member clicks on it, they will see the staff member's name, position, sales in the quarter, pending sales and the outstanding tasks. Editing and deleting staff is completed through clicking the pen and bin icon to the right of the client respectively. These symbols; purpose is clear, as these symbols remain consistent in every tab (tasks, clients etc.).



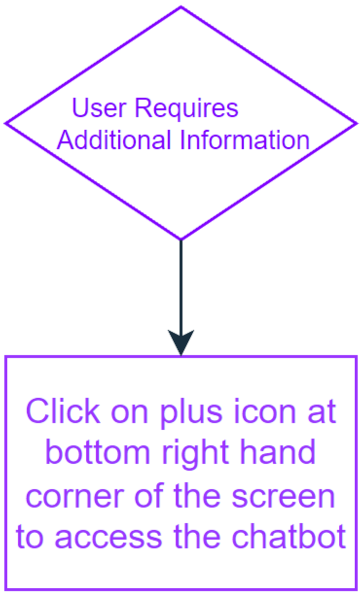
The products tab and the entirety of its contents can be accessed by both managers and staff. The product's name, price, inventory, quantity sold and dollar value sold are displayed. A search bar is available at the top of the page to find a specific product, whilst the add product icon, the edit product icon and delete icon tabs are consistent with each of the previous tabs, as this consistency improves usability.



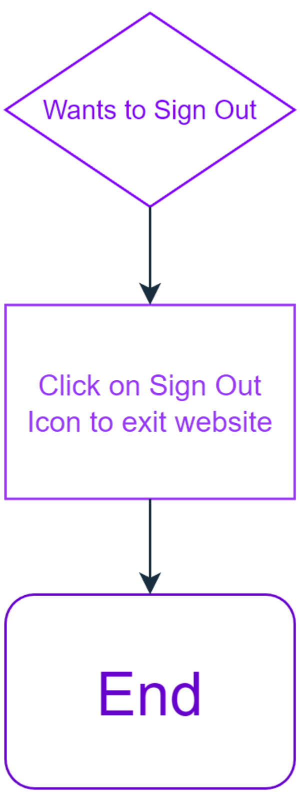
The ranking tab allows managers and staff to see their ranking in their organisation. The use of gamify elements with ranks such as 'Seasoned Seller' and 'Strong Seller' improves the user interface as it makes both staff and managers more invested into the CRM program and the value of sales they can make.



The plus icon in the bottom right hand corner of the screen represents the chatbot, where users can ask questions and get automatic responses. This improves accessibility as those unsure with the CRM program can receive direct assistance relating to their query.



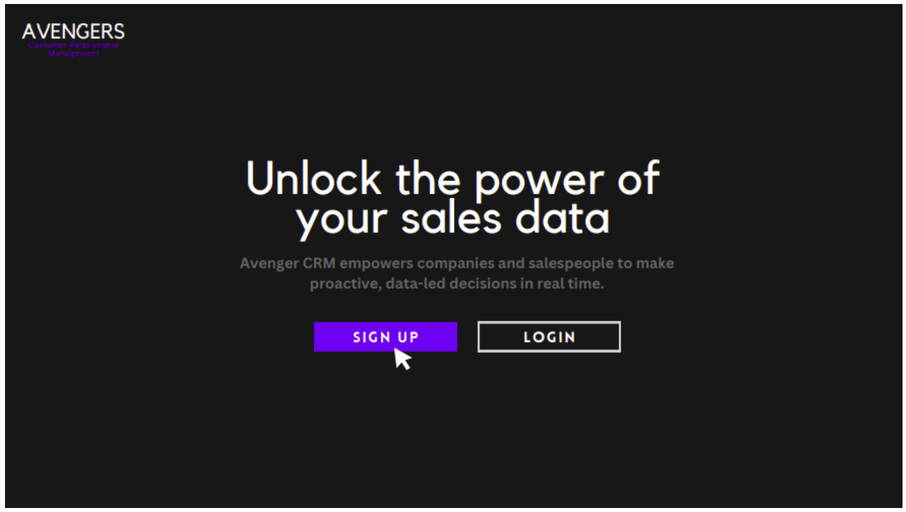
Users can sign out through the sign out icon in the bottom right corner of the screen, which remains consistent in all tabs. The arrow symbol with its text description makes this icon's use clear, increasing usability.



Interface Diagram

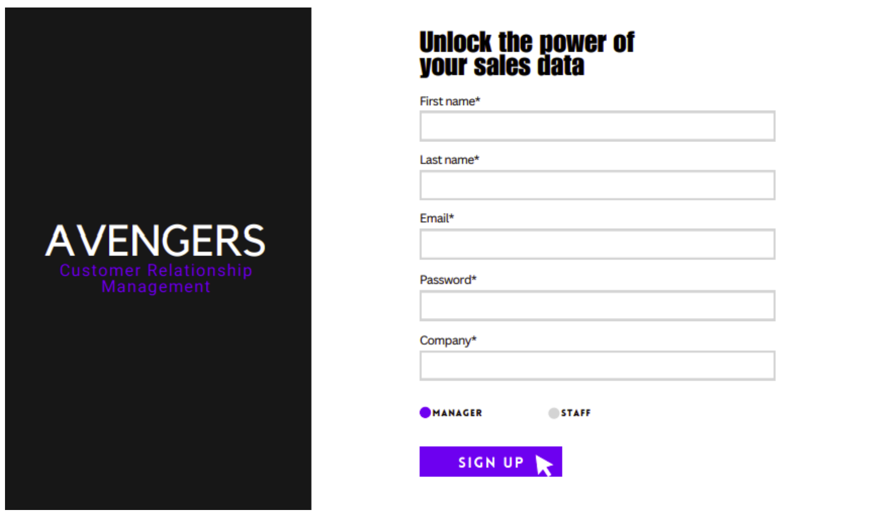
Landing page

-As a user, I want to register and log into the CRM system using username and password credentials to ensure that my access details are secure



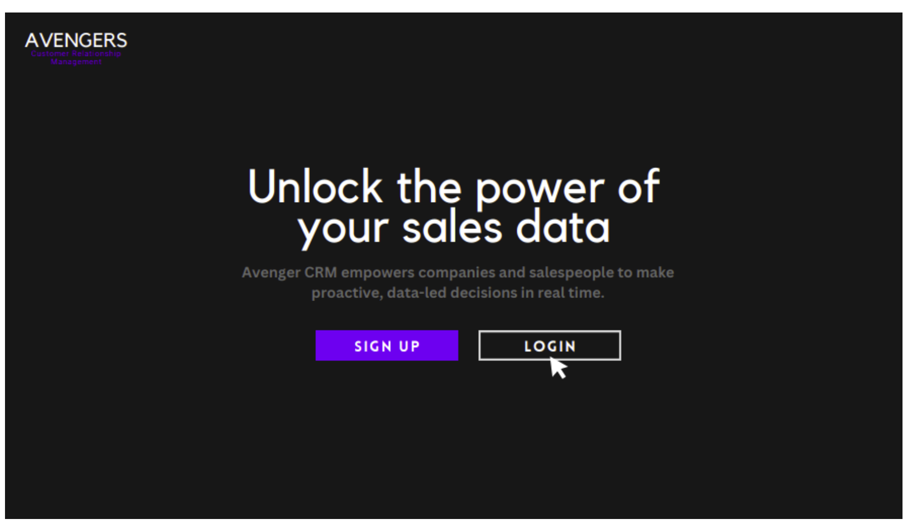
Sign up

-As a user, I want to be able to register an account with the platform if I do not currently have one



