Project Proposal

COMP3900 2022 Term 2

Computer Science Project

Project title: Dinner Party

Group name: NewWorld

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I. Background

Project Description / Problem Domain

Dinner Party is a simple mobile web app that enables individuals to organise, manage and plan at home dinner party events. The platform will focus on the ability to organise a meal plan and associated sourcing & allocation of ingredients and meals.

Users can browse through a full list of contributed recipes and their recommendations to formulate a meal plan for their dinner party. Dinner Party will include large amounts of automation, removing the need for hosts to manually combine and track every ingredient needed for their event. Events will also involve active contribution from invited guests, who can automatically receive web calendar invites based on the information set by the host.

Additionally, once created, events will be able to be shared with the invited guests, who will be able to see an overview of the meal plan and mark off any ingredients and or entire recipes they will be providing (similar to Google Docs). Leftover ingredients which haven't been accounted for will form a final interactive shopping list.

Dinner Party will also include basic functionality around more generic event management, including but not limited to auto generated invitation codes, emailing and calendar management.

In summary, Dinner Party solves the following core problems:

- Addressing the problem of manual searching and compilation of meal plans across multiple recipes and websites, by enabling organisation, planning and management of meal plans all in one place with an integrated recipe browsing and recommendation system.
- Addressing the problem of manual collation, sharing and tracking of ingredient lists involving multiple recipes between hosts and guests, by enabling automated collation and collaboration using a shared ingredients list, which is automatically generated from the meal plan.
- Addressing the problem of manual communication and coordination of event information, attendees and invitations, by centralising all event information in one place with automated email invitations and integrations with web calendars.

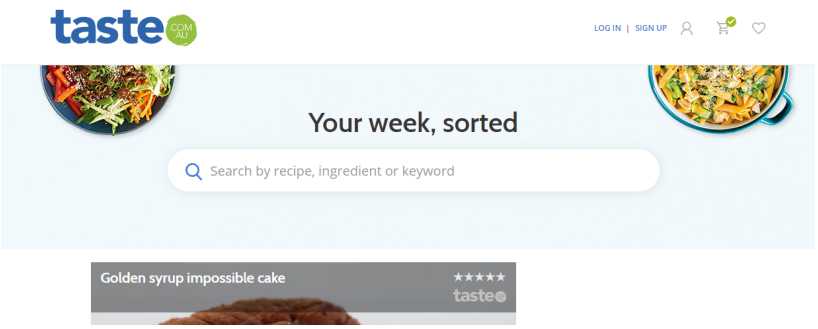
By solving all these problems, Dinner Party stands to be an extremely versatile and unique dinner party event management platform, with potential to be the go-to one-stop shop for organising dinner party events.

Existing Solutions

Dinner Party's approach to dinner party event management is innovative and addresses a unique set of problems in its problem domain. Therefore, Dinner Party has a competitive advantage over existing solutions in the same problem domain:

Taste.com.au

Taste is a recipe browsing website, where users can browse, search and filter for recipes. Users can also sign in to save recipes and also add a recipe's ingredients to a shopping list with the click of a button. This shopping list can then be edited, printed and emailed, with integration with Coles online to allow all ingredients to be automatically added to a Coles online shopping cart. Taste also shows recommendations, via a 'recipe of the day' and also popular collections of recipes based on user ratings and trends. Taste is Australia's #1 food site and currently has over 50000 free recipes available. [1]



Drawbacks:

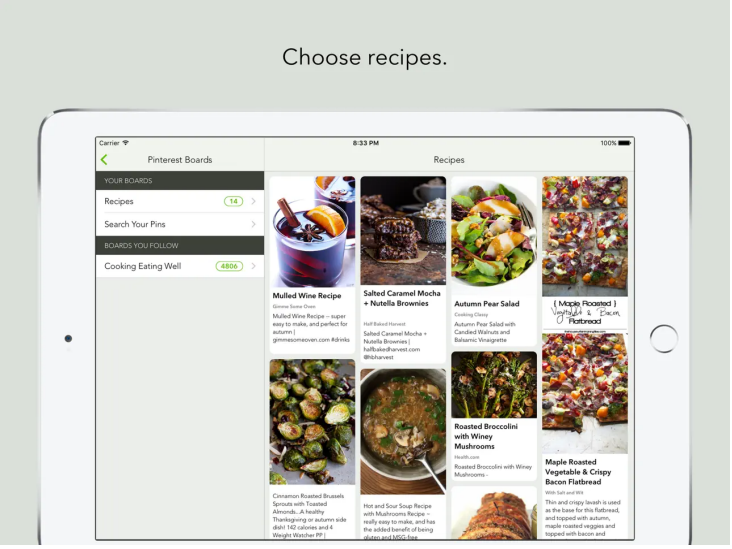
1. Taste treats all recipes individually and does not provide functionality for formulating meal plans by combining recipes in courses.
2. Taste's shopping list feature does not collate ingredients when multiple recipes are added. Instead it shows all ingredients under each recipe separately. Consequently, this requires the user to manually check ingredients shared between recipes.
3. Taste's shopping list feature does not allow for sharing or collaboration. This means that the host is solely in charge of the ingredients list and will have to do all the shopping or manually communicate the responsibility of ingredients with guests.

Dinner Party's solutions: (*in respective order*)

1. Dinner Party allows users to create a comprehensive meal plan by browsing and selecting multiple recipes across multiple courses under one event.
2. Dinner Party automatically combines and collates all required ingredients from all selected recipes. This results in a single unified ingredients list, which can ultimately be exported to a shopping list that does not require the user to collate between recipes.
3. Dinner Party's ingredients list enables sharing and collaboration between hosts and guests, meaning that all attendees can contribute to the ingredients list, thereby reducing the host's workload and streamlining coordination of ingredients.

BigNight: Dinner Party Planner

BigNight is a dinner party planning app available on iOS mobile devices. BigNight allows users to create a menu by selecting or importing recipes and then create shopping lists, which can be imported by guests. Users can also set reminders associated with events, which can be synced online with guests. BigNight is available on the Apple App Store for $3.99 and has 33 ratings. [2]



Drawbacks:

1. BigNight's shopping list can be imported by guests, but does not support collaborative editing between hosts and guests. Guests can view the shopping list when it is synced, but can not contribute directly.
2. BigNight allows for sharing of a menu and shopping list with guests, but does not have integrated event management functionality, meaning the host will have to manually share the menu with each guest and attendees would have to manually add the event to their calendars if they wish.
3. BigNight is platform-restricted to iOS mobile devices, meaning Android and desktop users can not participate in the event. Additionally, all guests will need to purchase the app to use its functionality, restricting its market.

Dinner Party's solutions: (*in respective order*)

1. Dinner Party's ingredients list is automatically shared with all attendees, meaning guests can contribute to the ingredients list through the platform, eliminating the need for manual communication with the host.
2. Dinner Party features integrated event management functionality, meaning hosts can invite guests through email when creating an event and attendees will receive automatic web calendar invitations.
3. Dinner Party is a web application, which means it can be accessed by anyone with an internet connection. Furthermore, guests can be invited by a unique event code if they aren't registered, meaning guests aren't required to install or set up anything if they want to participate in an event.

II. User Stories and Sprints

Project Objectives / Requirements

From the project proposal and problem description, a set of objectives were formulated to satisfy full coverage of the problem domain and all described functionality. These core objectives consisted of sub-requirements, which specified the exact functionality required.

Terminology and definitions:

Term	**Definition**
User	Non-authenticated user (everyone)
Guest	Authenticated and invited users
Host	Logged in user who has created the event (in context)
Logged-in user	Authenticated and currently logged in user
Session	A Dinner Party event, consisting of time, menu and guests
Active session	A session until the scheduled event finish time

1. **User authentication**
   - 1.1. Users can log in with an email and password
   - 1.2. Users can register for an account with an email and password
   - 1.3. Users can join via a code sent to their email
2. **Users can browse recipes**
   - 2.1. Users can view all recipes available
   - 2.2. Users can filter recipes by:
     - a) Meal-type (e.g breakfast, lunch, dinner, entree, main, dessert)
     - b) Cuisines
     - c) Certain tags
     - d) Cook time
   - 2.3. Users can sort recipes by rating (ascending/descending)
   - 2.4. Users can search for recipes by keyword (in title or tags)
3. **Hosts can create and manage a dinner party session**
   - 3.1. Hosts can schedule a session with set duration
   - 3.2. Hosts can specify a number of attendees
4. **Hosts can add recipes to their session**
   - 4.1. Hosts can assign and remove recipes to a course (entree, main, dessert) to create a menu
   - 4.2. Hosts can assign an infinite amount of unique recipes to each course
5. **An ingredients list comprises of all the ingredients required for all selected recipes within the session**
   - 5.1. Hosts and guests should be able to view a complete ingredients list

