

**SENG2021**  
**Software Engineering Workshop 2B**  
2016 - Semester 2

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**Team 'wasd'**  
**Final Report**

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Submitted on Friday 21st October 2016

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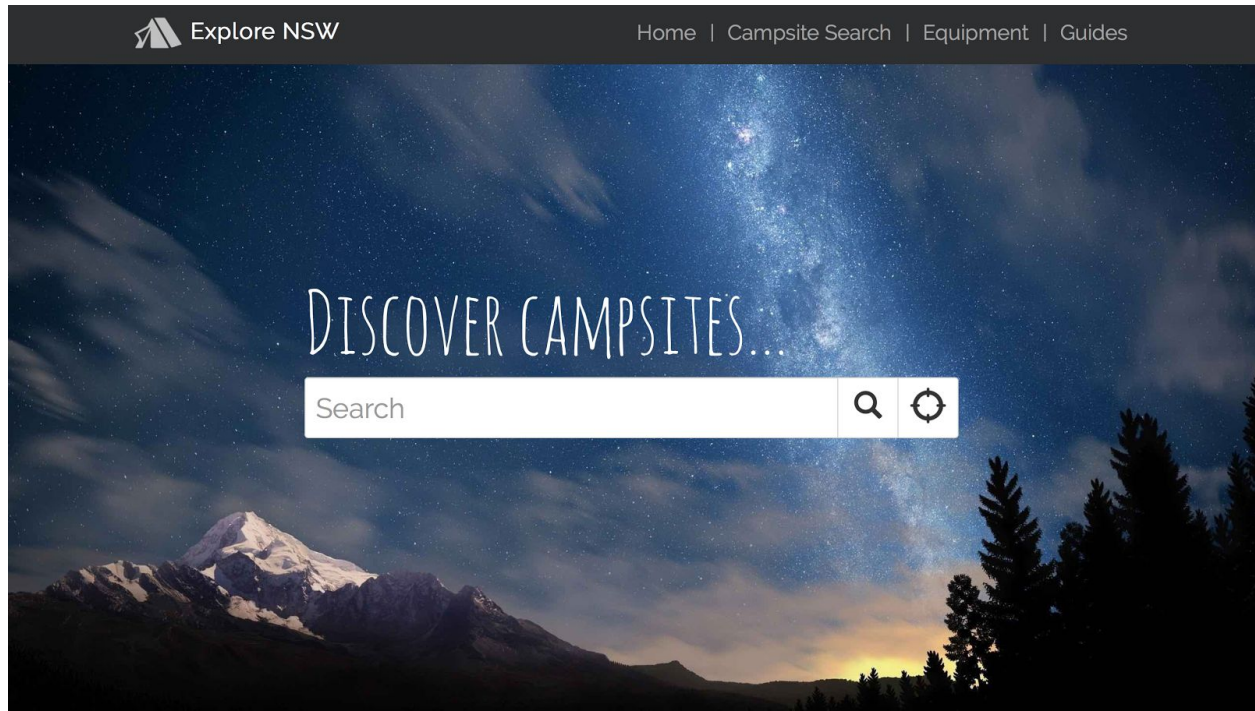
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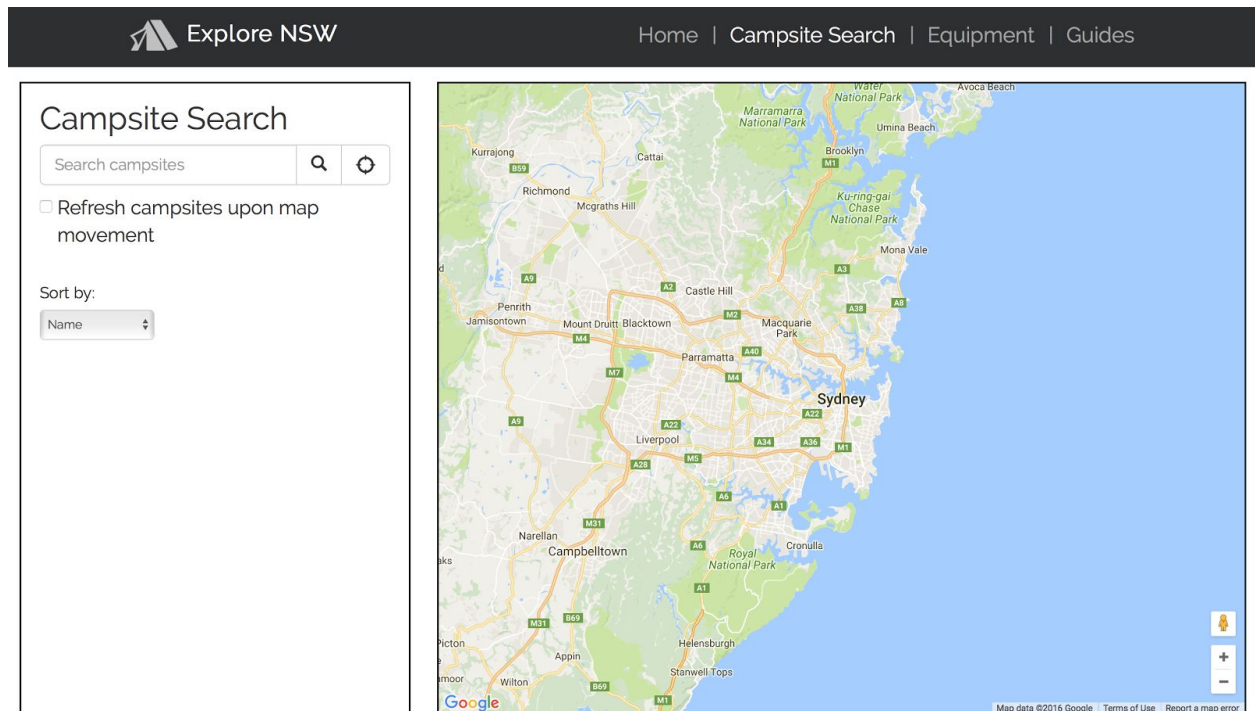
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# Pages