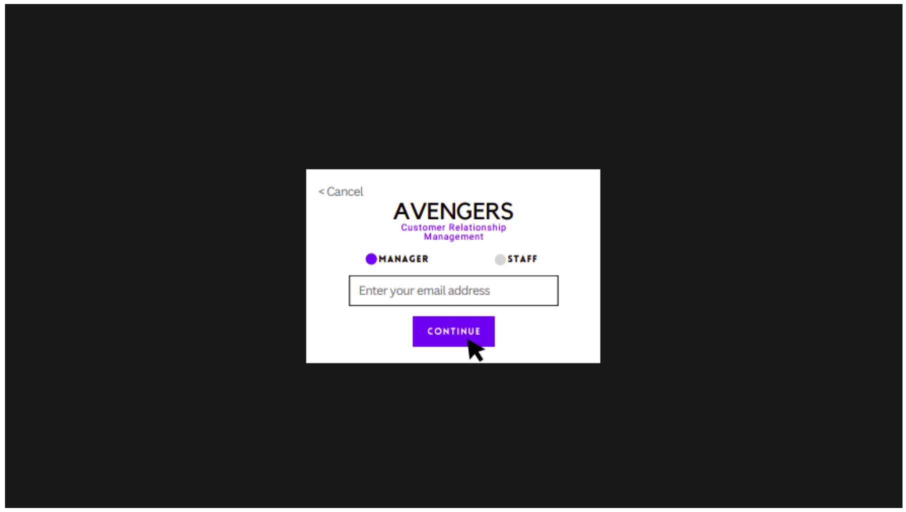
Login

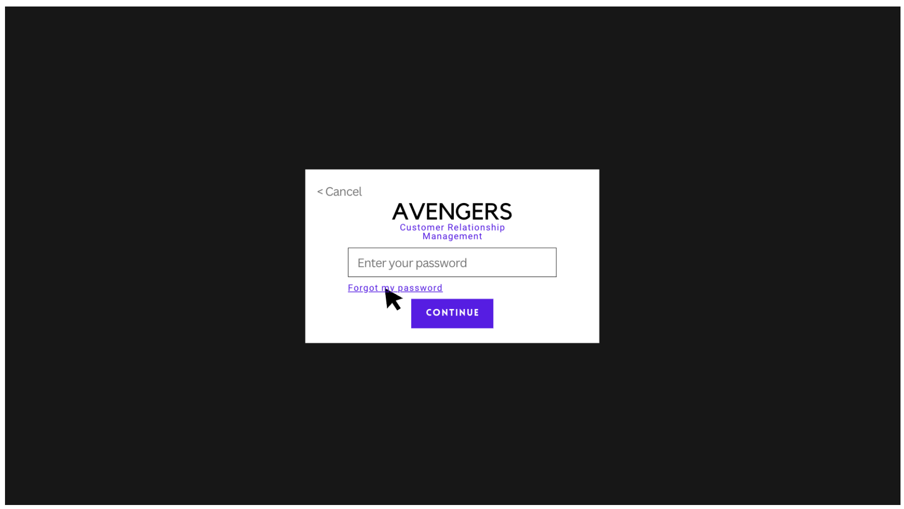
- As a user, I want to be able to log into my account, to access my uniquely saved data and account information

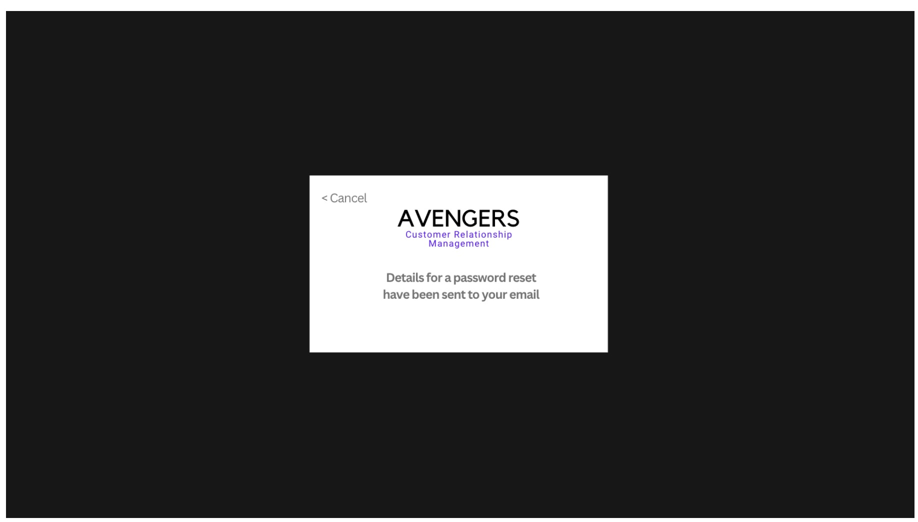


Forgot password

-As a user, if I forget my account details, I want to be able to recover them with my email.







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Visualization, Charts and Statistics

-As a user, I want to be able to monitor business metrics such as sales revenue and market share to evaluate performance and make strategic decisions.

-As a user, I want to be able to keep records of the lead sources for each of my customers, so I can analyze what marketing strategy suits my company.

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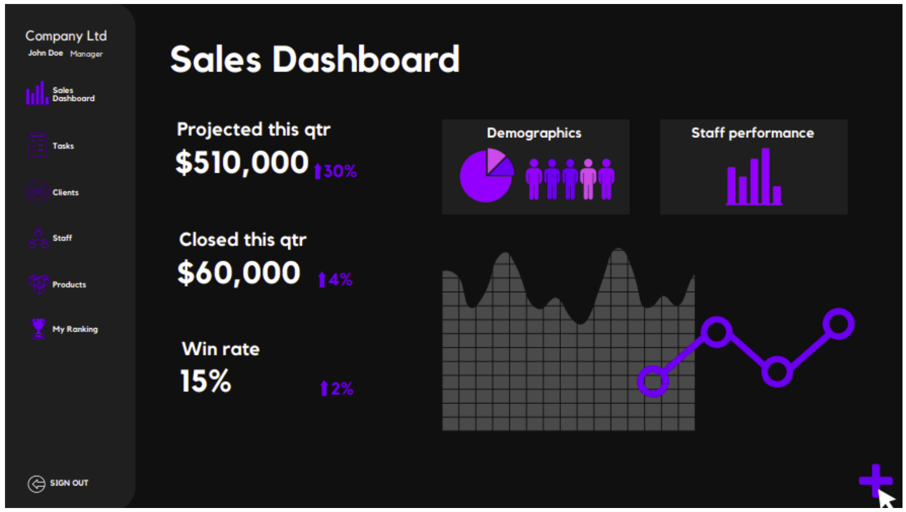
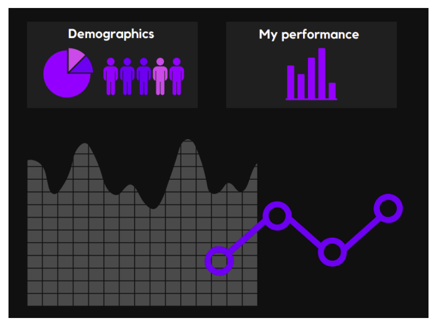


Staff can only see ‘My Performance’ not ‘Staff Performance’



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Chat bot

-As a user, I want to be able to consult with a chatbot to receive an immediate response for help and troubleshooting information

