

CSCC01 Deliverable 4

CodeShippers

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Contents

1	Product Backlog	3
1.1	Changes to Product Backlog	6
2	Release Plan	9
3	Sprint 3 Plan	10
3.1	Sprint 3 Backlog	10
3.2	Estimated Iteration Plan	12
3.3	Initial Taskboard and Burndown Chart	13
3.4	Final Taskboard and Burndown Chart	14
4	Sprint 4 Plan	15
4.1	Sprint 4 Backlog	15
4.2	Estimated Iteration Plan	19
4.3	Initial Taskboard and Burndown Chart	20
4.4	Final Taskboard and Burndown Chart	21
5	Software Architecture	22
5.1	Explanation of Components & Dependencies	23
6	Validation	27
6.1	Minutes from Meetings with Clients	27
6.2	Questions Prepared for Clients	27
6.3	Sample Demos	27
7	Retrospection	29
7.1	Progression from D3 to D4	29
7.2	Plan and Difficulties	29
7.3	Improvements for Next Sprint	30

1 Product Backlog

Customer: Ordering Process

- **[Done]** As Tom (a customer), I want to register for an account on the website with just my first name, last name, email, phone number, and password.
Priority: 1, Estimated Cost: 6
- As Tom (a customer), I want to be able to create an account on the website using Google sign-in.
Priority: 1, Estimated Cost: 6
- As Tom (a customer), I want to login to my account using either a registered email and password or a registered Google account.
Priority: 1, Estimated Cost: 6
- As Tom (a customer), I want to logout of my account on the website so that my information does not get compromised.
Priority: 1, Estimated Cost: 2
- **[Done]** As Tom (a customer), I want to view a list of restaurants which displays their name and logo.
Priority: 1, Estimated Cost: 4
- **[Done]** As Tom (a customer), I want to select a restaurant from a list of restaurants to view specific information regarding it, such as its contact information, location, menu, and prices, in the form of text and pictures.
Priority: 1, Estimated Cost: 5
- As Tom (a customer), I want to be able to select items from a restaurant's menu, specify their quantity, and have them placed in a virtual shopping cart for purchase.
Priority: 3, Estimated Cost: 6
- As Tom (a customer), I want to be able to remove specific items from my virtual shopping cart and cancel my order before payment by removing all items from the cart.
Priority: 3, Estimated Cost: 2
- As Tom (a customer), I want to place an order by checking out the items in my shopping cart, providing my payment details, whether I am ordering takeout or delivery, and, if I am ordering delivery, my delivery address and a short delivery note for the courier.
Priority: 3, Estimated Cost: 6
- As Tom (a customer), I want the online transactions related to my order to be handled securely such that my payment details and personal information are kept safe.
Priority: 4, Estimated Cost: 10

- As Tom (a customer), I want to be given the option to have my payment details and delivery address saved to the account that I am logged into after providing these details in the first delivery order that I place, so that this information can be automatically used for future orders on the account.

Priority: 4, Estimated Cost: 10

- As Tom (a customer), I want to give ratings to restaurants that I have ordered from, on a scale of 1 to 5.

Priority: 4, Estimated Cost: 6

- As Tom (a customer), I want to receive a virtual receipt of my order by email, which lists the items ordered and their individual prices, the total price, and any discounts applied.

Priority: 5, Estimated Cost: 10

- As Tom (a customer), I want to keep track of my delivery, so that I can plan my schedule accordingly.

Priority: 6, Estimated Cost: 20

Customer: Website Navigation and Searching

- As Tom (a customer), I want to have a search engine to search for restaurants that are nearby, by providing an address and obtaining a list of restaurants that are deemed nearby, so that I do not have to commute too far for takeout orders.

Priority: 2, Estimated Cost: 12

- As Tom (a customer), I want to have a search engine to search for food options by providing a type of cuisine and obtaining a list of restaurants which sell that type of cuisine, so that I can conveniently select food based on my current tastes.

Priority: 2, Estimated Cost: 6

- As Tom (a customer), I want to have a search engine to search for food by price by providing a specific price range and obtaining a list of restaurants whose average food prices fall within that range, so that I can easily find food based on my current budget.

Priority: 3, Estimated Cost: 6

- As Tom (a customer), I want to sort restaurants by customer ratings, so that I can easily determine which restaurants provide the most widely recommended services.

Priority: 4, Estimated Cost: 6

- As Tom (a customer), I want to select certain restaurants as my favourites and have them put into a personal list which I can view.

Priority: 4, Estimated Cost: 6

Restaurant Owner: Uploading Information

- **[Done]** As Jane (a restaurant owner), I want to register for an account on the website with just my first name, last name, email, phone number, password, restaurant name, restaurant phone number, restaurant address, and the type of cuisine my restaurant sells.

Priority: 1, Estimated Cost: 10

- As Jane (a restaurant owner), I want to upload basic information about my restaurant such as a name, an address, a telephone number, and the type of food we serve to a restaurant profile for customers to see.

Priority: 1, Estimated Cost: 6

- As Jane (a restaurant owner), I want to upload text, pictures, and videos to my restaurant profile that showcase my restaurant's food and menu.

Priority: 1, Estimated Cost: 6

- As Jane (a restaurant owner), I want to occasionally offer promotions of my own design, such as flat-rate or percentage discounts, the details of which I can upload to my restaurant profile for customers to see.

Priority: 6, Estimated Cost: 6

Restaurant Owner: Community Engagement

- As Jane (a restaurant owner), I want to share stories regarding my restaurant by uploading text, pictures, and videos to a section on my restaurant profile about my culture, recipe origins, and cooking tips for customers to see.

Priority: 3, Estimated Cost: 8

Restaurant Owner: Customer Service

- As Jane (a restaurant owner), I want to collect data on the customers that order from my restaurant, such as their customer ID, their location, what they ordered, when they placed the order, and any discount codes they used.

Priority: 5, Estimated Cost: 10

- As Jane (a restaurant owner), I want to view data that I have collected on customer orders, such as total number of customers ordering from my restaurant, most frequently ordered menu items, and total number of customers who ordered using a discount promotion.

Priority: 5, Estimated Cost: 10

General: Community Engagement

- **[Epic]** As a registered user of the website, I want to make posts in which I can upload text, pictures, and videos to a "Community" section on the website which I can then view later.