5.2. Once the dining event becomes active, ingredients of the same type across all selected recipes should be collated

6. Logged-in users can contribute recipes

6.1. Logged-in users should be able to add recipes

6.2. Logged-in users should be able to attach the following metadata to recipes:

a) Meal-type
b) Cuisine
c) Certain tags
d) Cook time
e) Photos

6.3. Recipes must have a list of ingredients

a) Existing ingredients should be able to be added through a search function.
b) Non-existing ingredients should be able to be defined and then added
c) Ingredients should have specified unit(s) associated with them

6.4. Recipes must have a chronological list of steps

6.5. Logged-in users should be able to modify any recipe they contributed

7. A recipe recommendation system is able to give recommendations for hosts to select meals based on the trending meals and the host's historical choices

7.1. Users are able to see a list of recommended recipes

7.2. Recommendations are based on the trending recipes, rating of recipes, host's historical choices

8. Logged-in users must be able to see a list of previous and current dinner party sessions

8.1. If the user has an account, show all dinner party events they have previously been invited to

8.2. Logged in users should not be able to edit any of their previous events

8.3. A user could be a host and a guest at the same time

8.4. Hosts can rate recipes that feature in past sessions

9. Hosts can invite guests to attend and contribute to the session

9.1. Host nominates guest names and emails

9.2. Guests are sent a unique code to access/read/write the share session

9.3. Guests are able to either login or register, but can access the information regardless

10. When the host creates a session and chooses guests, this creates a web calendar event that can be synced with a chosen calendar for each guest

10.1. The system should automatically send everyone a calendar invite for the time period of the event to the associated email address

11. All invitees to an active DinnerParty session can view and contribute to a shared ingredients list

11.1. Host can first account for items, before sharing with the group

11.2. The host can set a time window for contribution (beyond a certain time, guests can no longer edit

11.3. Guests can view all un-accounted for ingredients

11.4. A guest can check-off items to account for them

11.5. At the contribution time limit, remaining ingredients form a shopping list

User Stories

Epics were used to group and categorise user stories for easy reference and tracking. Each epic's title is provided in [square brackets], followed by a summary in the form of a user story and then the individual user stories which form the epic.

1. **[User authentication / management]**
   As a user, I want to be able to authenticate myself, so I can access personalised features and retain my information.
   - 1.1. As a user, I want to be able to login, so I can retain my information across devices.
   - 1.2. As a user, I want to be able to register, so I can retain my information across devices.
   - 1.3. As a user, I want to be able to join an active-session with a code, so I can participate in an active-session without having to log in.
2. **[Recipe browsing]**
   As a user, I want to be able to browse all the available recipes, so I can decide what I want to cook.
   - 2.1. As a user, I want to be able to see all the recipes available, so I have more choice on what I want to eat.
   - 2.2. As a user, I want to be able to filter recipes by meal type, cuisine, tags and cook time, so I can find the right recipe for the occasion.
   - 2.3. As a user, I want to sort recipes when browsing by rating, so I can easily find the best recipes.
   - 2.4. As a user, I want to be able to search for recipes by keywords, so I can find the exact recipes I want easily.
3. **[Session management]**
   As a host, I want to be able to create and manage a session, so I can control my dinner party plans.
   - 3.1. As a host, I want to be able to schedule the duration of my session, so I can plan my time around it.
   - 3.2. As a host, I want to be able to select the number of attendees, so I can manage my servings and ingredients accordingly.
4. **[Menu]**
   As a host, I want to be able to add recipes to my session, so I can form a menu.
   - 4.1. As a host, I want to be able to assign and remove recipes to a course, so I can organise a three course menu.
   - 4.2. As a host, I want to be able to assign any number of recipes to a single course so I can have full control and flexibility of my menu.
5. **[Ingredients list]**
   As a user, I want to see the ingredients for the recipes, so that I can prepare the ingredients that I don't have at the moment.
   - 5.1. As a host or guest, I want to see all ingredients across all the recipes in this session combined, so that I can easily obtain all the required ingredients.
   - 5.2. As a host or guest, I want ingredients that may appear across courses to collate into a single line item, so my shopping is easier.
6. **[Recipe contribution]**
   As a logged-in user, I want to contribute to the recipes, so that users can use it.