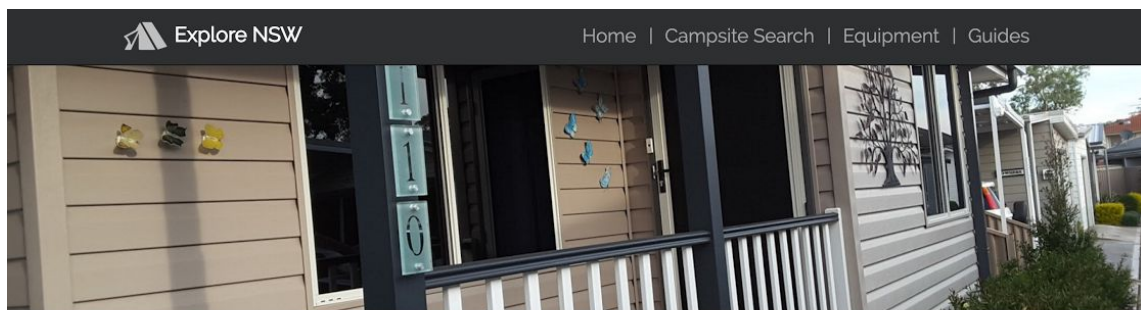
## “Home” Page



## “Campsite Search” Page



## "Campsite Information" Page

[Go Back](#)

## Cockatoo Island Camping

Thu Fri Sat Sun Mon



21°C 20°C 14°C 15°C 18°C

Share Tweet

Rating: ★★★★★

Facilities:      

Address: Cockatoo Island campground, Sydney Harbour NSW 2000, Australia

Phone Number: (02) 8969 2111

Website: <http://www.cockatooisland.gov.au/stay>



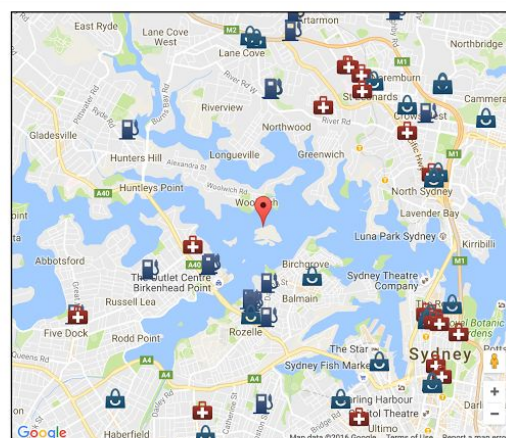
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### Nearby Facilities

[Show Shops](#)[Show Petrol Stations](#)[Show Medical Facilities](#)[Show All](#)

### Directions

[Get Directions to Campsite](#)




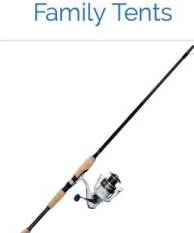
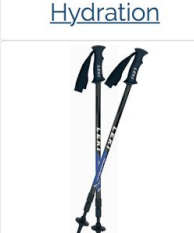
# "Equipment" Page