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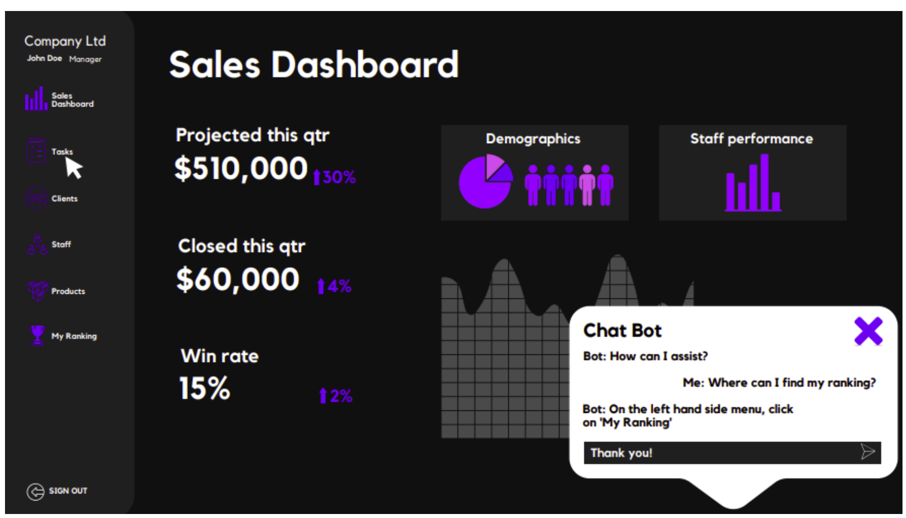

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View tasks

-As a manager, I want to be able to view the task list and status of tasks to track progress and allocate resources effectively.

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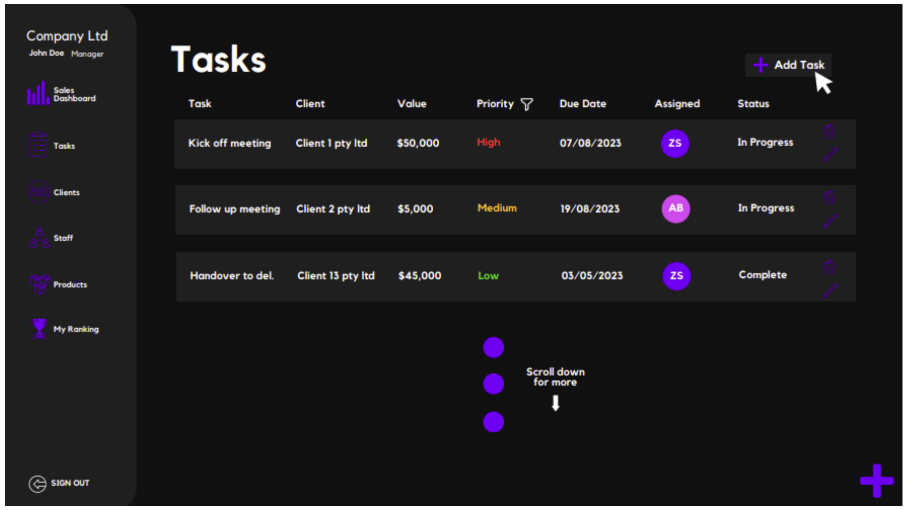

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Can create new tasks and assign staff

-As a manager, I want to be able to add tasks to the system with information about the task such as deadline, priority level and description, so the staff knows what has to be done.

-As a manager, I want to be able to assign tasks to staff members, so that staff member's know which tasks they are accountable for

-As a staff member, I want to update the status of tasks, marking them as "in progress" or "completed," to share progress with the manager.

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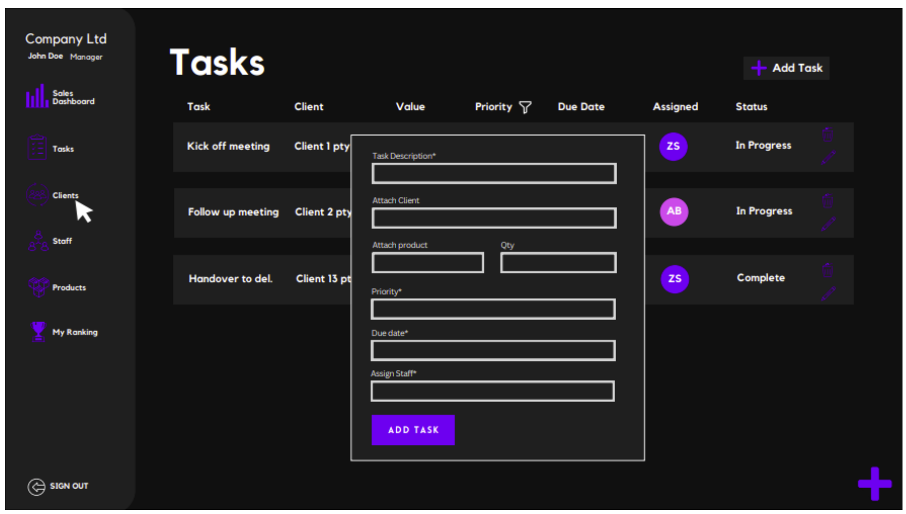
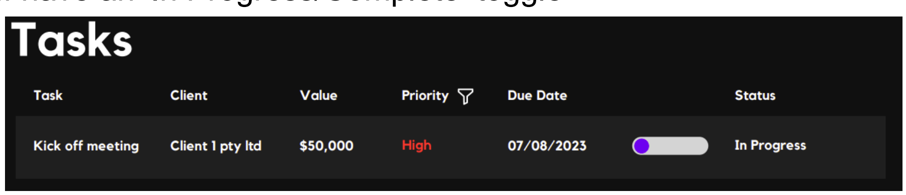


Staff have an 'In Progress/Complete' toggle



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View and search clients

-As a user, I want to be able to search for a specific customer using their name or client Id, so I save time by not having to search in the customers list one by one.

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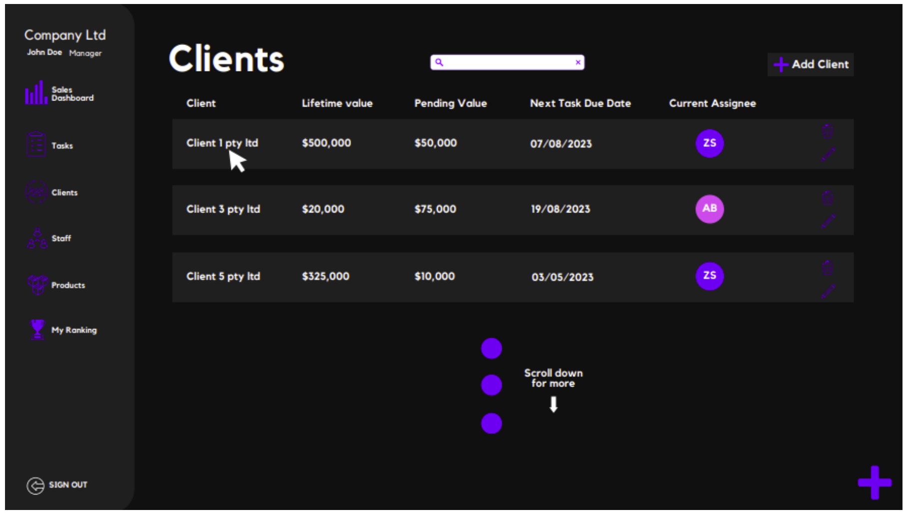

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Can see customer journey
-As a user, I want to be able to view the customer journey, so I know their preferences to adapt my sales approach.

-As a user, I want to view customer's purchase history to understand their needs and provide personalized service.