6.1. As a logged-in user, I want to be able to add a recipe, so that other users and I can use the recipe in our sessions.
6.2. As a recipe creator, I want to add a meal type, cuisine, tags, cook time and photos to the recipe, so that users can filter faster.
6.3. As a recipe creator, I want to add ingredients to recipes I contribute, so that users know what a recipe requires.
6.4. As a recipe creator, I want to be able to search for known ingredients to add to recipes, so I can easily specify the required materials.
6.5. As a recipe creator, I want to be able to add ingredients that don't already exist in the known ingredient base, so I can specify custom ingredients.
6.6. As a recipe creator, I want to be able to add chronological steps to the recipe I'm adding, so users can follow the process.
6.7. As a recipe creator, I want to be able to update recipes I added, so that I can tweak and improve my recipes.

7. [Recommendation system]

As a user, I want to be able to have a recommendation list for recipes, so that I can get recommendations for recipes.

7.1. As a user, I want to be able to see a list of recommended recipes in the browsing page, so that I can have tailored suggestions and try something new.
7.2. As a user, I want my recommendations to be based on previous choices, user trends and ratings, so that I can get the most personalised recommendations.

8. [User dashboard]

As a user, I want to be able to see a list of previous and current dinner party sessions, so that I can refer back to sessions I'm involved in.

8.1. As a user, I want to be able to see all dinner party events I have been invited to, so that I can refer back at my leisure.
8.2. As a user, I do not want to alter an event within my history, so that I can ensure the details of that event are authentic.
8.3. As a user, I want to be active between multiple dinner party sessions occurring at the same time, regardless of whether I am a host or a guest , so that I can interact with every session that I am invited to.
8.4. As a user, I want to be able to rate recipes from my past sessions, so that I can provide feedback.

9. [Event management]

As a user, I want to be able to invite guests to my session, so that they are aware of the event and can contribute.

9.1. As a host, I want to nominate the email addresses for each invited guest so that they can access the session.
9.2. As a guest, I want to access the session without having an account, so that I don't have to register if I don't want to.
9.3. As a guest, I want to be able to sign up so that I can save the session information.

10. [Calendar integration]

As a user, I want to be able to receive a calendar invite for sessions, so I can manage the session in my web calendar.

10.1. As a user, I want to receive a webcal invite, so that I can import the event information to my web calendar of choice.

11. [Shared ingredients]
A host or guest, I want to be able to access a shared ingredients list, so I can contribute to the session and see the contribution of others.

11.1. As a host, when creating the session, I want to edit the supplied ingredient list before it is shared so that I can make any changes necessary.
11.2. As a host, I want to allow my guests to contribute within a convenient time window, so that ingredients can be sourced before the event begins.
11.3. As a guest, I want to know what ingredients aren't already assigned, so that I am aware of what I could contribute.
11.4. As a host or guest, I want to clearly and simply mark the ingredients that I can provide, so that all invitees are aware of how I am contributing.
11.5. As a host, I want to know what ingredients are leftover by my chosen time limit, so that I can source these ingredients in my method of choice.

Objective to Story Mapping

Objectives and requirements were directly translated into epics and user stories respectively. The mapping between these two are **direct 1:1** with few exceptions. As such, the objective and requirement numbers above directly correlate to the same epic or user story with the same number. *For instance:*

Requirement 6.1: Logged-in users should be able to add recipes

Directly maps to:

User story 6.1: As a logged-in user, I want to be able to add a recipe, so that other users and I can use the recipe in our sessions.

This allowed for simple and unambiguous mapping and relationships between objectives and user stories. Each user story **directly and clearly satisfies** its respective project objective, as they represent the same point and are equivalent. Thus, fulfilling any user story will also fulfil its corresponding project objective.

