COMP3900 Proposal

Task | master

COMP3900-W18A-LADZ

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Background

Problem Domain

In the real world, managing numerous tasks and their deadlines is difficult, resulting in incomplete tasks and missed deadlines. As well as this, there is the issue of distributing these tasks fairly across a team, accounting for how busy each individual is. Therefore, the problem we are solving is the issue of tracking several tasks simultaneously and distributing tasks amongst a diverse team. The main objective of TaskMaster is to provide a platform to manage tasks effectively and distribute tasks efficiently.

The main functionalities of TaskMaster will be:

- Creating a profile to keep track of a user's data
- Connect users with other users to distribute tasks
- Create tasks and assign them to users
- View all tasks and users to effectively manage deadlines

Existing Systems

What applications are already available in-market?
Monday allows workflows to be easily managed and has several features and visualisations. However, it is quite a complicated platform, which takes a while to learn and is generally quite complex, meaning tasks and deadlines cannot be as easily interpreted. TaskMaster has a minimalistic approach, with only the most important features included, thus providing clearer management.
https://monday.com/

Teamwork also provides quite a sophisticated task management system, again at the cost of being easily interpretable. It is quite convoluted with too many features, making it difficult to cleanly see what needs to be done and when. Again, TaskMaster is superior due to its simplicity, making it easier.
https://www.teamwork.com/

What is unique and better about Task Master?
The main benefits involve the networking and communication features our Task Master implementation will provide. The ability to assign tasks to other users based upon their workload or business is novel to this application. This provides a substantial benefit in being able to effectively and efficiently distribute various tasks to a whole network of users within a team or organisation.

User Stories

These are the user stories outlined from the Project Specifications.
Story points: 1-5 (5 requiring the greatest amount of work)

User Epic 1

As a user, I want to be able to create and modify my account so that I can utilise the platform.

ID	US1.1
User Story	As a user, I want to be able to create a profile so that I can connect with other users and utilise the platform.
Functionality and acceptance criteria	- Profile has a unique user ID (email). - Users cannot sign up with an already existing email. - Users should sign up with a valid email containing '@', '.', alphabet characters and numbers.
Story points	3
Priority	High

ID	US1.2
User Story	As a user, I want to be able to delete my account and data to protect my privacy and security.
Functionality and acceptance criteria	- Account information is removed - Connected users can no longer see the deleted account - Cannot login to deleted account
Story points	1
Priority	Medium

ID	US1.3
User Story	As a user, I want to be able to change my account details so I can keep them up to date.
Functionality and acceptance criteria	- User can update basic details (name, etc) - User can update password

Story points	1
Priority	Low

User Epic 2

As a user, I want to be able to create and modify tasks so that I can organise my workload/scheduling efficiently.

ID	US2.1
User Story	As a user, I want to be able to create tasks, including a title and description, so that I can keep track of what needs to be done.
Functionality and acceptance criteria	● Task is created successfully ● Task created includes a valid title and a description (length limitation) ● Task can be viewed by the user ● Unique task ID
Story points	3
Priority	High

ID	US2.2
User Story	As a user, I want to set deadlines for tasks, so that I know how I should prioritise my time.
Functionality and acceptance criteria	● Deadlines can be assigned to tasks. ● Deadlines can be selected from a calendar of valid dates. ● Deadlines include a date and a time. ● Deadlines before the current date and time are invalid. ● Tasks without deadlines can be successfully created. ● Task shows correct deadline. ● Tasks without deadlines are correctly displayed.
Story points	3
Priority	Medium

ID	US2.3
User Story	As a user, I want to be able to view a list of all my assigned tasks sorted by deadline so that I know what tasks I need to complete.
Functionality and acceptance criteria	● User can see all of their tasks ● Each assigned task shows a summary of the task, ID, title and deadline (if specified) ● Tasks are sorted by deadline, from earliest to latest, with tasks not having a deadline appearing last.
Story points	1
Priority	Medium

ID	US2.4
User Story	As a user, I want to be able to update the state of my task so that I can keep track of my progress.
Functionality and acceptance criteria	● State of tasks are updated correctly ● Updated state can be viewed ● Tasks can only be assigned valid task states, i.e. “Not Started”, “In Progress”, “Blocked”, “Completed” ● Start state for new tasks is “Not Started”
Story points	1
Priority	Low

ID	US2.5
User Story	As a user, I want to be able to delete a task so I can remove any solved/unnecessary tasks
Functionality and acceptance criteria	● User no longer sees the deleted task in their list of assigned tasks ● Related task masters no longer sees the deleted task ● Task load estimations also update accordingly
Story points	2
Priority	Low

User Epic 3

As a user, I want to be able to network with other users so that workloads are distributed effectively.