-As a user, I want to be able to update the information related to a customer, so in case the information changes the company will be able to keep data up to date.

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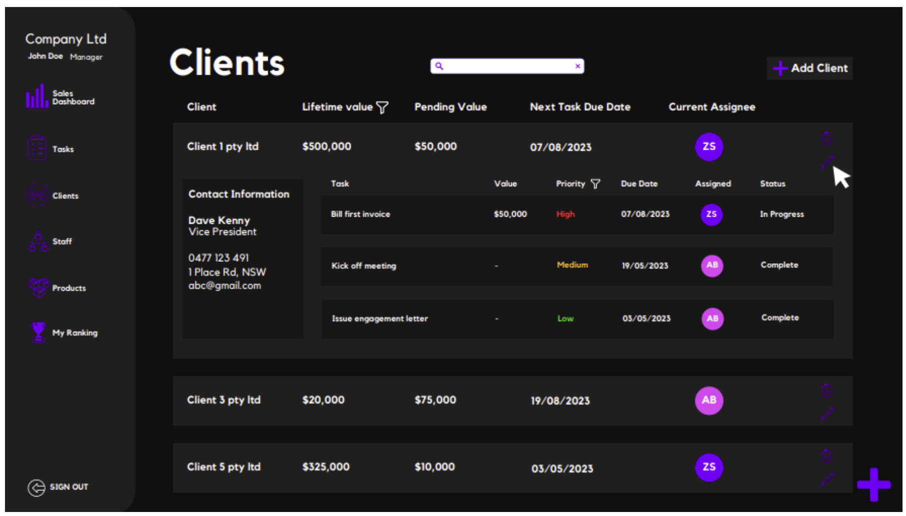
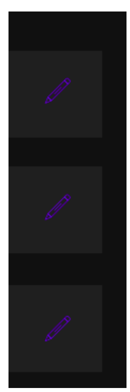


Staff accounts only have edit permissions



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Adding new client

-As a user, I want to be able to save customer contact information, including names, phone numbers, and email addresses, to follow up and maintain customer relationships.

- As a user, I want to be able to keep records of the lead sources for each of my customers, so I can analyze what marketing strategy suits my company.

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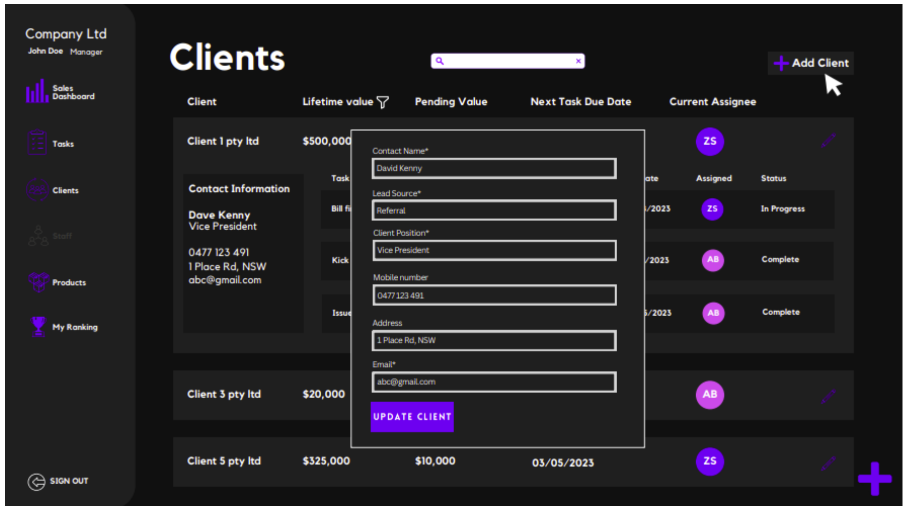

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Search for a client

-As a user, I want to be able to search for a specific customer using their name or client Id, so I save time by not having to search in the customers list one by one.

Deleting a client

- As a manager, I want to be able to delete clients, so I can delete them from the database if the client is no longer relevant to the company

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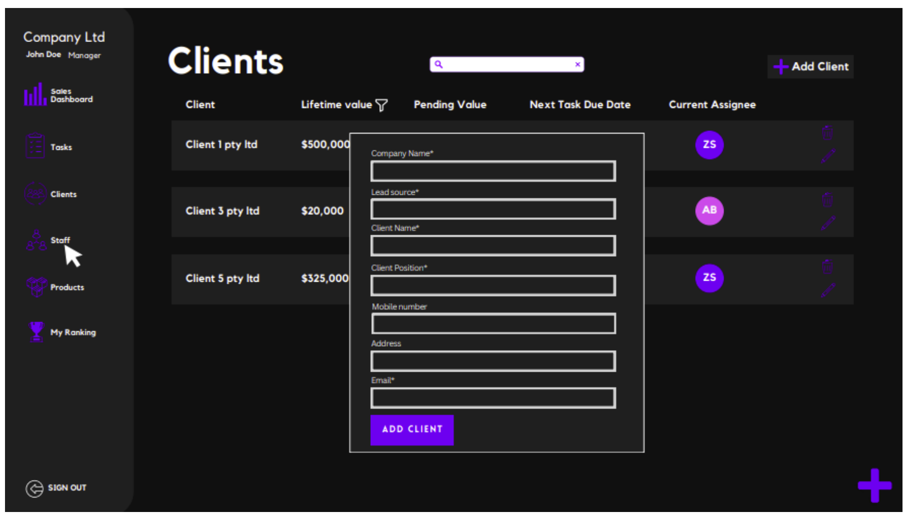

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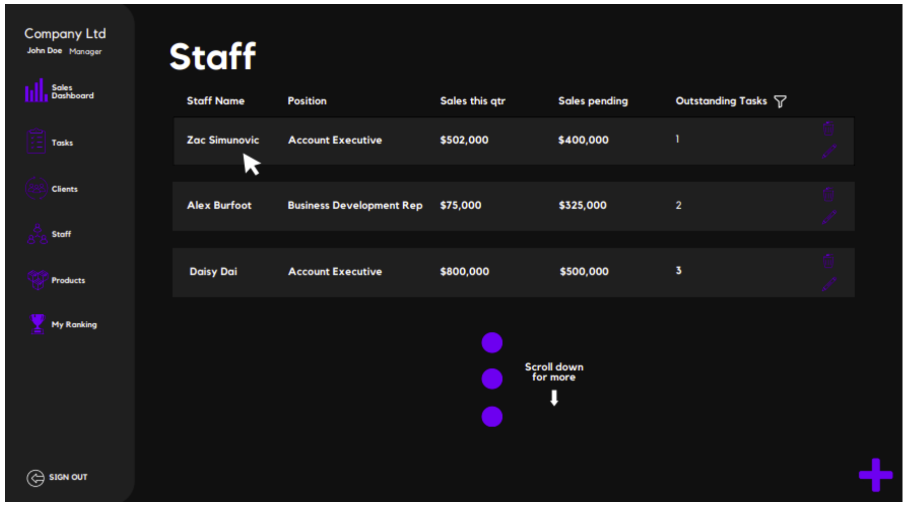
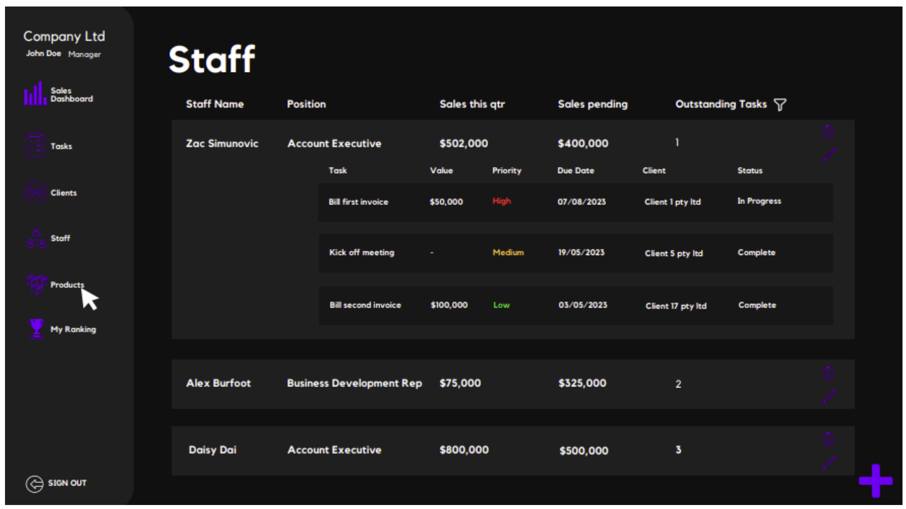
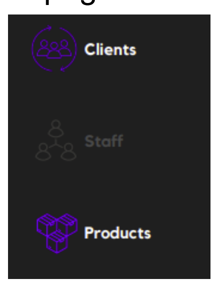
Can see all assigned tasks for each employee