Priority: 6, Estimated Cost: 10

1.1 Changes to Product Backlog

- **Modified User Story:** “As Tom (a customer), I want to register for an account on the website...” → “As Tom (a customer), I want to register for an account on the website *with just my first name, last name, email, phone number, and password.*”
 - This is to add more information to what the user story requires in order to make it more estimable and testable.
- **Modified User Story:** “As Tom (a customer), I want to be able to create an account on the website using Google sign-in *or Facebook sign-in*” → “As Tom (a customer), I want to be able to create an account on the website using Google sign-in.”
 - We removed the Facebook sign-in requirement because our clients specified that it was unnecessary.
- **Modified User Story:** “As Tom (a customer), I want to login to my account on the website” → “As Tom (a customer), I want to login to my account *using either a registered email and password or a registered Google account.*”
 - Added what information is specifically required to login to make the user story more estimable and testable. Also included the requirement for a customer to login using a registered Google account.
- **Modified User Story:** “As Tom (a customer), I want to select items from a restaurant’s menu and have them placed in a virtual shopping cart for purchase” → “As Tom (a customer), I want to be able to select items from a restaurant’s menu, *specify their quantity*, and have them placed in a virtual shopping cart for purchase.”
 - This is to incorporate the requirement that customers are able to specify the quantity of the items they order to the user story.
- **New User Story:** As Tom (a customer), I want to be able to remove specific items from my virtual shopping cart and cancel my order before payment by removing all items from the cart.

Priority: 3, Estimated Cost: 2

 - This is to address the requirement that customers are able to remove items from their shopping cart.
- **New User Story:** As Tom (a customer), I want to place an order by checking out the items in my shopping cart, providing my payment details, whether I am ordering takeout or delivery, and, if I am ordering delivery, my delivery address and a short delivery note for the courier.

Priority: 3, Estimated Cost: 6

 - This is to address the requirement that customers are able to check out their shopping cart to place an order.
- **Deleted User Story:** As Tom (a customer), I want to be able to choose between delivery and takeout options for my order.

- The requirements of this user story are addressed in the previous user story, making this user story obsolete.
- **Deleted User Story:** As Jane (a restaurant owner), I want to offer an online ordering service to customers such that when customers select items from my restaurant’s menu and places an order through the website, a list of the items ordered, their prices, the total cost of the order, and a note indicating whether it was a takeout order or delivery order is sent to me.
 - Similarly to the previous user story, the requirements of this user story are addressed by the newly added user story: “As Tom (a customer), I want to place an order by checking out the items in my shopping cart...”
- **New User Story:** As Tom (a customer), I want the online transactions related to my order to be handled securely such that my payment details and personal information are kept safe.

Priority: 4, Estimated Cost: 10

 - This is to address the requirement that online transactions are handled securely. We decided this requirement was large enough to be solely addressed by a specific user story.
- **New User Story:** As Tom (a customer), I want to be given the option to have my payment details and delivery address saved to the account that I am logged into after providing these details in the first delivery order that I place, so that this information can be automatically used for future orders on the account.

Priority: 4, Estimated Cost: 10

 - After discussing with our clients, we learned that the customer should not need to provide a delivery address upon registration. Instead, a customer’s payment details and delivery address should only be saved after the customer provides these details in an order they place.
- **Modified User Story:** “As Jane (a restaurant owner), I want to register for an account on the website so that I am able to independently access and edit my restaurant profile, including my menu and information” → “As Jane (a restaurant owner), I want to register for an account on the website *with just my first name, last name, email, phone number, password, restaurant name, restaurant phone number, restaurant address, and the type of cuisine my restaurant sells.*”
 - This is to add more information to what the user story requires in order to make it more estimable and testable.
- **Deleted User Story:** As Tom (a customer), I want to read about information regarding a restaurant through restaurant profiles and posts by the owner.
 - The requirements covered by this user story are already covered by other user stories, for example: “As Jane (a restaurant owner), I want to upload text, pictures, and videos to my restaurant profile...” Therefore, this user story was redundant.
- **Broke Down Epic into User Stories:** Broke down the epic: “As Jane (a restaurant owner), I want to view analytics on the customers that order from my restaurant, such as their location, what they ordered, and other data, so that I can improve my business model” into the following two user stories:

- As Jane (a restaurant owner), I want to collect data on the customers that order from my restaurant, such as their customer ID, their location, what they ordered, when they placed the order, and any discount codes they used.

Priority: 5, Estimated Cost: 10

- As Jane (a restaurant owner), I want to view data that I have collected on customer orders, such as total number of customers ordering from my restaurant, most frequently ordered menu items, and total number of customers who ordered using a discount promotion.

Priority: 5, Estimated Cost: 10

After discussing with our clients, we learned that we are required to collect data on as much of the customer ordering process as possible and use this data to interpret information that may be useful for analysis. However, we do not need to provide any further analysis of the data such as graphs or projections.

- **Modified User Story:** “As Jane (a restaurant owner), I want to display a section on my restaurant profile with information about special community events, recommended restaurants, and social media links...” → “As a registered user of the website, I want to make posts in which I can upload text, pictures, and videos to a ‘Community’ section on the website which I can then view later”, and set this as an epic.
 - After discussing with our clients, we learned that this community engagement requirement should instead be addressed through the creation of a “Community” section on the website that both customers and restaurant owners are able to see and make posts on. The specific details of this “Community” section are still being decided by our clients, which is why this is left as an epic for now.

2 Release Plan

The length of our sprints will be one week long. Since we do not have a large amount of time to develop our software, we decided to go with a fairly short sprint length. This is so that we can more accurately measure our progress by making sure that we are up to date each week rather than, for example, every two weeks.

One week sprints also allow us to easily correspond each sprint with a priority in our user stories. Since our priorities range from 1 to 6 and we have roughly 6 weeks to complete our project, we can assign priority 1 user stories to sprint 1, priority 2 user stories to sprint 2, and so on.

3 Sprint 3 Plan

3.1 Sprint 3 Backlog

Note: Items in the Sprint Backlog are organized according to the following:

- User Story
 - Acceptance Criteria
-

Customer: Ordering Process

- **ID 1:** As Tom (a customer), I want to be able to create an account on the website using Google sign-in so that I can easily order from the website without having to manually create an account.

Priority: 1, Estimated Cost: 6

- Given Tom wants to create an account on the website using Google sign-in, when he clicks on the “Google Sign-Up” button, then he should see a form which asks him to provide a Google account email and password.
- Given Tom provides a valid Google account to the Google sign-in form, when he clicks on the “Submit” button, then his account information will be stored in the database.
- Given Tom doesn’t provide a valid Google account to the Google sign-in form, when he clicks on the “Submit” button, then he will be notified that the Google account provided does not exist.

- **ID 2:** As Tom (a customer), I want to login to my account using either a registered email and password or a registered Google account.

Priority: 1, Estimated Cost: 6

- Given Tom has registered for an account, when he clicks the “Login” button in the navigation bar of the website, then he should see a form which asks for his email and password.
- Given Tom has registered for a Google account, when he clicks the “Google Login” button in the navigation bar of the website, then he should see a form which asks for his Google email.
- Given Tom has filled out all fields of the “Login” or “Google Login” form, when he clicks the “Submit” button, then he should be logged into his account.
- Given Tom has not filled out all fields of the “Login” or “Google Login” form, when he clicks the “Submit” button, then he will be notified that not all required fields were filled in.

- **ID 3:** As Tom (a customer), I want to logout of my account on the website so that my information does not get compromised.