ID	US 3.1
User Story	As a user, I want to be able to see workload estimations for myself and other users to know how best to allocate tasks.
Functionality and acceptance criteria	- Estimation is a percentage ranging from 0 to 100 if the user is not overloaded, such as “0%”, “15%” or “100%”. - If the user is overloaded then “100%+” is shown. - Workload estimates are for the following 7 days.
Story points	5
Priority	Medium

- The above story is unique to the Task Master system and not featured on any of the competitors, it allows for a team to better understand each other’s workload and effectively allocate additional tasks.

ID	US 3.2
User Story	As a user, I want to be able to search for a task so I can quickly find a relevant task.
Functionality and acceptance criteria	- Users can search for tasks by ID, name, description and/or deadline fields. - All tasks assigned to the searcher or users connected to the searcher are available to be searched and found.
Story points	3
Priority	Low

ID	US 3.3
User Story	As a user, I want to be able to send a request to other users, so that I can communicate with them.
Functionality and acceptance criteria	- Send request to other user by specifying their unique email address in a search bar and click submit - Can't send a request to someone already connected with - Users are notified if the email address entered is invalid or not found
Story points	2
Priority	High

ID	US 3.4
User Story	As a user, I want to be able to accept/decline other users' requests to connect to protect my privacy.
Functionality and acceptance criteria	- Connection occurs when the user receiving a request accepts - Sender sees new friend, if new friend accepted - New friend see sender if accepted
Story points	1
Priority	High

ID	US 3.5
User Story	As a user, I want to be able to assign tasks to myself or other users to distribute the workload.
Functionality and acceptance criteria	- Task can be assigned to a different user, if given their ID - Task cannot be assigned to a non-connected user. - If the “assign to” is left empty then it automatically is assigned, by default, to the creator of the task.
Story points	4
Priority	High

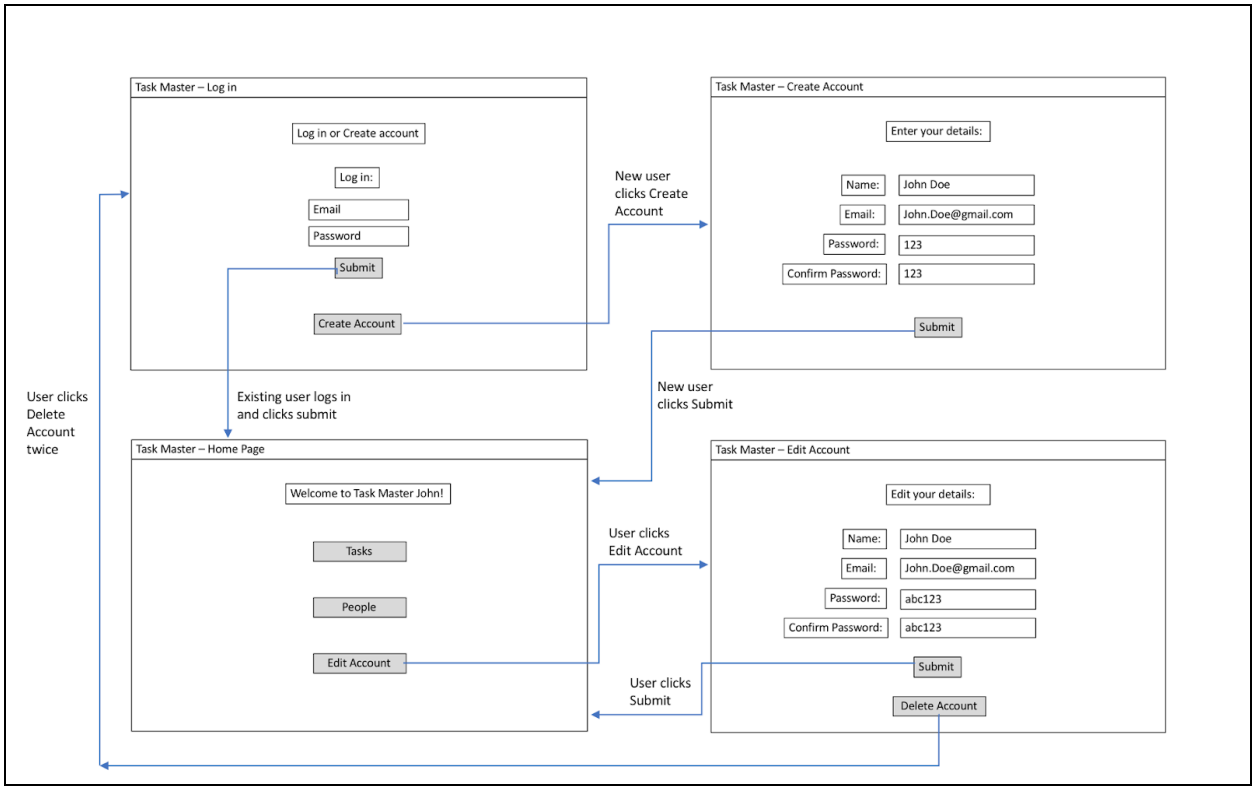
- Once again this is a unique feature to our system, the ability to assign tasks to other people means that if there is a manager on the team they are able to delegate tasks effectively. This functionality is also incredibly useful if there is a problem/task that must be resolved by a specific person, the task is able to be raised to the specific person and when they are available they are able to work on it.