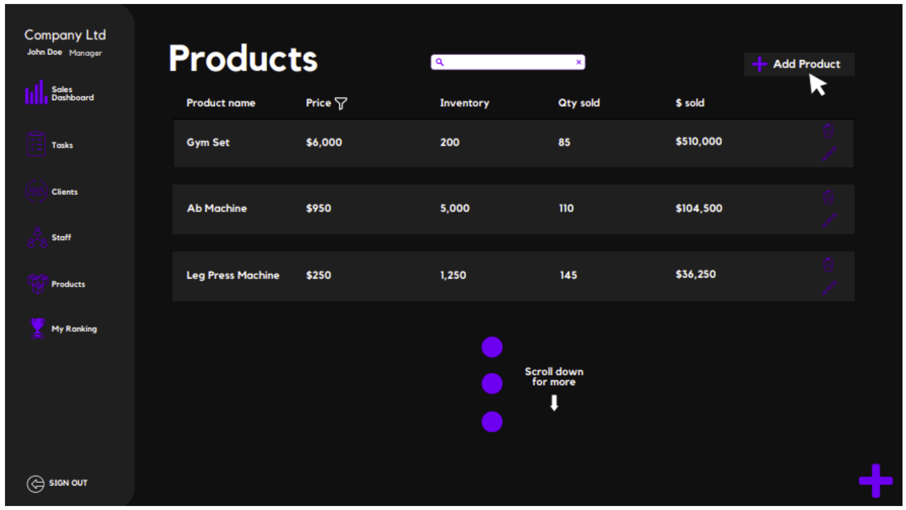
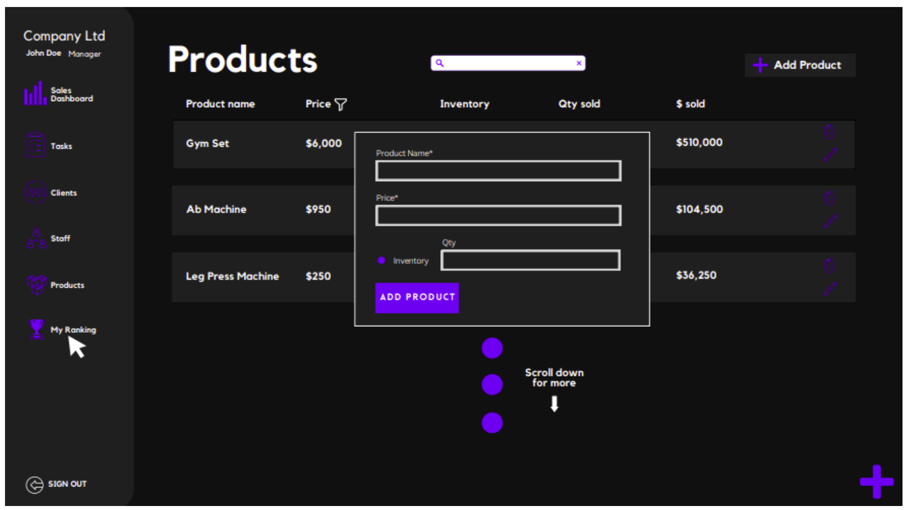
-As a manager, I want to be able to view the task list and status of employees to track progress and allocate resources effectively.





Staff view cannot access 'Staff page'



Can see all products and how they are performing -As a user, I want to get detailed information about a product when I search for them, so I can be more efficient when using the product inventory. -As a user, I want to be able to see the availability of the products, so I know what is currently in stock.	
Can add new products -As a user, I want to be able to add company products into an inventory database, so the company can keep track of them easily. **Can delete products** -As a manager, I want to be able to delete products from the inventory, so if the company stops selling a certain product I will be able to delete it.	

Gamification Epic

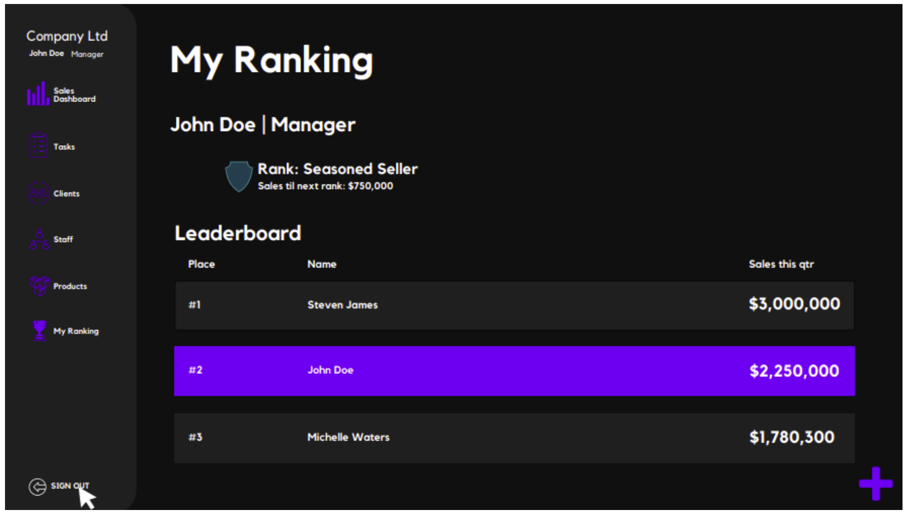
Leaderboard

-As a manager, I want my team to have a sales leaderboard which is visible to everyone, so it motivates them to be more competitive and increase their performance.

-As a staff member, I want a sales leaderboard, so my managers can easily see and compare my performance with others. And then they will be able to give bonuses or promotions to those who deserve it.