Priority: 1, Estimated Cost: 2

- Given Tom is logged into his account, when he clicks the “Logout” button, then he should be logged out of his account.

Restaurant Owner: Uploading Information

- **ID 4:** As Jane (a restaurant owner), I want to upload basic information about my restaurant such as a name, an address, a telephone number, and the type of food we serve to a restaurant profile for customers to see.

Priority: 1, Estimated Cost: 6

- Given Jane has logged in to her account and has gone to her restaurant profile section and wants to upload basic information about her restaurant, when Jane clicks on the “Edit Information” button, then she will see a form where she can fill out her restaurant’s name, address, telephone number, and type of cuisine.
- Given Jane has filled out all required fields of the “Edit Information” form, when Jane clicks on the “Submit” button, then her restaurant information will be updated in the website’s database, and her restaurant profile will be updated to show the new restaurant information.

- **ID 5:** As Jane (a restaurant owner), I want to upload text, pictures, and videos to my restaurant profile that showcase my restaurant’s food and menu.

Priority: 1, Estimated Cost: 6

- Given Jane has relevant text and media to share about her menu items, when Jane clicks on the “Add Menu Item” button, then she will see a form where she can upload text, images, and videos, which will prompt her to find the media items using a File Explorer interface.
- Given Jane has filled out all required fields of the “Add Menu Item” form, when Jane clicks on the “Submit” button, then her restaurant information will be updated in the website’s database, and her restaurant’s menu profile will be updated to show the new restaurant’s menu information.
- Given Jane has not filled out all required fields of the “Add Menu Item” form, when Jane clicks on the “Submit” button, then she will receive an error, identifying that she has not filled out all of the relevant fields.

Miscellaneous Tasks

- **ID 6:** Store customer and restaurant account information to database.

Priority: 1, Estimated Cost: 8

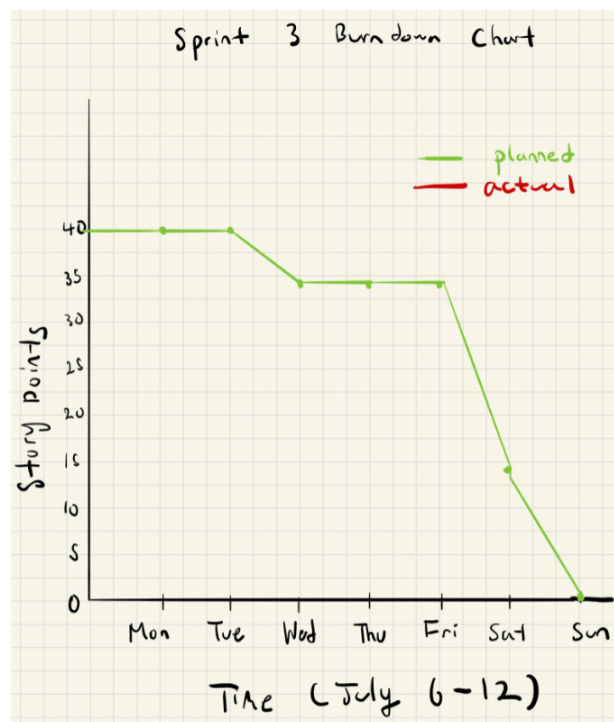
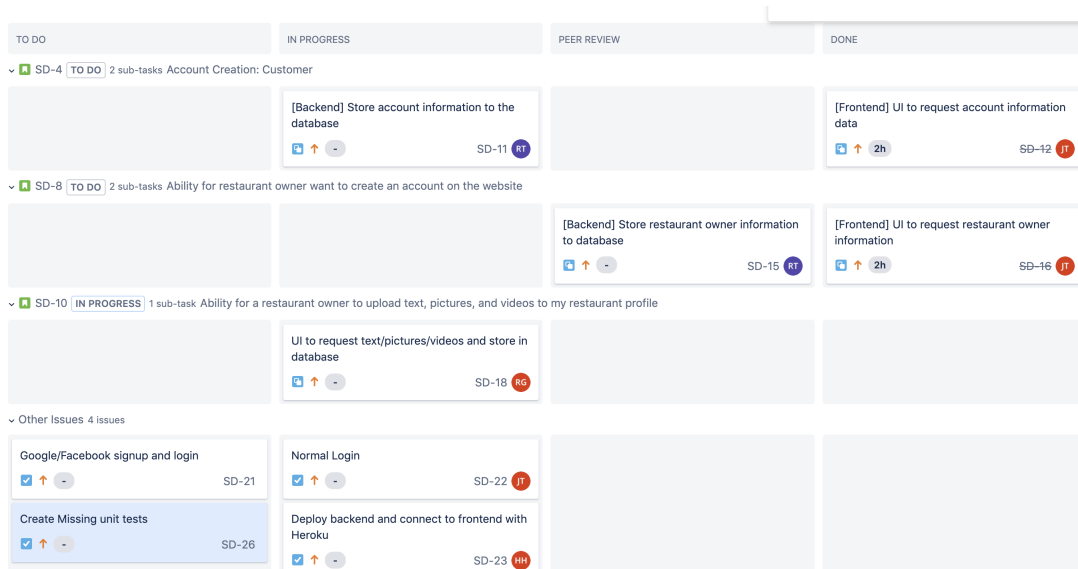
- **ID 7:** Deploy backend and connect to frontend with Heroku.