ID	US 3.6
User Story	As a user, I want to be able to view details of other connected users so I know who they are and what tasks are assigned to them.
Functionality and acceptance criteria	- Can search for another task master using their unique email address. - Can only view the pages of other tasks masters the searcher has already connected with. - If a task master’s profile is found, there must be an “Assigned Tasks List” showing all their assigned tasks. The tasks must have their task ID, title and deadline (if specified) listed and tasks are ordered by earliest to latest deadline. Tasks without deadlines come after tasks with deadlines. Tasks with the same deadline, or no deadlines, are sorted by their title in alphabetical order.
Story points	3
Priority	Medium

These three epic stories and their user stories cover all the project objectives described in Task Master. The project objectives can be grouped into profiles, tasks, and networking, which correspond to our three epic stories. Specifically, the detailed requirements provided in the project objectives are reflected in the acceptance criteria for each of the user stories. Therefore, this fine granularity allows all the project objectives to be satisfied by our defined user stories.

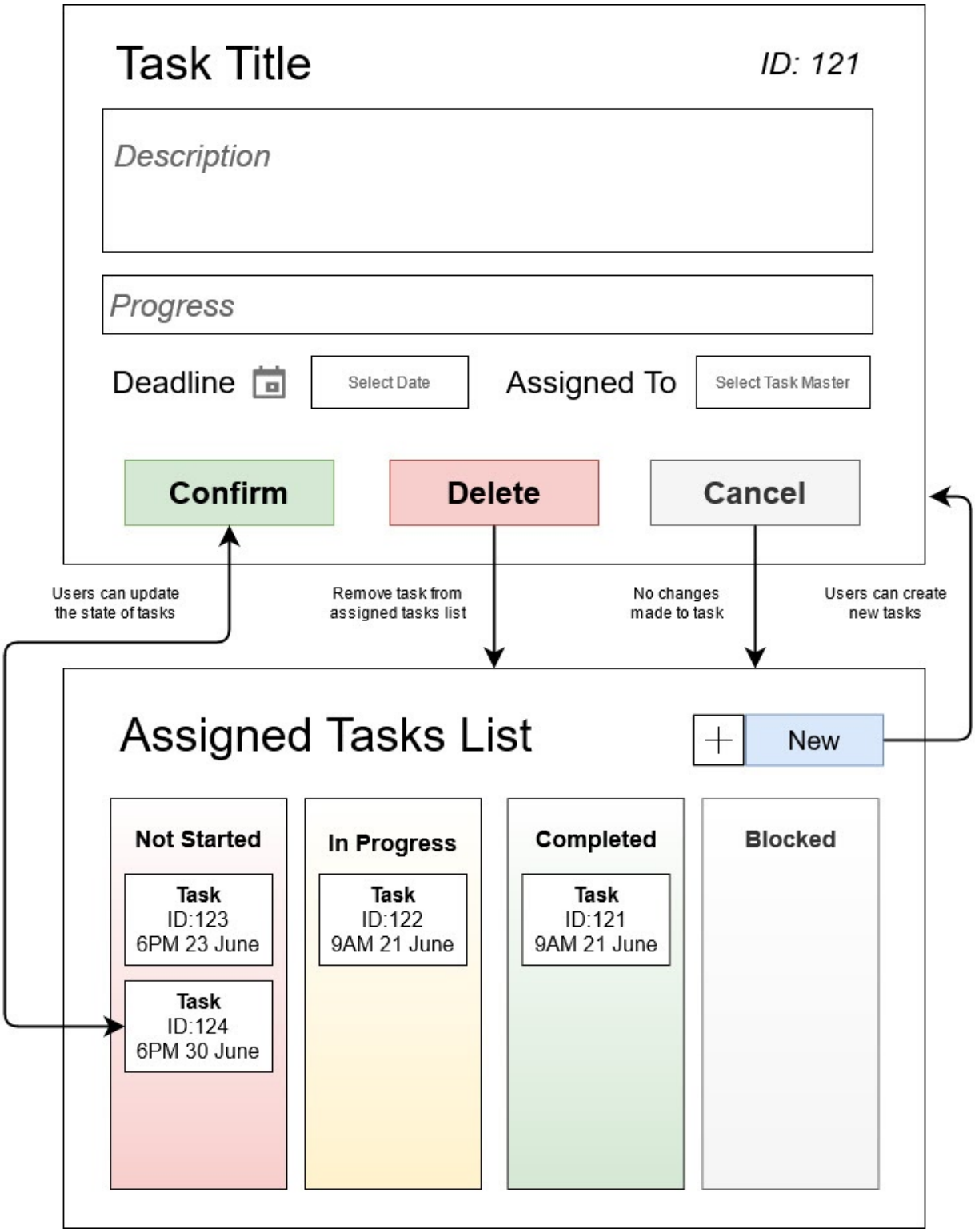
Interface and Flow Diagrams

Profile Storyboard:

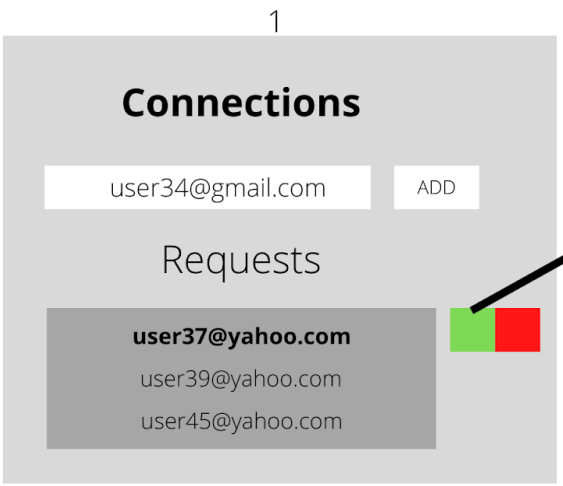


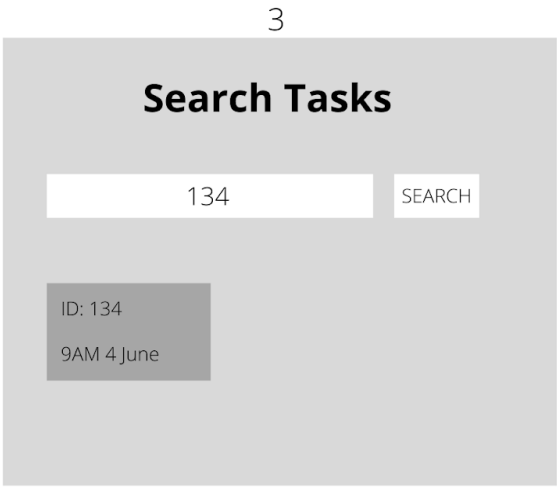
- Task button goes to **Assigned Tasks List** screen (See Task Storyboard)
- People button goes to **Connections** screen (See Connections Storyboard)

Task Storyboard:



Connections Storyboard:





Page 1

Putting a name in search bar and clicking add will send that task master a user. Clicking on a username then clicking green box will accept, while red box declines.

Page 2

Shows profile of a task master. Page contains their details, workload and pending tasks.

Page 3

Type id, description, etc in search bar then click submit, then task will appear underneath.

Sprints

Project Sprint Schedule

Sprint #	Start Date	End Date
1	Monday Week 4 (21st June)	Tuesday Week 5 (29th June)
2	Wednesday Week 5 (30th June)	Tuesday Week 8 (20th July)
3	Wednesday Week 8 (21st July)	Sunday Week 10 (1st August)

Sprint 1 Backlog (User Stories)

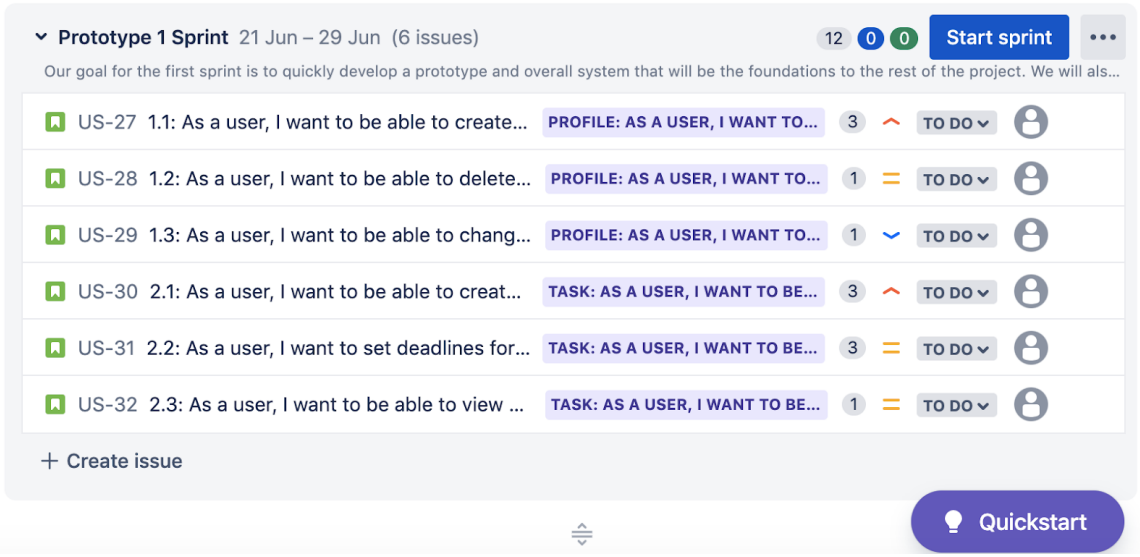
- **US1.1** - As a user, I want to be able to create a profile so that I can connect with other users and utilise the platform. **- Deepan/David**
- **US1.2** - As a user, I want to be able to delete my account and data to protect my privacy and security. **- Deepan/David**
- **US 1.3** - As a user, I want to be able to change my account details so I can keep them up to date. **- Deepan/David**
- **US2.1** - As a user, I want to be able to create tasks, including a title and description, so that I can keep track of what needs to be done. **- Minsung/Ke/Rudra**
- **US2.2** - As a user, I want to set deadlines for tasks, so that I know how I should prioritise my time. **- Minsung/Ke/Rudra**
- **US2.3** - As a user, I want to be able to view a list of all my assigned tasks sorted by deadline so that I know what tasks I need to complete. **- Minsung/Ke/Rudra**