The only exceptions to the numbering scheme are as follows:

- User story 6.4 is mapped from requirement 6.3 (a)
- User story 6.5 is mapped from requirement 6.3 (b)
- User story 6.6 is mapped from requirement 6.4
- User story 6.7 is mapped from requirement 6.5

This has occurred as requirement 6.4 specifies important sub-requirements for the ingredient base, which are substantial enough to warrant their own user stories. Thus, requirement 6.3 maps into user stories 6.3, 6.4 and 6.5, which offsets the following 6.x user story and requirements mapping by 2.

Novel Functionality

As outlined in Section I, Dinner Party has a unique set of features, which provide novel functionality over existing systems in the same problem domain.

[Story 4.1] As a host, I want to be able to assign and remove recipes to a course, so I can organise a three course menu.

- Existing recipe sharing websites such as Taste.com.au do not allow users to select and combine multiple recipes across different courses to create a menu. As Taste treats recipes separately, Dinner Party has a novel advantage in this regard, which removes the need for users to manually compile a menu from individual recipes.

[Story 5.1] As a host or guest, I want to see all ingredients across all the recipes in this session combined, so that I can easily obtain all the required ingredients.
[Story 5.2] As a host or guest, I want ingredients that may appear across courses to collate into a single line item, so my shopping is easier.

- Existing recipe websites such as Taste.com.au allow users to add recipes to a shopping cart for a list of ingredients. However, Taste treats recipes separately in the cart and common ingredients are still separated under each recipe. This means the user has to manually collate the ingredients to form a final ingredients list. Dinner Party solves this problem by automatically combining ingredients from multiple recipes and collating the items for ease of use.

[Story 11.3] As a guest, I want to know what ingredients aren't already assigned, so that I am aware of what I could contribute.
[Story 11.4] As a host or guest, I want to clearly and simply mark the ingredients that I can provide, so that all invitees are aware of how I am contributing.

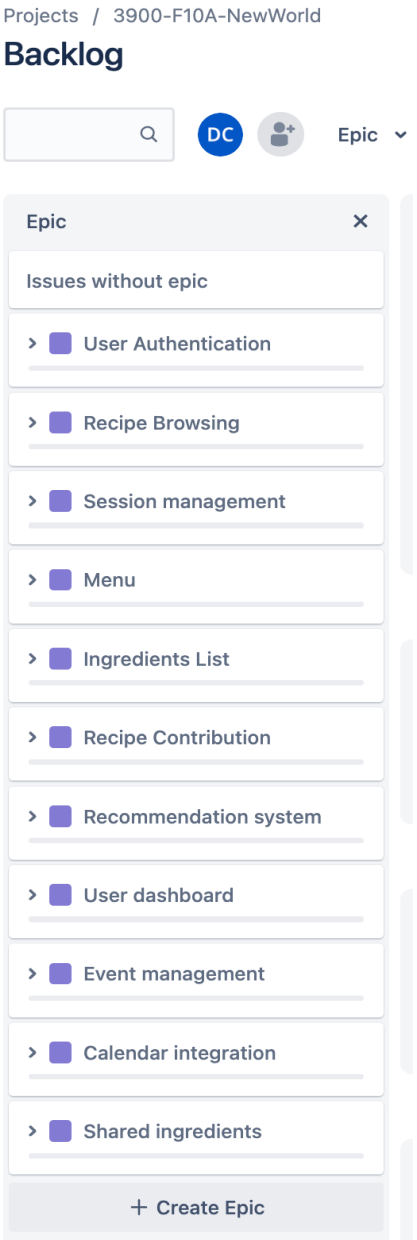
- Existing recipe websites such as Taste.com.au allow users to create a shopping list and export or email this list. However, no existing solution has collaboration functionality to allow the list to be shared with guests for active contribution towards the event's shopping list. Similarly, BigNight allows for importing and syncing of this shopping list, but does not support live collaborative editing with guests. Furthermore, for BigNight, guests are required to purchase an iOS app to participate. Thus, Dinner Party's web-based ingredient list sharing and collaboration feature is novel over existing solutions.

[Story 9.1] As a host, I want to nominate the email addresses for each invited guest so that they can access the session.
[Story 10.1] As a user, I want to receive a webcal invite, so that I can import the event information to my web calendar of choice.