Priority: 2, Estimated Cost: 6

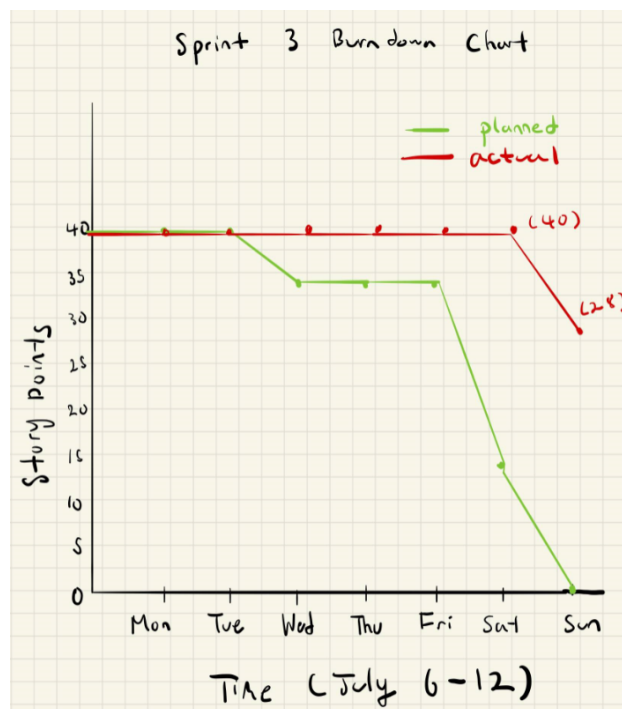
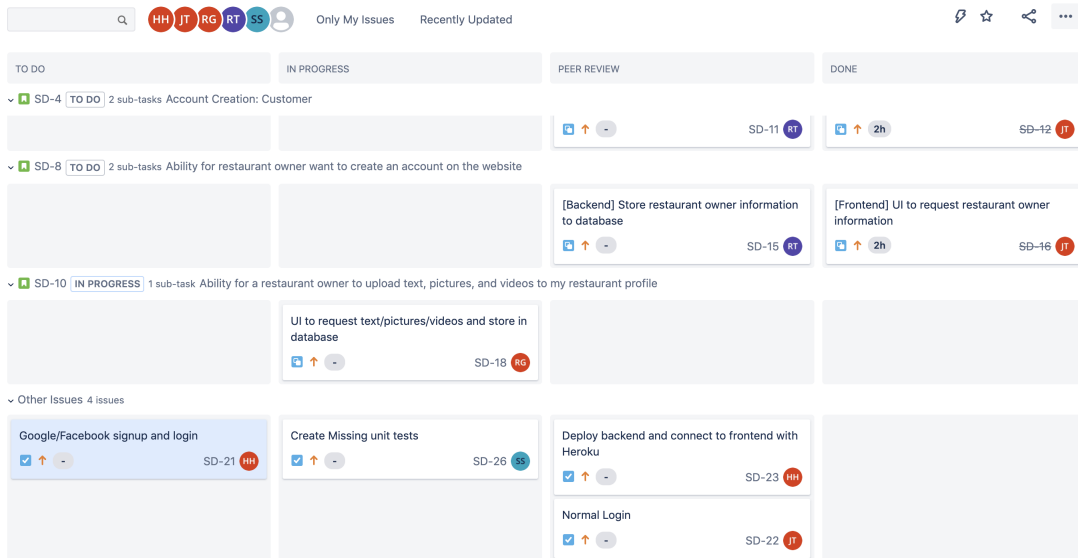
3.2 Estimated Iteration Plan

Task ID	Cost	Priority	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Assign
1	6	1	2	2	2	0	0	0	0	Justin
2	6	1	0	0	0	2	2	2	0	Justin
3	2	1	0	0	0	0	0	0	2	Justin
4	6	1	0	0	0	2	2	2	0	Sayon
5	6	1	0	0	0	0	2	2	2	Richard
6	8	1	0	0	0	4	2	2	0	Riyasat
7	6	2	0	0	0	0	2	2	2	Henry
Total	40	N/A	2	2	2	8	10	10	6	N/A
Work Left	40	N/A	40	40	34	34	34	14	0	N/A

3.3 Initial Taskboard and Burndown Chart



3.4 Final Taskboard and Burndown Chart



4 Sprint 4 Plan

4.1 Sprint 4 Backlog

Note: Items in the Sprint Backlog are organized according to the following:

- User Story
 - Acceptance Criteria
-

Customer: Ordering Process

- **ID 1:** As Tom (a customer), I want to be able to create an account on the website using Google sign-in so that I can easily order from the website without having to manually create an account.

Priority: 1, Estimated Cost: 6

- Given Tom wants to create an account on the website using Google sign-in, when he clicks on the “Google Sign-Up” button, then he should see a form which asks him to provide a Google account email and password.
- Given Tom provides a valid Google account to the Google sign-in form, when he clicks on the “Submit” button, then his account information will be stored in the database.
- Given Tom doesn’t provide a valid Google account to the Google sign-in form, when he clicks on the “Submit” button, then he will be notified that the Google account provided does not exist.

- **ID 2:** As Tom (a customer), I want to login to my account using either a registered email and password or a registered Google account.

Priority: 1, Estimated Cost: 6

- Given Tom has registered for an account, when he clicks the “Login” button in the navigation bar of the website, then he should see a form which asks for his email and password.
- Given Tom has registered for a Google account, when he clicks the “Google Login” button in the navigation bar of the website, then he should see a form which asks for his Google email.
- Given Tom has filled out all fields of the “Login” or “Google Login” form, when he clicks the “Submit” button, then he should be logged into his account.
- Given Tom has not filled out all fields of the “Login” or “Google Login” form, when he clicks the “Submit” button, then he will be notified that not all required fields were filled in.

- **ID 3:** As Tom (a customer), I want to logout of my account on the website so that my information does not get compromised.

Priority: 1, Estimated Cost: 2

- Given Tom is logged into his account, when he clicks the “Logout” button, then he should be logged out of his account.

- **ID 4:** As Tom (a customer), I want to be able to select items from a restaurant’s menu, specify their quantity, and have them placed in a virtual shopping cart for purchase.

Priority: 3, Estimated Cost: 6

- Given Tom wants to add an item to his shopping cart, when he clicks on an item from a restaurant’s menu, then he should see a dropdown list which allows him to select a quantity for the item.
- Given Tom has clicked on an item from a restaurant’s menu, when he clicks the “Add to Order” button, then the item should get placed in his shopping cart.
- Given Tom has placed items into his shopping cart, when he clicks the shopping cart icon, then he should see a list of the items he ordered including their quantities and prices, and the total price of the order.
- Given Tom has items from a particular restaurant already in his shopping cart, when he attempts to add an item from a different restaurant to his shopping cart, then he will see a pop-up telling him that he can only order from one restaurant at a time.

- **ID 5:** As Tom (a customer), I want to be able to remove specific items from my virtual shopping cart and cancel my order before payment by removing all items from the cart.

Priority: 3, Estimated Cost: 2

- Given Tom wants to remove an item from his shopping cart, when he clicks the shopping cart icon, then he should see a dropdown list next to each item in his shopping cart which allows him to decrease the quantity or entirely remove items from his shopping cart.
- Given Tom is viewing his shopping cart, when he removes all items from the shopping cart, then he should see the message “Your shopping cart is empty”.

- **ID 6:** As Tom (a customer), I want to place an order by checking out the items in my shopping cart, providing my payment details, whether I am ordering takeout or delivery, and, if I am ordering delivery, my delivery address and a short delivery note for the courier.

Priority: 3, Estimated Cost: 6

- Given Tom wants to check out his shopping cart, when he clicks the shopping cart icon, then he should see a form requesting his payment details, whether he wants delivery or takeout, delivery information (if he specified delivery), and a “Place Order” button that places his order.
- Given Tom has not filled out all required fields of the checkout form, when he clicks the “Place Order” button, then he will receive an error, identifying that she has not filled out all of the required fields.

- Given Tom has filled out all required fields of the checkout form, when he clicks the “Place Order” button to place his order, then details of his order such as items ordered, quantity of each item, price of each item, total price, whether the order was takeout or delivery, delivery address, and delivery note are sent to the restaurant.

Customer: Website Navigation and Searching

- **ID 7:** As Tom (a customer), I want to have a search engine to search for restaurants that are nearby, by providing an address and obtaining a list of restaurants that are deemed nearby, so that I do not have to commute too far for takeout orders.