* For more details refer to the User stories section of the proposal.

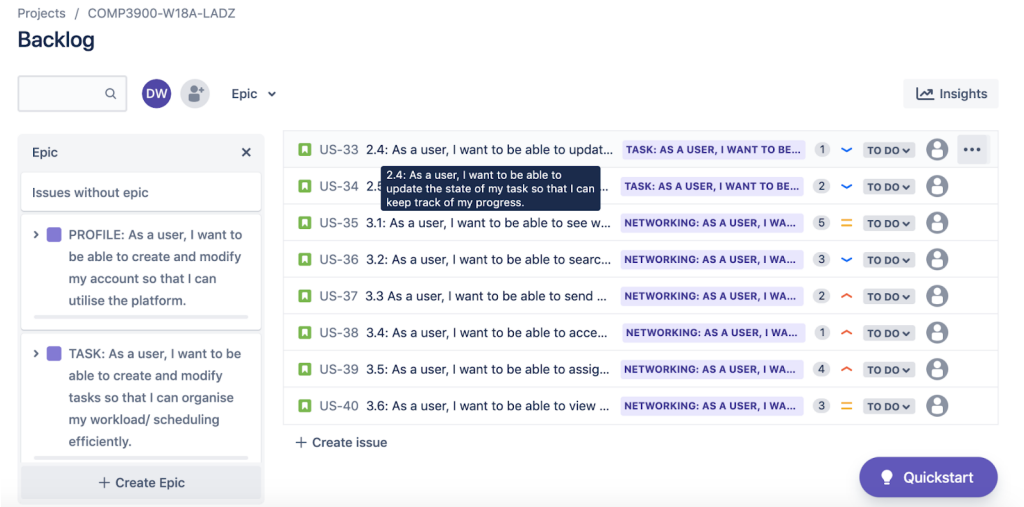
JIRA Screenshots: User Stories and Sprints