Rankings

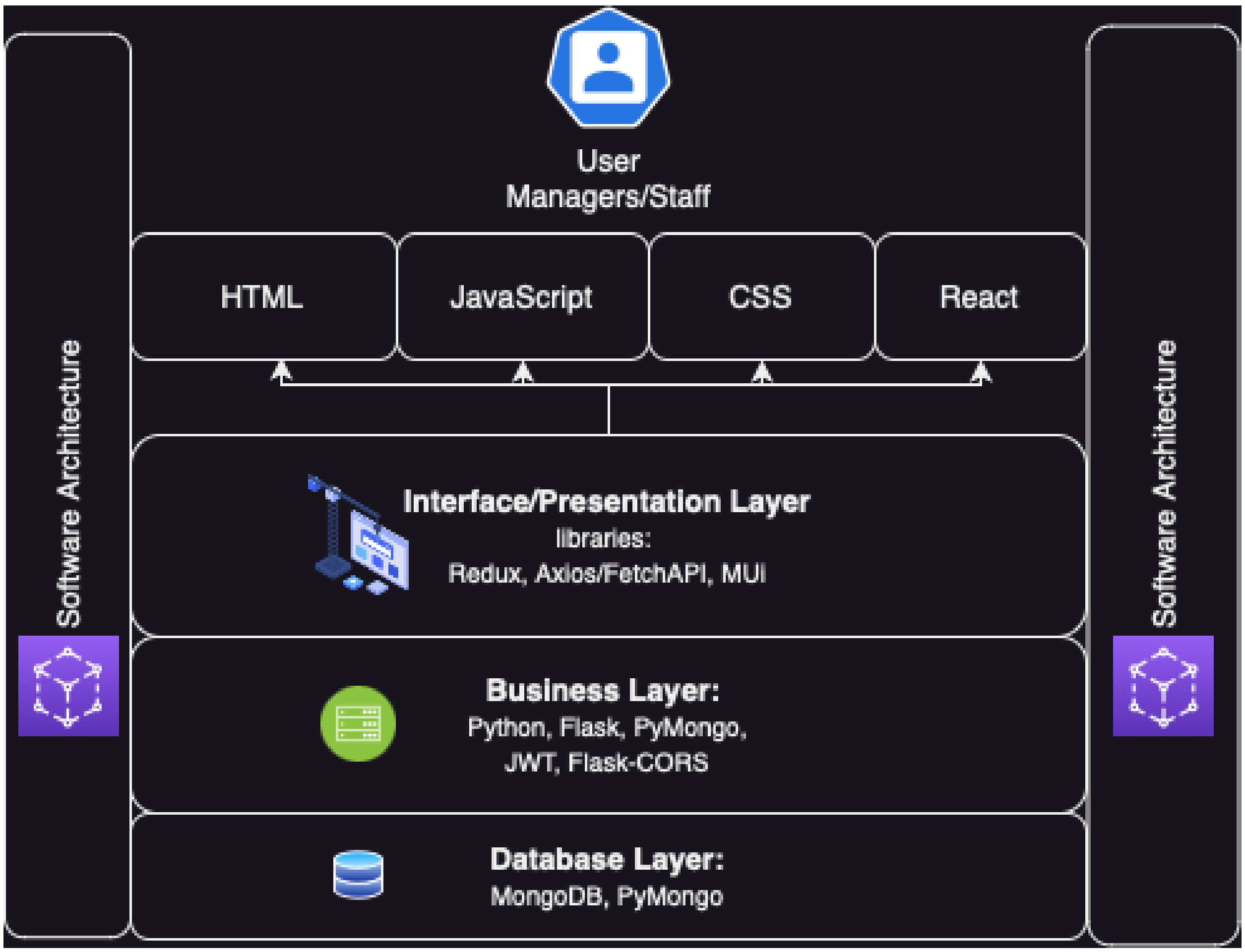
-As a user, I want to have multiple achievable ranks which I can obtain once I hit a certain amount in sales, such that I can have short term performance goals



System Architecture of CRM

System Architecture Diagram

The proposed CRM system architecture follows a three-layered approach, consisting of the presentation layer, business layer, and data layer.



Presentation Layer

The user interface and interaction with users are handled by the presentation layer. It has elements that are involved with the user interface and user experience. The parts of the presentation layer are broken down as follows:

- **User Interface:** This component encompasses the web-based or desktop-based interfaces through which users interact with the CRM system. It includes forms, screens, menus, data, and other visual elements that enable users to perform various tasks such as managing contacts, leads, and opportunities.

- **User Experience (UX):** This component focuses on enhancing user satisfaction and usability. It involves designing intuitive navigation, user-friendly layouts, responsive design, and incorporating best practices for a smooth user experience.
- **Technologies used:** HTML, CSS, JavaScript (**React**)
    - **Frontend:**
        - **HTML, CSS and React. Libraries: Redux** is used for state management, and gives extra freedom using Middleware (can be helpful for API calls).
        - **Axios or Fetch API** is used for HTTP requests from the backend to fetch the data.
        - **Material-UI** is used for the UI/UX, provides components which are responsive, very appealing and user friendly.

Business Layer

The business layer handles the core logic and functionality of the CRM system. It processes user requests, performs data manipulation and validation, and executes business rules. Here's an overview of the components within the business layer:

- **Business Logic:** This component contains the rules and processes that govern the behavior of the CRM system. It includes functionalities such as lead management, opportunity tracking, contact management, activity logging, sales forecasting, and reporting.
- **API Services:** This component exposes APIs (Application Programming Interfaces) that allow external systems or applications to interact with the CRM system. It enables integration with other systems, third-party services, or custom applications.
- **Technologies used:** Python, Flask
    - **Backend**:

        Flask Python framework for backend development and API handling, like route handling, manage data serialization and handle requests.

        PyMongo is a python library to interact with MongoDB, used to perform database operations and connection to the db.

        JWT is used for authorisation and authentication in the backend, secures API endpoints and manages user sessions.

        Optional: Flask-CORS difficult to understand: important to allow multiple users (clients) from different domains to access the backend.

Data Layer

The data layer is responsible for managing and storing data within the CRM system. It includes the database and related components. To carry out CRUD (Create, Read, Update, Delete) operations and protect the system's data integrity, it communicates with the underlying database. Here's an overview of the components within the data layer:

- **Database**: This component stores all the CRM-related data, such as customer information, leads, opportunities, contacts, interactions, and any other relevant entities. It ensures data persistence, integrity, and supports efficient querying and retrieval.
- **Technologies used**: MongoDB, PyMongo.

Through RESTful APIs made available by the Flask backend, the presentation layer communicates with the business layer. To access and modify data contained in the MongoDB database, the business layer converses with the data layer.

External Actors

Managers and staff engage with the CRM system through its user interface, taking advantage of tools and features made to speed up the analytics, customer management, and sales processes. While employees may effectively do their given jobs and have access to pertinent client information, the system gives supervisors the ability to oversee the full sales cycle and customer journey.

Managers

The main users of the CRM system are managers, who are in-charge of directing and controlling the sales and customer interaction operations. They carry out a variety of activities and have administrative rights, including:

- **Registering and logging in**: To access the system, managers must first log in to their accounts using a special username and password combination.
- **Viewing the sales dashboard**: Managers have access to a visually appealing dashboard that displays various charts and indicators and offers data and insights on sales success.
- **Adding client contact information to the system**: Managers can add and update customer contact information, capturing pertinent data for efficient tracking and communication.
- **Adding and assigning tasks:** Managers have the ability to create tasks, assign them to team members, and specify their priority, deadline, and description.

- **Monitoring tasks:** Managers can examine the status of tasks (in progress or complete), track their progress, and evaluate the workload and productivity of staff members.
- **Managing product inventory**: Managers can add new items to the inventory database and analyze sales information to pinpoint profitable products and potential sales-loss locations.
- **Searching and filtering:** Managers can use the search tool to look for particular clients or goods. They can also use filters to divide up their clientele or their product lines according to certain standards.
- **Tracking and analyzing client journeys** from initial contact to purchase and subsequent interactions is a management tool. They may keep an eye on important business data like client lifetime value, win rate, and lead source.