Priority: 2, Estimated Cost: 12

- Given Tom wants to search for restaurants that are nearby, when he clicks the “Search by Location” search bar, then he should be able to type his address into the search bar.
- Given Tom has entered an address in the search bar, when he clicks the “Find Nearby Restaurants” button, then he should see a list of restaurants that are within 100 km of the address.
- Given Tom has entered an address in the search bar that is not within 100 km of any registered restaurants on the website, when he clicks the “Find Nearby Restaurants” button, then he should be notified that no restaurants are nearby.

- **ID 8:** As Tom (a customer), I want to have a search engine to search for food options by providing a type of cuisine and obtaining a list of restaurants which sell that type of cuisine, so that I can conveniently select food based on my current tastes.

Priority: 2, Estimated Cost: 6

- Given Tom wants to search for restaurants by cuisine type, when he clicks the “Search by Cuisine” button, then he should see a dropdown list of cuisine types.
- Given Tom has clicked on the “Search by Cuisine” button, when he clicks on a cuisine type from the dropdown list of cuisine types, then he should see a list of restaurants which offer that type of cuisine.

Restaurant Owner: Uploading Information

- **ID 9:** As Jane (a restaurant owner), I want to upload text, pictures, and videos to my restaurant profile that showcase my restaurant’s food and menu.

Priority: 1, Estimated Cost: 6

- Given Jane has relevant text and media to share about her menu items, when Jane clicks on the “Add Menu Item” button, then she will see a form where she can upload text, images, and videos, which will prompt her to find the media items using a File Explorer interface.
- Given Jane has filled out all required fields of the “Add Menu Item” form, when Jane clicks on the “Submit” button, then her restaurant information will be updated in the website’s database, and her restaurant’s menu profile will be updated to show the new restaurant’s menu information.

- Given Jane has not filled out all required fields of the “Add Menu Item” form, when Jane clicks on the “Submit” button, then she will receive an error, identifying that she has not filled out all of the relevant fields.

Restaurant Owner: Community Engagement

- **ID 10:** As Jane (a restaurant owner), I want to share stories regarding my restaurant by uploading text, pictures, and videos to a section on my restaurant profile about my culture, recipe origins, and cooking tips for customers to see.

Priority: 3, Estimated Cost: 8

- Given Jane wants to share information about herself and her restaurant, when she clicks on the “Manage Restaurant Homepage” button, then she should see a form which asks for a her name, a picture of herself, a description of herself, and a description of her restaurant.
- Given Jane wants to share additional information to her restaurant profile, when she clicks on the “Add Text” button, then she should see a form where she can type out text to upload.
- Given Jane wants to add a video to her restaurant profile, when she clicks on the “Add Video” button, then she will be prompted to find a video using a File Explorer interface.
- Given Jane wants to update her information, when she clicks on “Manage Restaurant Homepage” button, then she should see a form containing previously inputted information that she is able to edit.
- Given Jane has uploaded information to her restaurant profile’s homepage, when she navigates to her restaurant on the website, then she should see this information.

Miscellaneous Tasks

- **ID 11:** Connect frontend UI to backend for restaurant list and page.

Priority: 2, Estimated Cost: 8

- **ID 12:** Update the account creation process for Google login.

Priority: 2, Estimated Cost: 8

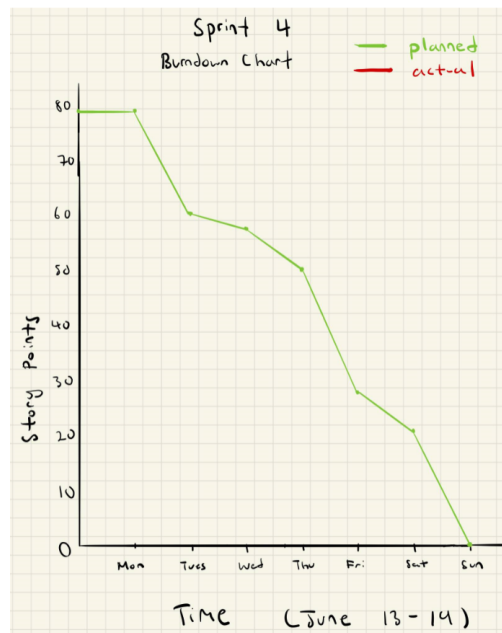
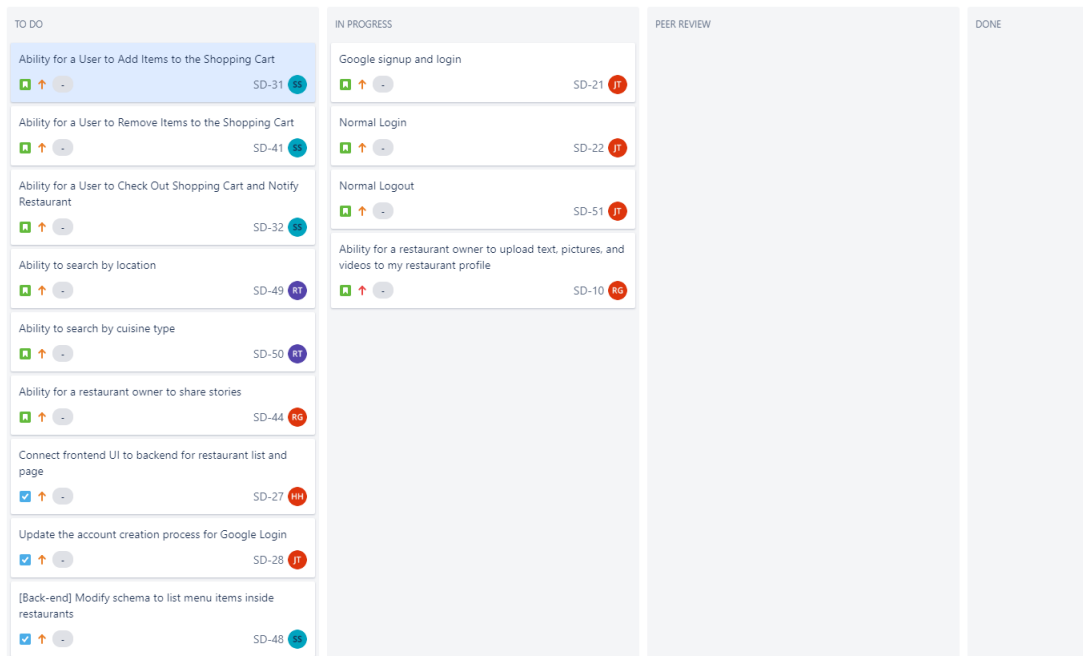
- **ID 13:** Modify database schema to list menu items inside restaurants collection.