Sprints and Backlog Screenshot

Sprint 1 User Stories

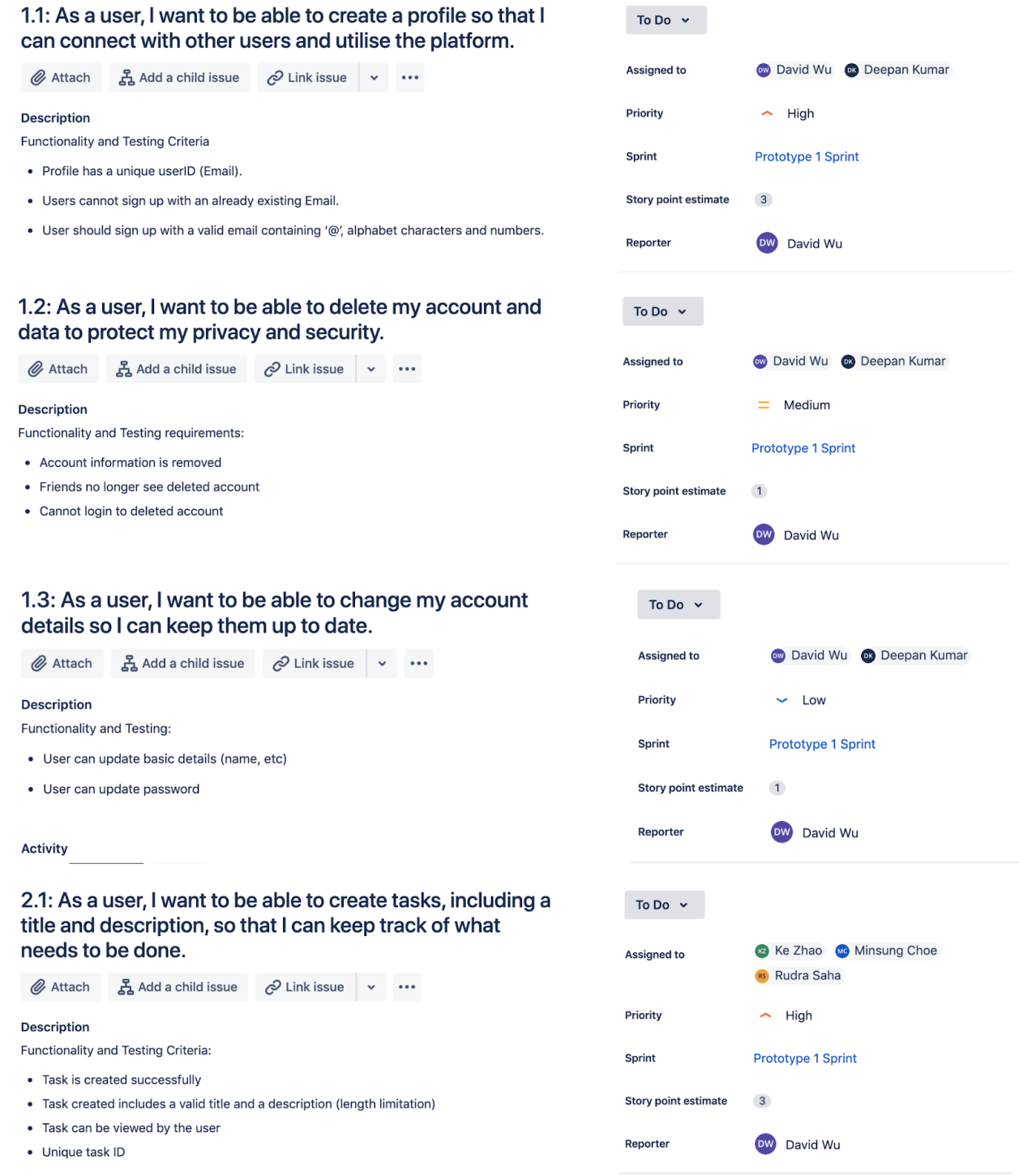


Screenshot of remaining Backlog:



User Stories Screenshots

Screenshot of example User-Stories in JIRA with title being the user story, the functionality and testing criteria as part of the description as well as priorities and story point estimates along with the **Sprint** this user story is part of (if decided upon) and who it is assigned to.



1.1: As a user, I want to be able to create a profile so that I can connect with other users and utilise the platform.

Attach | Add a child issue | Link issue

Description

Functionality and Testing Criteria

- Profile has a unique userID (Email).
- Users cannot sign up with an already existing Email.
- User should sign up with a valid email containing '@', alphabet characters and numbers.

To Do

Assigned to: David Wu, Deepan Kumar
Priority: High
Sprint: Prototype 1 Sprint
Story point estimate: 3
Reporter: David Wu

1.2: As a user, I want to be able to delete my account and data to protect my privacy and security.

Attach | Add a child issue | Link issue

Description

Functionality and Testing requirements:

- Account information is removed
- Friends no longer see deleted account
- Cannot login to deleted account

To Do

Assigned to: David Wu, Deepan Kumar
Priority: Medium
Sprint: Prototype 1 Sprint
Story point estimate: 1
Reporter: David Wu

1.3: As a user, I want to be able to change my account details so I can keep them up to date.

Attach | Add a child issue | Link issue

Description

Functionality and Testing:

- User can update basic details (name, etc)
- User can update password

To Do

Assigned to: David Wu, Deepan Kumar
Priority: Low
Sprint: Prototype 1 Sprint
Story point estimate: 1
Reporter: David Wu

Activity

2.1: As a user, I want to be able to create tasks, including a title and description, so that I can keep track of what needs to be done.

Attach | Add a child issue | Link issue

Description

Functionality and Testing Criteria:

- Task is created successfully
- Task created includes a valid title and a description (length limitation)
- Task can be viewed by the user
- Unique task ID

To Do

Assigned to: Ke Zhao, Minsung Choe, Rudra Saha
Priority: High
Sprint: Prototype 1 Sprint
Story point estimate: 3
Reporter: David Wu

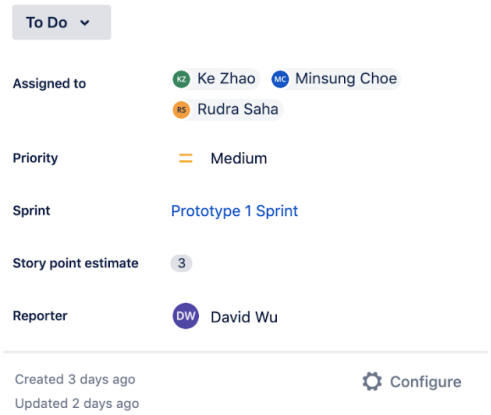
2.2: As a user, I want to set deadlines for tasks, so that I know how I should prioritise my time.

Attach | Add a child issue | Link issue

Description

Functionality and Testing Criteria:

- Deadlines can be assigned to tasks.
- Deadlines can be selected from a calendar of valid dates.
- Deadlines include a date and a time.
- Deadlines before the current date and time are invalid.
- Tasks without deadlines can be successfully created.
- Task shows correct deadline.
- Tasks without deadlines are correctly displayed.