Staff

Under the direction and control of managers, staff members are employees who interact with the CRM system. Among their interactions are:

- **Logging in:** Employees can access the CRM system by entering their specific login and password information.
- **Viewing tasks given to employees:** Employees can view the assignments that supervisors have given them, including their specifics, priority, and deadline.
- **Updating the status of allocated work:** Employees can designate tasks as "in progress" or "complete" to indicate their progress.
- **Customer information access:** In order to effectively communicate and provide individualized services, staff members can access customer contact information contained in the CRM system.

Frontend

- **JavaScript:** The primary language for implementing the frontend logic and interactivity.
- **React:** A JavaScript library for building user interfaces. It allows for the development of reusable UI components and provides a smooth and efficient rendering experience.
- **HTML:** The standard markup language for creating the structure and content of web pages.
- **CSS:** The style sheet language used to define the presentation and layout of the CRM system's frontend.
- **Axios or Fetch API** is used for HTTP requests from the backend to fetch the data.

- **Redux:** A predictable state management library for JavaScript applications. Redux helps manage the application state and facilitates efficient data flow and updates across components.
- **Material UI:** A popular UI component library for React that provides pre-designed and customizable UI elements following the Material Design guidelines.

Backend

- **Python:** A versatile and widely used programming language known for its simplicity and readability. It will be used for implementing the backend logic and handling server-side operations.
- **Flask:** A lightweight web framework for Python that simplifies backend development. Flask allows for easy routing, request handling, and integration with different components.
- **MongoDB:** A NoSQL database that offers flexibility in data modeling and scalability. MongoDB will be used as the database for storing customer information, tasks, and product data.
- **PyMongo:** A Python library for interacting with MongoDB. It provides the necessary functionality to connect, query, and manipulate data in the MongoDB database.

Deployment

- **AWS (Amazon Web Services):** A cloud computing platform that offers a wide range of services for hosting, managing, and scaling applications. AWS will be used for deploying the CRM system, ensuring scalability, reliability, and easy management.
- **Docker:** A containerization platform that allows for packaging applications and their dependencies into lightweight, isolated containers. Docker can be used to containerize the frontend and backend components of the CRM system, ensuring portability and ease of deployment.

Sprint Structure, Backlog and Schedule

Weekly Schedule

Every Tuesday and Sunday by 10pm we do an asynchronous standup by sending notes through the chat specifying what we have done since the last standup, what we plan to do by next standup and any blockers.

Every Thursday at 6pm we have a face to face meeting during and after the tutorial to discuss and ask questions.

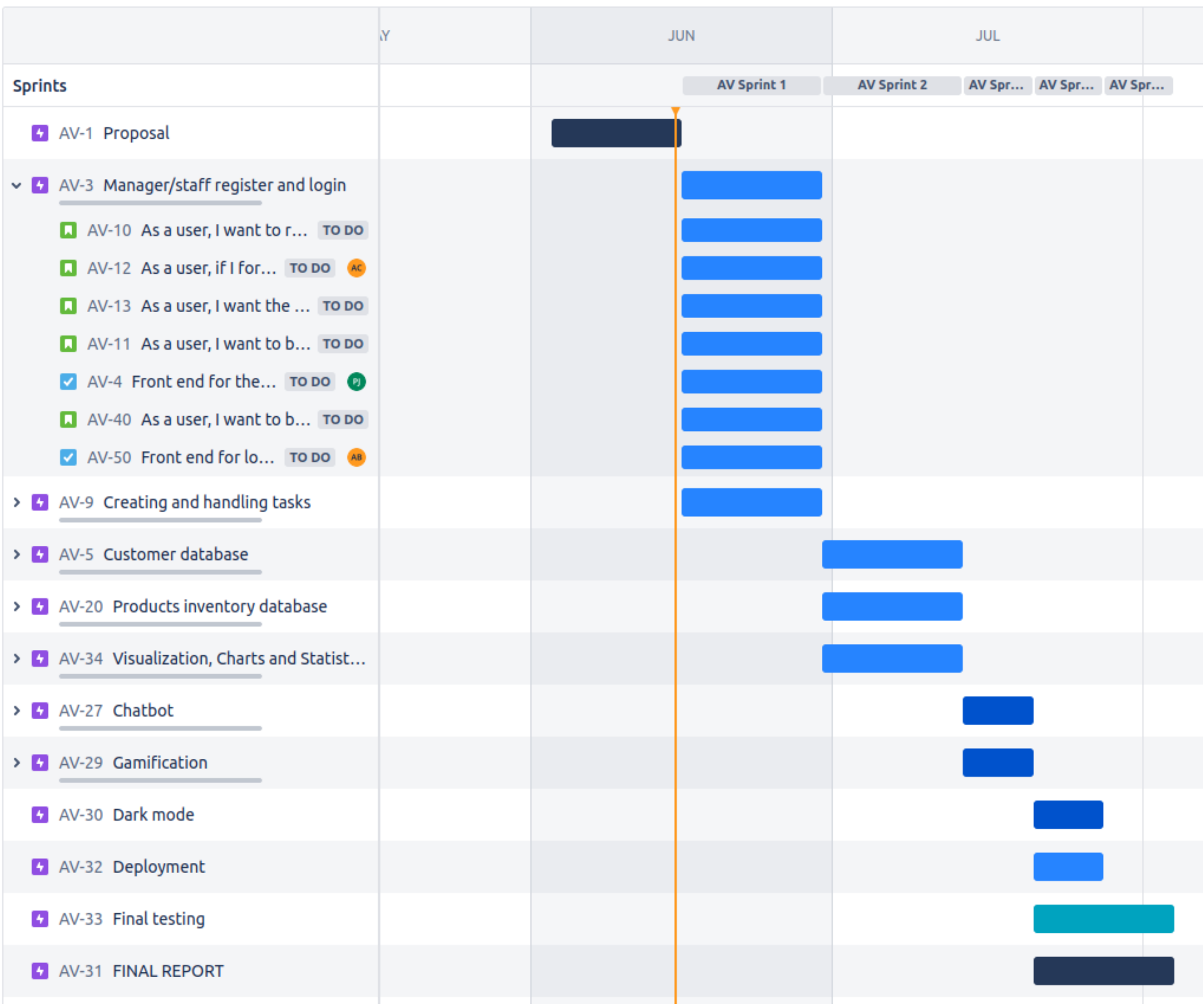
On top of the meetings mentioned above, we also plan to do pair programming once (or more) a week when needed to ensure that the front-end developers and back-end developers have great communication and coding practices.

Github and coding practices

We plan to have two main branches, the Main branch and the Develop branch.
The development branch is going to be updated throughout the sprint when a functionality has been fully tested and it’s ready to be added to Develop. Also before a branch is merged into Develop, it has to be reviewed by at least 2 other members.
The Main branch is only going to be updated at the end of each sprint and it is updated by merging the Develop branch into the Main branch.
Both Main and Develop must be able to pass the pipeline and have correct time at all times.