Priority: 2, Estimated Cost: 2

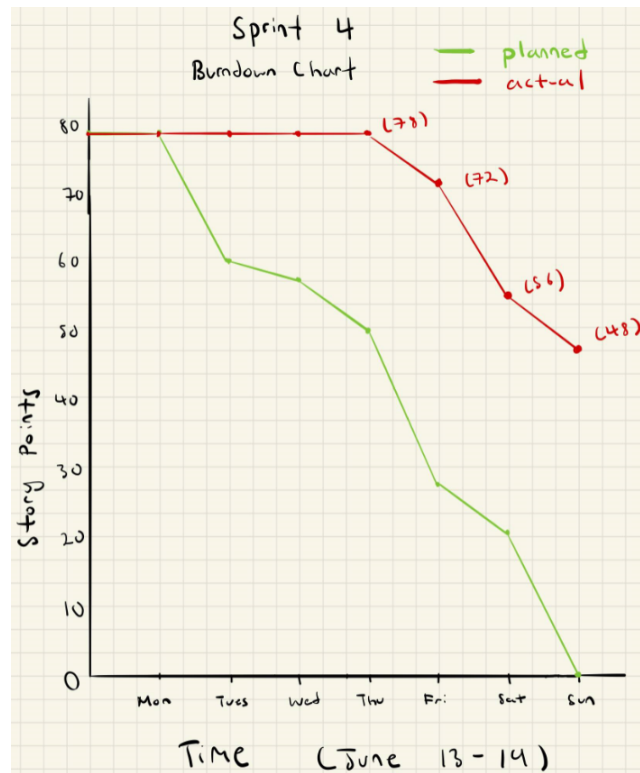
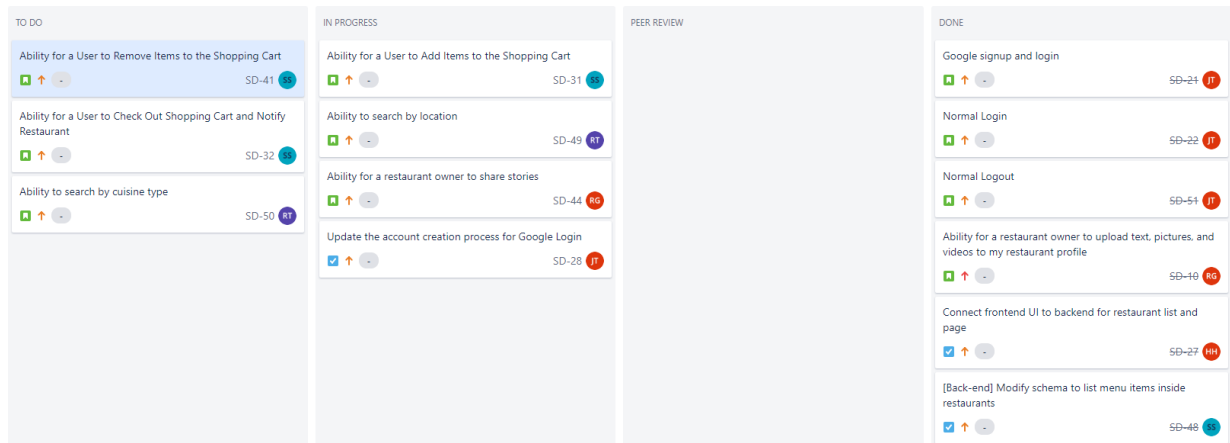
4.2 Estimated Iteration Plan

Task ID	Cost	Priority	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Assign
9	6	1	3	3	0	0	0	0	0	Richard
1	6	1	3	3	0	0	0	0	0	Justin
2	6	1	3	3	0	0	0	0	0	Justin
3	2	1	0	0	2	0	0	0	0	Justin
11	8	2	0	0	3	3	2	0	0	Henry
12	8	2	0	0	0	0	2	2	4	Justin
13	2	2	0	0	2	0	0	0	0	Sayon
7	12	2	0	3	3	3	3	0	0	Riyasat
8	6	2	0	0	0	0	3	3	0	Riyasat
4	6	3	0	0	3	3	0	0	0	Sayon
5	2	3	0	0	0	0	2	0	0	Sayon
6	6	3	0	0	0	0	0	3	3	Sayon
10	8	3	0	0	0	0	3	3	2	Richard
Total	78	N/A	9	12	13	9	15	11	9	N/A
Work Left	78	N/A	78	60	56	50	28	22	0	N/A

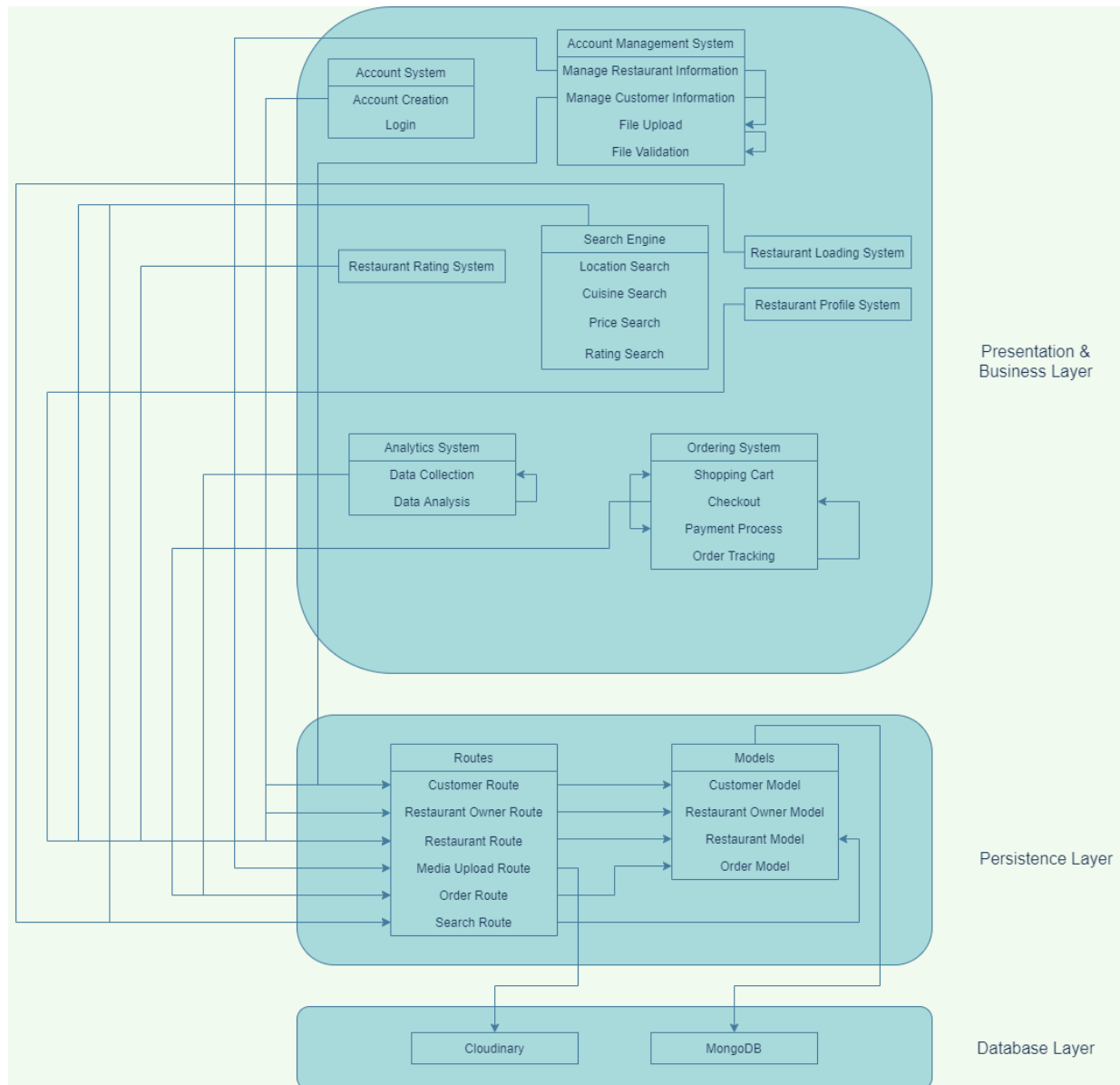
4.3 Initial Taskboard and Burndown Chart