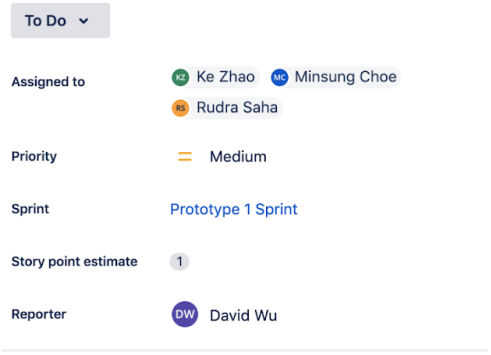
2.3: As a user, I want to be able to view a list of all my assigned tasks sorted by deadline so that I know what tasks I need to complete.

Attach | Add a child issue | Link issue

Description

Functionality and Testing:

- User can see all of their tasks
- Each assigned task shows a summary of the task, ID, title and deadline (if specified)
- Tasks are sorted by deadline, from earliest to latest, with tasks not having a deadline appearing last.



Projects / COMP3900-W18A-LADZ / TASK: As a user, I w... / US-33

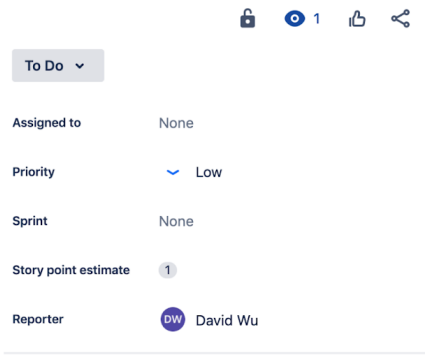
2.4: As a user, I want to be able to update the state of my task so that I can keep track of my progress.

Attach | Add a child issue | Link issue

Description

Functionality and Testing criteria:

- State of tasks are updated correctly
- Updated state can be viewed



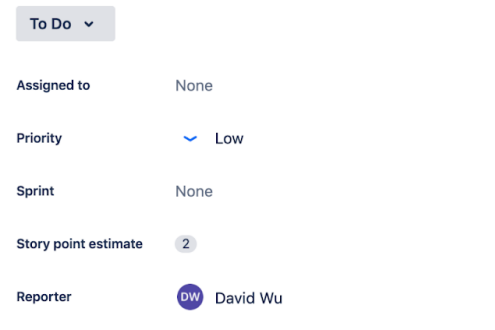
2.5: As a user, I want to be able to delete a task so I can remove any solved/unnecessary tasks

Attach | Add a child issue | Link issue

Description

Functionality and Testing:

- User no longer sees task as part of their tasks
- Friends no longer sees the deleted task
- Task load calculation is updated



3.1: As a user, I want to be able to see workload estimations for myself and other users to know how best to allocate tasks.

Attach | Add a child issue | Link issue

Description

Add a description...

Activity

Show: Comments | History | Newest first

To Do

Assigned to	None
Priority	Medium
Sprint	None
Story point estimate	5
Reporter	David Wu

3.2: As a user, I want to be able to search for a task so I can quickly find a relevant task.

Attach | Add a child issue | Link issue

Description

Functionality and Testing:

- Can search for tasks by id, name, description and/or deadline fields.
- All tasks assigned to the searcher or users connected to the searcer are available to be searched and found.

To Do

Assigned to	None
Priority	Low
Sprint	None
Story point estimate	3
Reporter	David Wu

3.3 As a user, I want to be able to send a request to other users, so that I can communicate with them.

Attach | Add a child issue | Link issue

Description

Functionality and testing criteria:

- Send request to other user by specifying their unique email address in a search bar and click submit
- Can't send a request to someone already connected with

To Do

Assigned to	None
Priority	High
Sprint	None
Story point estimate	2
Reporter	David Wu

3.4: As a user, I want to be able to accept/decline other users' requests to connect to protect my privacy.

Attach | Add a child issue | Link issue

Description

Functionality and Testing criteria:

- Connection occurs when the user receiving a request accepts
- Sender sees new friend, if new friend accepted
- New friend see sender if accepted

To Do

Assigned to	None
Priority	High
Sprint	None
Story point estimate	1
Reporter	David Wu

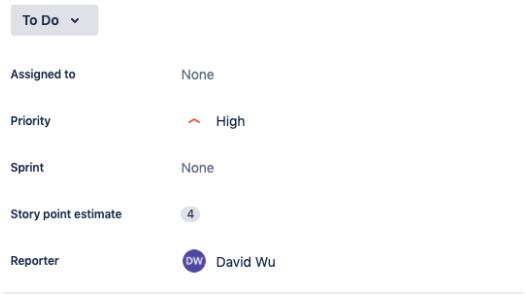
3.5: As a user, I want to be able to assign tasks to myself or other users to distribute the workload.