Sprint Structure and Backlog

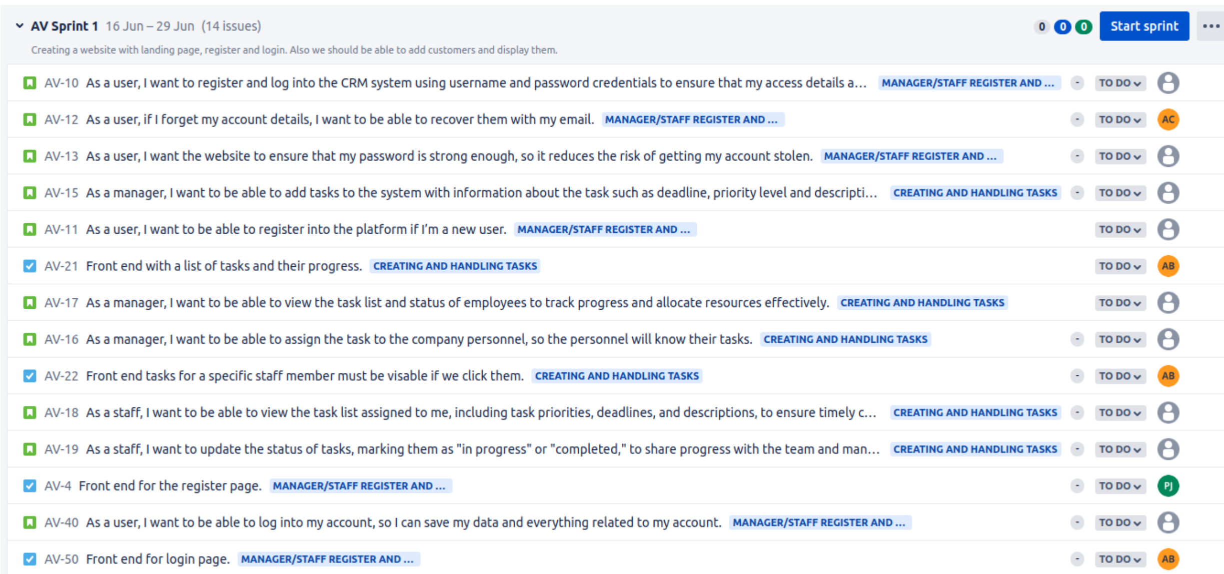
Our team will use a 5-sprint structure to finalize this project. The sprints 1 and 2 are going to be approximately 2 weeks long, and these two sprints aim to finish all the 8 basic functionalities of the system. Then the sprints 3 to 5 are going to be each 1 week long each and they aim to focus on the novel functionalities, final testing, deployment and documentation.
A sprint consists of multiple epics and an epic consists of closely related user stories and tasks.



After each sprint we plan to do a sprint retrospective where we are going to list all what we achieved, things we learned and what has to be improved for the next sprint.

Sprint 1 - June 16th to June 29th

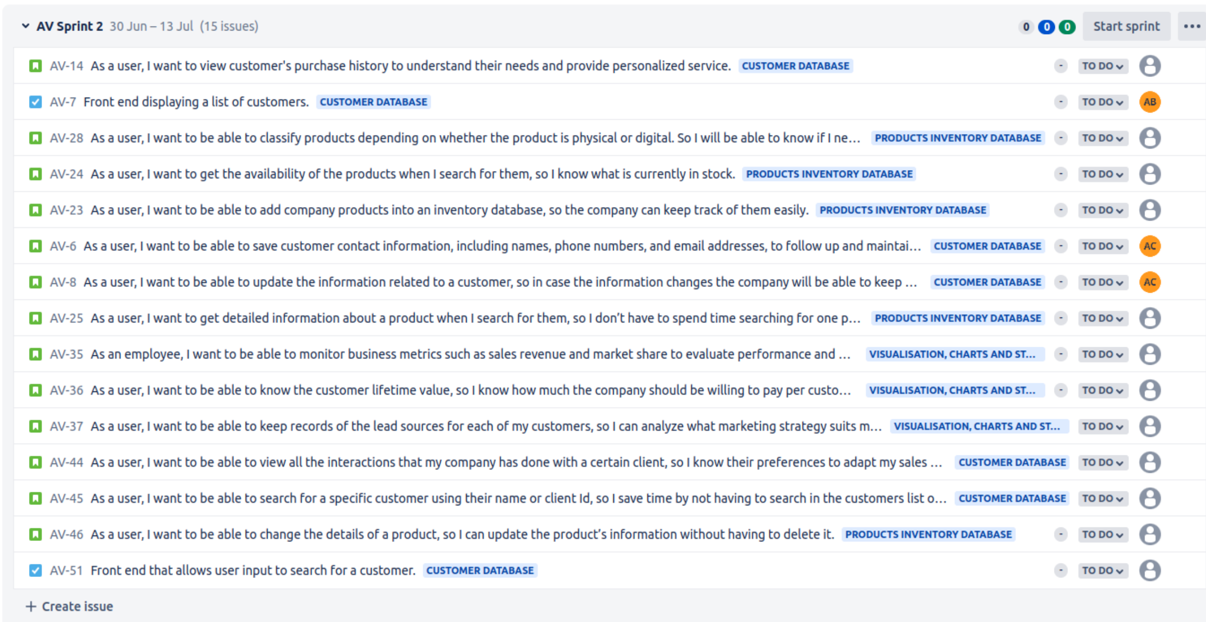
This 2-week long sprint will allow users to create and use their accounts. Also, managers will be able to create tasks, assign them to staff members and staff members will be able to easily see the tasks assigned to them. This sprint consists of the epics “Manager/Staff Register and Login” and “Creating and Handling Tasks” and “Visualization, Charts and Statistics”.



All of these functionalities will be presented during the first progressive demo in week 5.

Sprint 2 - June 30th to July 13th

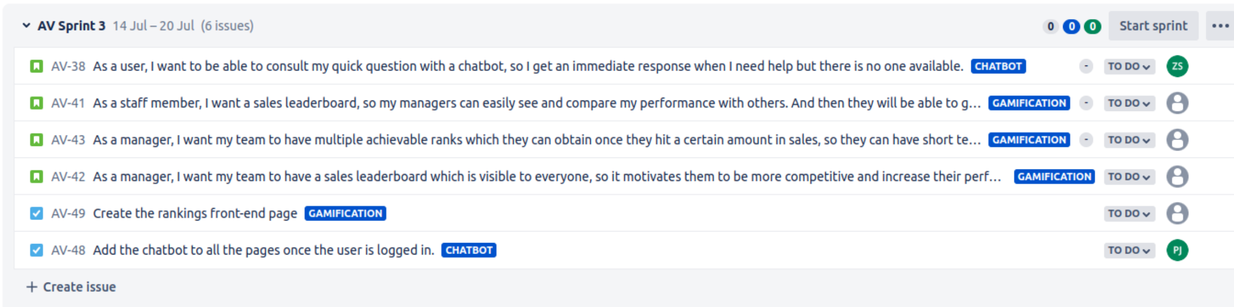
This sprint is also 2 weeks including the flexible week, and its goal is to finalize all the core functionalities of this project excluding the novel functionalities. This sprint consists of the epics “Customer Database”, “Products Inventory Database” and “Visualization, Charts and Statistics”.



All of these functionalities will be presented during the second progressive demo in week 8.

Sprint 3 - July 14th to July 20th

Sprint 3 is 1-week long and aims to finalize 2 of the planned novel functionalities. The sprint consists of delivering the “Gamification” and “Chatbot” functionalities.



All of these functionalities will be presented during the second progressive demo in week 8.

Sprint 4 - July 21th to July 27th

The fourth sprint will focus on one of our potential novel functionalities which will be a dark theme option for the website and also will focus on the deployment of the app on the internet. As soon as we finish this we will go through the front and back end looking for any possible bug and fix it. Once finished this, we will move on to finalize the final report.

Sprint 5 - July 28th to August 3th

In our final sprint we do not plan to add any more features to our website, instead we plan to polish the front end and the final report. As well as preparing for the final presentation.

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