4.4 Final Taskboard and Burndown Chart



5 Software Architecture



5.1 Explanation of Components & Dependencies

Note: Items in this section are organized according to the following:

System Component:

- *Subcomponent:* Description of subcomponent.
 - Dependency of subcomponent.

Not all system components may have subcomponents and not all subcomponents may have dependencies.

Account System:

- *Account Creation:* Allows customers and restaurants to create an account.
 - Uses Customer Route, Restaurant Owner Route, and Restaurant Route to save information to and fetch information from the database regarding customer data, restaurant owner data, and restaurant data, respectively.
- *Login:* Allows customers and restaurants to login to an account.

Account Management System:

- *Manage Restaurant Information:* Allows restaurant owners to upload information such as their restaurant name, address, type of cuisine, and menu items. Restaurant owners can later edit or delete information that they had uploaded through their account. Information uploaded by restaurant owners is displayed on the website.
 - Uses File Upload to upload images and videos related to the restaurant.
 - Uses Restaurant Route to save information to and fetch information from the database regarding restaurant information.
 - Uses Media Upload Route to save information to and fetch information from the database regarding media items, such as images and videos.
- *Manage Customer Information:* Allows customers to upload information such as their name, email, and delivery address.
 - Uses File Upload to upload images and videos related to the customer.
 - Uses Customer Route too save information to and fetch information from the database regarding customer data.
- *File Upload:* Allows for restaurants and customers to upload files to the website, such as images and videos.

- Uses File Validation to verify that provided files are image or video files.
- *File Validation*: Validates that the files have a valid file type.

Restaurant Rating System: Allows restaurant owners to receive ratings from customers who have used their services, and allows customers to see the ratings received by that restaurant.

- Uses Restaurant Route to save information to and fetch information from the database regarding restaurant ratings.

Search Engine:

- *Location Search*: Allows customers to filter the list of restaurants by location. Given an address, computes a list of nearby restaurants.
- *Cuisine Search*: Allows customers to filter the list of restaurants by cuisine type. Given a predefined cuisine type, computes a list of restaurants which sell that type of cuisine.
- *Price Search*: Allows customers to filter the list of restaurants by price. Given a predefined price range, computes a list of restaurants whose average menu item prices fall within that range.
- *Rating Search*: Allows customers to sort the list of restaurants by rating in either descending or ascending order.
- All subcomponents of the Search Engine use the Restaurant Route to fetch information from the database regarding restaurant data such as their location, what type of cuisine they sell, their average menu item prices, and average rating.
- All subcomponents of the Search Engine use the Search route to provide an appropriate route for the search.

Restaurant Loading System: Allows customers to view a list of restaurants registered on the website according to their preference.

- Uses Search Route to determine if a search filter is applied and display a list of restaurants depending on the search filter.

Restaurant Profile System: Allows customers to click on a restaurant in the list to view specific information about it such as its address, contact details, and menu.

- Uses Restaurant Route to fetch information about a specified restaurant from the database in order to display it.

Ordering System: Allows customers to order from restaurants online. Customers are able to choose between delivery and takeout options, select items from a restaurant's menu to be placed in a virtual shopping cart for purchase, and send information about the order (such as items ordered and total price) to the restaurant to notify them of the order.

- *Shopping Cart*: Allows customers to select items from a restaurant's menu and have them placed in a virtual shopping cart for purchase.
- *Checkout*: Allows customers to checkout their shopping cart, place an order online, and pay for their order.
 - Uses Shopping Cart to fetch information about menu items that are placed in the shopping cart.
 - Uses Payment Process to validate that the given payment information for the order is legitimate, and that the online transaction is secure.
 - Uses Order Route to save information about the order to the database.
- *Payment Process*: Handles the verification of payment details, such as checking that the given credit card information is valid. Also handles the security of the online transaction, ensuring that the customer's payment details are safe.
- *Order Tracking*: Tracks the delivery of a placed delivery order.
 - Uses Checkout to fetch information about the order.

Analytics System:

- *Data Collection*: Collects data regarding customer orders, such as what they ordered, where they ordered from, and discount codes used.
 - Uses Order Route to fetch information about an order.
- *Data Analysis*: Analyzes collected data regarding customer orders, such as finding the total number of customers ordering from a particular restaurant, or finding most frequently ordered menu items.
 - Uses Data Collection to fetch relevant data on which computations and analyses can be made.

Routes:

- *Customer Route*: Handles the routing of HTTP requests regarding customer data.
 - Uses Customer Model to query the database about customer data.
- *Restaurant Owner Route*: Handles the routing of HTTP requests regarding restaurant owner data.
 - Uses Restaurant Owner Model to query the database about restaurant owner data.
- *Restaurant Route*: Handles the routing of HTTP requests regarding restaurant data.
 - Uses Restaurant Model to query the database about restaurant data.
- *Media Upload Route*: Handles the routing of HTTP requests regarding media data, such as images and video files.

- Uses Cloudinary to upload and store files, such as images and videos.
- *Order Route*: Handles the routing of HTTP requests regarding customer order data.
 - Uses Order Model to query the database about customer order data.
- *Search Route*: Handles the routing of HTTP requests regarding restaurant searches.
 - Uses Restaurant Model to query the database about restaurant data and select restaurants which satisfy a given search.

Models:

- *Customer Model*: Models customer data from the database as a usable object.
- *Restaurant Owner Model*: Models restaurant owner data from the database as a usable object.
- *Restaurant Model*: Models restaurant data from the database as a usable object.
- *Order Model*: Models customer order data from the database as a usable object.
- All models use MongoDB to map objects to a collection of data in the MongoDB database.

MongoDB: Database used to store information regarding customers, restaurant owners, restaurants, and customer orders.

Cloudinary: File storage used to store image and video files uploaded by customers or restaurant owners.