Attach | Add a child issue | Link issue

Description

- Task can be assigned to a different user, if given their ID
- Task cannot be assigned to a non-connected user.
- If the “assign to” is left empty then it automatically is assigned, by default, to the creator of the task.

Activity

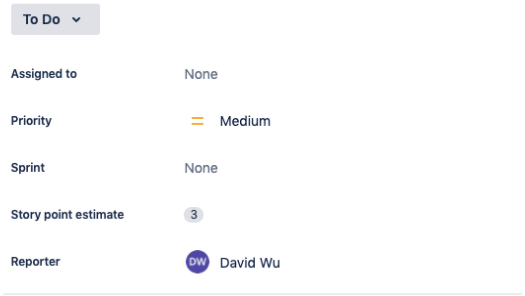


3.6: As a user, I want to be able to view details of other connected users so I know who they are and what tasks are assigned to them.

Attach | Add a child issue | Link issue

Description

- Can search for another task master using their unique email address.
- Can only view the pages of other tasks masters the searcher has already connected with.
- If a task master’s profile is found, there must be an “Assigned Tasks List” showing all their assigned tasks. The tasks must have their task ID, title and deadline (if specified) listed and tasks are ordered by earliest to latest deadline. Tasks without deadlines come after tasks with deadlines. Tasks with the same deadline, or no deadlines, are sorted by their title in alphabetical order.



System Architecture

Rationale

Programming Paradigm:

The scope of Task Master requires us to implement a system that revolves around individual users and their interaction with tasks along with networking with other users. This clear delineation of two central entities, the ‘User’ and ‘Tasks’ lends itself to being best implemented as some form of object. As such we have decided to approach this project based on **OOP (Object Oriented Programming)** concepts. We will treat each user and task as instances of an over-arching User and Task objects - building a system around these two central objects to enable all the functionality required.

Software Architecture Model:

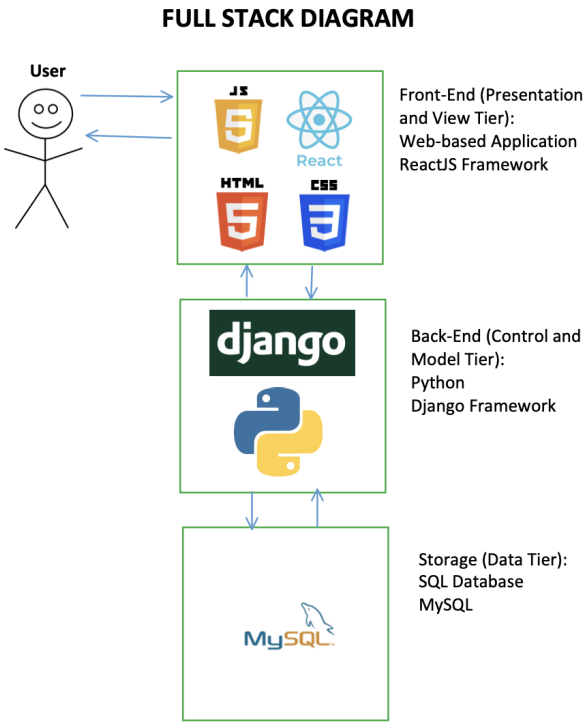
In order for us to achieve our project objectives we have decided to implement our system based on the layered architecture design of **Model-View-Controller (MVC)**. By clearly separating the project into three distinct layers we ultimately achieve greater flexibility by allowing us to achieve prototypes that are **functioning** and **testable** for each of the required progressive demonstrations, in line with our sprints. In conjunction with our OOP style we are also able to easily assign roles and specific tasks to team mates enabling us greater flexibility in regards to our schedules, as there is less reliance on certain tasks being completed before others.

The MVC design has many positives, in particular with **flexibility**, **robustness** and the separation of concerns. However, there are some drawbacks that we, as developers, must keep at the forefront of our minds. We must ensure that there is little to no coupling and interdependencies between our layers. In addition, we should ensure that our code remains simple, re-factored, and does not become difficult to understand later on.

Full-stack Overview

View

For the View-layer which is focused on the Front-end GUI logic and user-interaction elements. The site will use a Javascript framework of ReactJS to implement the bulk of our web-based functionality along with HTML and CSS to add aesthetics and improved user-experience.



In terms of external actors there is only one type of user. This user will be able to interact with the system (make a profile, create and view tasks) all through a standard website - there is no need to make an admin or other types of user roles.

Controller

The controller aspect bridges the Model and View layers along with providing the bulk of the processing and business logic. As such we have chosen to use a Django full-stack framework on Python as it is one of the most widely supported and well-documented full-stack frameworks and is very suitable for our needs.

Model

As mentioned before we are going to model the data in the form of instances of objects which we will implement in Python. We will then pass these instances of objects around between different parts of the system. This data will then be stored in a relational database implemented through MySQL. Using an SQL database will enable the application to easily search for users and tasks based on specific criteria along with providing us much needed system persistence.

References

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