- Current menu planning solutions such as BigNight allow for events to be shared manually, but do not allow for automatic sharing via email invites and calendar invites. Therefore, Dinner Party's native email and calendar invitations, which integrate with the platform's menu planning capabilities, allow for a seamless and novel event planning experience unlike any other existing solution.

Product Backlog

All of the above stories were entered into the product backlog on Jira as pictured:



User Authentication

Description

As a user, I want to be able to authenticate myself, so I can access personalised features and retain my information.

Child issues Order by

0% Done

MP3900-25	Login	TO DO
MP3900-26	Register	TO DO
MP3900-27	Join Active Session	TO DO

Recipe Browsing

Description

As a user, I want to be able to browse all the available recipes, so I can decide what I want to cook.

Child issues Order by

0% Done

MP3900-28	See Recipes	TO DO
MP3900-29	Filter Recipes	TO DO
MP3900-30	Sort Recipes	TO DO
MP3900-31	Search Recipes	TO DO

Session management

Attach | Add a child issue | Link issue

Description

As a host, I want to be able to create and manage a session, so I can control my dinner party plans.

Child issues Order by

0% Done

MP3900-32	Schedule Session	TO DO
MP3900-33	Select Number of Attendees	TO DO

Menu

Attach | Add a child issue | Link issue

Description

As a host, I want to be able to add recipes to my session, so I can form a menu.

Child issues Order by

0% Done

MP3900-34	Assign & Remove Recipes	TO DO
MP3900-35	Assign Any Number of Recipes	TO DO

Recipe Contribution

Attach | Add a child issue | Link issue

Description

As a logged-in user, I want to contribute to the recipes, so that users can use it.

Child issues Order by

0% Done

MP3900-37	Add Recipe	TO DO
MP3900-38	Add meta data to recipe	TO DO
MP3900-39	Add ingredients to recipe	TO DO
MP3900-40	Add known ingredients	TO DO
MP3900-41	Add unknown ingredients	TO DO
MP3900-42	Add steps to a recipe	TO DO
MP3900-43	Update recipes	TO DO

Ingredients List

Attach | Add a child issue | Link issue

Description

As a user, I want to see the ingredients for the recipes, so that I can prepare the ingredients that I don't have at the moment.

Child issues Order by

0% Done

MP3900-36	Combine Ingredients	TO DO
MP3900-59	Merge similar ingredients	TO DO

Recommendation system

Attach | Add a child issue | Link issue

Description

As a user, I want to be able to have a recommendation list for recipes, so that I can get recommendations for recipes.

Child issues Order by

0% Done

MP3900-44	Recommended Recipes	TO DO
MP3900-45	Recommendations based on smart factors	TO DO

User dashboard

Attach | Add a child issue | Link issue

Description

As a user, I want to be able to see a list of previous and current dinner party sessions, so that I can refer back to sessions I'm involved in.

Child issues Order by

0% Done

MP3900-46	See all previous events	TO DO
MP3900-47	Can't alter historic events	TO DO
MP3900-48	Multiple active sessions	TO DO
MP3900-50	Rate Recipe	TO DO

Event management

Attach | Add a child issue | Link issue

Description

As a user, I want to be able to invite guests to my session, so that they are aware of the event and can contribute.

Child issues Order by

0% Done

MP3900-51	Invite Emails to Session	TO DO
MP3900-52	Access session without account	TO DO
MP3900-53	Register links to previous session invites	TO DO

Calendar integration

Attach | Add a child issue | Link issue

Description

As a user, I want to be able to receive a calendar invite for sessions, so I can manage the session in my web calendar.

Child issues Order by

MP3900-54	Calender Invites	TO DO

Shared ingredients

Attach | Add a child issue | Link issue

Description

A host or guest, I want to be able to access a shared ingredients list, so I can contribute to the session and see the contribution of others.