6 Validation

6.1 Minutes from Meetings with Clients

Meeting 1 (Friday, July 10): 32 minutes

- <https://web.microsoftstream.com/video/90e2cd6a-1cca-4070-a359-7024a3a65cbc>

Meeting 2 (Friday, July 17): 20 minutes

- <https://drive.google.com/file/d/1VkBOuNGXMWK2ieYP14wdCbSR0g8EnIdA/view>

6.2 Questions Prepared for Clients

Meeting 1:

- Should we include Google sign-in and/or Facebook sign-in?
- Should the customer be asked to provide their delivery address upon registration?
- What data should be collected and what kinds of analysis on the data should be performed?

Meeting 2:

- Should we include both Google sign-up and manual registration, or should we include only Google sign-up?
- Should the “Manage Restaurant Information” section be split into multiple tabs? For example, one tab for general restaurant information and another for uploading menu items?
- How important is making the website mobile-friendly?

6.3 Sample Demos

Summary of what we learned from Meeting 1:

- Include Google sign-in, but Facebook sign-in is unnecessary.
- The customer should not be asked to provide their delivery address upon registration. Their delivery address should be asked for when they try to search for restaurants by location or place a delivery order.

- Any information pertaining to customer orders should be collected for data analysis. This information includes customer ID, what they ordered, where they ordered from, and any discount codes used. The collected data should be used to perform various computations that provide insights such as which restaurants are most popular or how many customers used a particular discount code. However, no graphs or projections of the data are expected.
- A key requirement is to have the ability to search for restaurants by location.
- Another key requirement (although lower priority than location search) is to have a “Community” section on the website which acts as a community board, similar to Yelp, where customers and restaurant owners are able to make posts and reviews, and leave comments on them. However, the details regarding this section are still in discussion.
- Include categories for the menu, such as “Starters”, “Appetizers”, “Main”, and so on.
- Include the address and ratings of restaurants that appear in the restaurant list.
- It would be nice to have a cleaner UI and it is recommended to use a variety of restaurant logos from the Internet, rather than using the same logo for each of the restaurants.

Summary of what we learned from Meeting 2:

- Include both Google sign-up and manual registration. Restaurant owners who want to register their restaurant should do so using the manual registration.
- A key requirement to have is to have a “Story” section of the restaurant which provides a photo of the restaurant owner, a description of themselves and their restaurant, and possibly an introductory video. This section should be the first page the customer sees when clicking on a restaurant from the restaurant list. The UI of this section should be similar to the UI of the website 150neighbours.ca.
- It is unclear whether both customers and restaurant owners should be able to make posts on the community board, or just customers. Therefore, we will leave the “Community” section requirement as an epic for now.
- The “Story” section of the restaurant takes priority over the “Community” board.
- Restaurant owners that sign-up and register their restaurant should have their registration approved manually.
- It would be nice to have the “Manage Restaurant Information” section split into multiple tabs to make the uploading interface cleaner and easier to use.
- It is relatively important to have the ability to view the restaurant on mobile devices. However, the website does not have to look perfect on a mobile device. Adjusting the UI of the website on mobile devices should be a low priority task.

7 Retrospection

7.1 Progression from D3 to D4

From deliverable 3 to deliverable 4 the project has had some drastic changes and improvements overall. At the end of deliverable 3, the project was in an early stage of development. Many of the features consisted of just the user interface with no actual interaction with the web application and database. Features were hollowly implemented, meaning the user interface was implemented and could be interacted with, but functionality was not there. For example, when a customer registered for an account, they could fill in and submit the form, but the data was not stored anywhere.

Moving from deliverable 3 to 4, the project connected frontend components to the backend which was a large improvement as many features were now fully functional, testable and could be demonstrated to our client for feedback. New features were added to the project such as the Google sign-in and sign-out, restaurant media upload, improved restaurant profile page, and greatly improved upon visual design for the user interface. Unit testing suites were also added to the project for an improved verification process than what was present at the end of deliverable 3. Finally, having a basic implementation of the project at the end of deliverable 3 allowed for more complete presentation of the project to the client. This improved the team's understanding of the requirements set out by the client from feedback during live demos, and this is reflected in the many improvements and changes to the user stories and priorities in our backlog.

In summary, the project moving from deliverable 3 to deliverable 4 saw the full implementation of many key features, the addition of key requirements, an improved verification process, and a better understanding of the client's expectations and vision for the future of the project.

Estimated Project velocity: 78 points

- Our estimated project velocity was based on the number of incomplete tasks that were brought over from the previous sprint and the planned tasks for this sprint. The incomplete tasks were very close to being finished and was projected to be done at the beginning of the sprint. This allows us to work on the new tasks for the remaining of the sprint. We believe we will be able to complete most of the new tasks as the learning curve will not be as big as previously.

Actual Project velocity: 30 points

7.2 Plan and Difficulties

Did you follow your plan(s) exactly?

We did not follow our plans exactly. Several of the original time estimates were underestimated as they did not account for the time taken to learn new technologies and familiarize ourselves with the code that other team members wrote. This caused our tasks to be pushed back since we could not start working on them until we were familiar with the code already written. As well, some tasks took longer to implement than we originally expected, causing tasks to be stretched out.

What difficulties have you encountered?

During our sprints, many of our team members had responsibilities outside of coding for the project such as other courses, job interviews, and working on the deliverable itself. As a result, we were not able to complete as much work on the actual code than we desired. As well, we were still familiarizing ourselves with new technologies and the code that others had written in previous sprints. This took extra time that we did not explicitly plan for. Furthermore, for sprint 4, some of the unfinished tasks from sprint 3 took longer than expected to complete, due to the changing requirements imposed by our clients, as well as issues we found as we continued implementing the features.

Was your contingency plan useful at that point or did you have to come up with a new solution?

During the sprint there were no problems that warranted the need to use the contingency plan. All members were present everyday of the sprint, the team ensured this through conducting daily stand-up meetings. It was evident that all members were active and diligent in the development process of the project.

7.3 Improvements for Next Sprint

Moving forward from deliverable 4 there are many improvements that can be made on the existing project. Based on the feedback gathered from our client meetings, there is a new emphasis on community which translates to the community engagement user stories being considered higher priority. Another high priority feature to implement in the future is the search engine. There are improvements that can be made for existing features such as using google for account creation and improving restaurant profile pages with the layout that was requested in our client meeting.

Other than improvements to the project itself, there are improvements that can be made in conducting sprints. One issue that will be addressed in the sprint planning process is lowering the number of story points that will be considered for our sprints in the future. Another change that the team would like to make is changing the start of the sprint to Wednesdays or Thursday so that the sprint planning meeting is placed after the client meeting, this is so that the team can better plan the sprint. We also plan to change the estimates of user stories to take into account the time required to familiarize ourselves with new technologies and the existing codebase, as well as the time required to resolve any issues we run into along the way. Finally, the team has found that pull requests are taking too long to be reviewed and will make efforts to address pull requests sooner moving forward.