Child issues Order by

0% Done

MP3900-55	Edit ingredient list before active	TO DO
MP3900-56	Guests contribute to ingredient list	TO DO
MP3900-57	See ingredient assignment	TO DO
MP3900-58	Assign ingredients	TO DO
MP3900-60	See remaining ingredients	TO DO

Sprint Structure

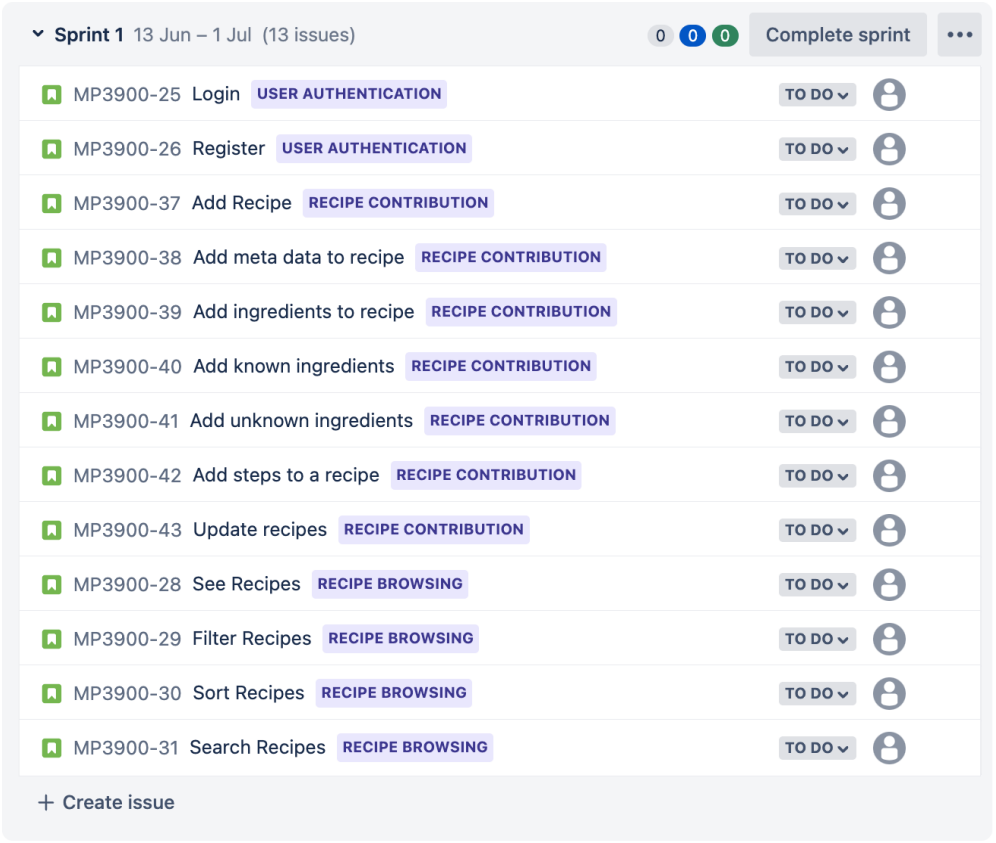
The provided 5 sprint structure was selected as the project's sprint structure for the additional flexibility it provided between weeks. Furthermore, these additional sprints will bolster collaboration and encourage more frequent communication within the team.

Sprint Number	Start Date	End Date	Academic Weeks
1	13/06/2022	01/07/2022	Week 3 - Week 5
2	02/07/2022	08/07/2022	Week 6
3	09/07/2022	15/07/2022	Week 7
4	16/07/2022	22/07/2022	Week 8
5	23/07/2022	29/07/2022	Week 9

Sprint #1

For the first sprint, the following user stories were selected from the product backlog and added to the respective sprint backlog in Jira as pictured:

User authentication: 1.1, 1.2
Recipe browsing: 2.1, 2.2, 2.3. 2.4 (all)
Recipe contribution: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7 (all)

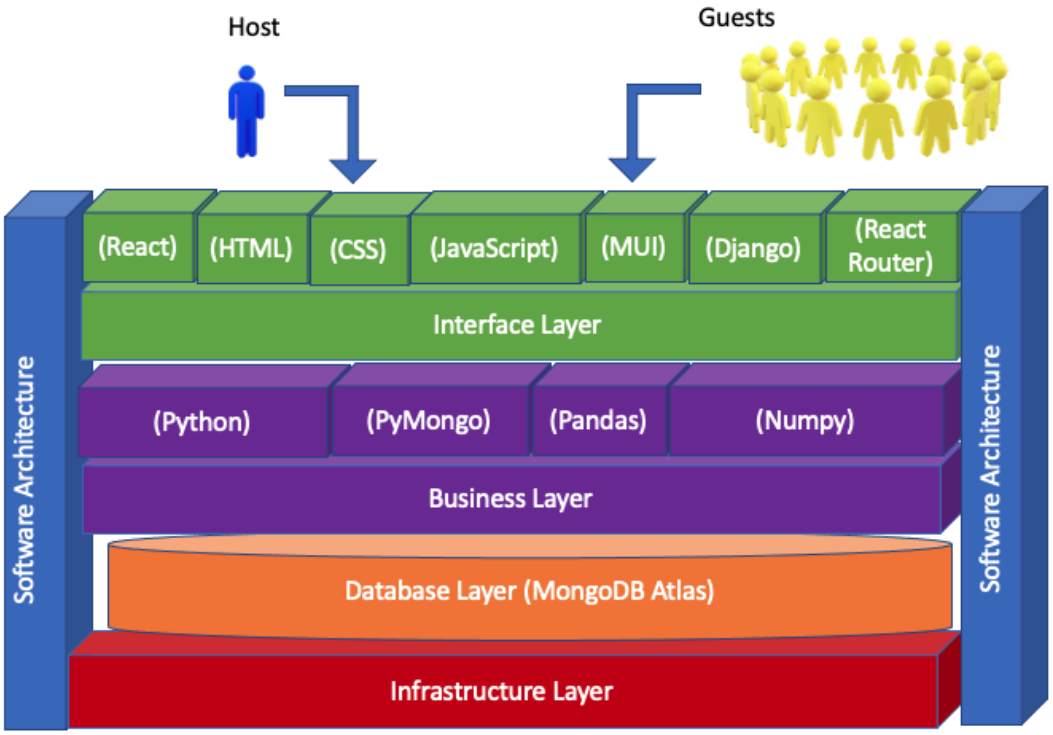


III. Storyboards

Please see Appendix A.

IV. Software Architecture

The system architecture defines the structure of Dinner Party's software system through the use of many different technologies and languages, which form the presentation, business and data layers. The technologies which form this architecture were carefully and deliberately selected considering the project's objectives, requirements and proficiency of the team to maximise performance and minimise development and learning time to fit within the time constraints of the project.



Software Architecture Diagram

Presentation Layer

The interface/presentation layer consists of technologies, which a user sees and interacts with, forming part of the user experience. **External actors** interact with the system solely through the interface layer, which provides a web-app experience for users, who can access it from any client device with a web browser. External actors consist of unauthenticated users and authenticated users, who can act as hosts and guests. Both types of actors (hosts and guests) interact with the system through the same presentation layer and mostly the same user interface and experience. These actors will interact with the presentation layer, which will interface with the business layer, which in turn manipulates data in the data layer. This presentation layer allows all users to access the system over the internet with any client device browser.

As Dinner Party is a web app, it will be constructed as a React App, as this is the framework most team members are familiar with. Thus, the presentation layer contains React and associated key technologies such as HTML, CSS and Javascript. Furthermore, key libraries such as MUI and React Router form part of the presentation layer as Material UI (MUI) will provide primitive React components which form the web app and React Router will manage navigation and routing within the app's interface. Finally, Django REST API will be used in conjunction with Python to interface between the frontend and backend through the use of CRUD operations.

Business Layer

The business logic layer implements business rules using programming logic. In this system, the business layer sits between the presentation and data layers, forming the backend of the system by receiving requests from the presentation layer, applying logic to it and then processing or storing the data by utilising the data layer. The language utilised for the business layer was selected to be Python, as this is the only language that all the involved developers are familiar with.

Some important Python libraries also form the business layer, such as PyMongo, which interacts with the database layer and Pandas and NumPy, which are utilised in conjunction with the data layer to implement the custom recipe recommendation system.

Data Layer

The data layer is the system architecture layer concerned with data storage and retrieval. The selected database technology is MongoDB Atlas, which is a cloud NoSQL database. This technology was selected due to its ease of use, convenience and novelty, which is in line with the requirements of the project. This database will store all persistent platform data and facilitate updates and queries.

V. References

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