Explore NSW

[Home](#) | [Campsite Search](#) | [Equipment](#) | [Guides](#)

## Browse Equipment

 <p>A small, brown, single-person tent.</p>	 <p>A green and white 4-person tent.</p>	 <p>A large, orange and white family tent.</p>	 <p>Four water bottles in blue, green, red, and silver.</p>	 <p>A blue and black folding camp chair.</p>
<a href="#">Single Tents</a>	<a href="#">4 Person Tents</a>	<a href="#">Family Tents</a>	<a href="#">Hydration</a>	<a href="#">Chairs</a>
 <p>A black cooking pot with a handle.</p>	 <p>A blue sleeping bag.</p>	 <p>A fishing rod with a reel.</p>	 <p>Two hiking poles.</p>	 <p>A red first aid kit with a white cross.</p>
<a href="#">Cooking Utensils</a>	<a href="#">Sleeping Bags</a>	<a href="#">Fishing Rods</a>	<a href="#">Hiking Equipment</a>	<a href="#">First Aid</a>

# "Guides" Page

Explore NSW

Home | Campsite Search | Equipment | Guides

Guides

Camping

What to Take

Things to do

Camping

So, you're probably wondering why you should leave your comfortable house, stop bingeing Game of Thrones and venture out into the great unknown that is camping. Our world is becoming larger and larger. More people are connected to the Internet than ever before. The amount of people who own a mobile phone has almost doubled in the past ten years. When in a city, it is becoming virtually impossible to achieve a level of tranquility that comes by the very nature of being outdoors.

We all need a return to nature now and then, and we all can benefit with a break from our routines. The thought of sitting around a campfire under a clear sky, gazing up at the stars and listening to the sounds of the night can strengthen our bodies, pacify our minds and restore our spirits. Camping is rejuvenating!

Why I Love Camping

CAMPING KICKS ASS

What to Take

You know the old Scout motto: "A boy scout is always prepared". Equally, your camping trip will become exponentially easier and more enjoyable if proper planning and equipment has been brought along. Here is a bare-bones starter kit to bring with you on your first camping trip.

Tent


The most important piece of equipment for your camping arsenal is a proper tent. Depending of the size and length of your expedition a different type of tent could be warranted. All the [Purchase](#) and [Assembly Instructions](#) links redirect to a third-party website.

The Basic Ridge Tent

Ridge tents are very stable, easy to construct and perfect for one-to-two occupants. They can be found at almost any camping/outlet store and are generally the cheapest on the market. The largest drawback is the lack of headroom which can become frustrating if used for extended periods of time.

Assembly Instructions

Purchase



Dome Tent

Instant Tent

Pod Living

Cold Weather Tent


Sleeping Bag

A comfortable sleeping bag is crucial to a good nights sleep when camping. In a lot of cases, keeping ourselves warm can be the difference between a great camping experience & an absolute miserable one. On a personal note this drives me crazy! As for a lot of first time campers it could spell the end of camping forever. NOT A GOOD START!!

Alpine Sleeping Bag

Designed for extreme conditions above the snowline. They need to be both warm and light: a mummy shape, lightweight fabric and high quality down are used to give a high warmth-to-weight ratio, with water-resistant shell fabrics also common.

Purchase







Bushwalking Bags

All-Rounder Bag

Cooking Utensils

The following cooking utensils are vital for preparing meals while camping. All the [Purchase](#) links redirect to a third-party camping website which you can buy the item from.


Utensil	Image	Purchase
Plates		<div>Purchase</div>
Plates		<div>Purchase</div>
Thermos		<div>Purchase</div>
Frying Pan		<div>Purchase</div>

Things to do

There is no shortage of activities to do while camping. Simply cooking and breathing the fresh air is often enough. However, if you are more adventurous there are other options.

Fishing

Fishing is great fun. It involves simply sitting and chilling out for extended periods of time.



Hiking

Four-Wheel Driving

Back to top



# Use Cases

**Problem:** The available camping websites do not offer functionalities that allow NSW campers to locate specific nearby camping locations

**Feature:** Locate all campsites near a specified region.

**As a user**

**So that** I can easily discover new campsites around a chosen area

**I want to** Search a chosen location for nearby campsites

**Given** that I am on the “Home” screen.

**Or**

**Given** that I am on the “Campsite Search” screen.

**When** I enter a location into the “Search Campsite” text box

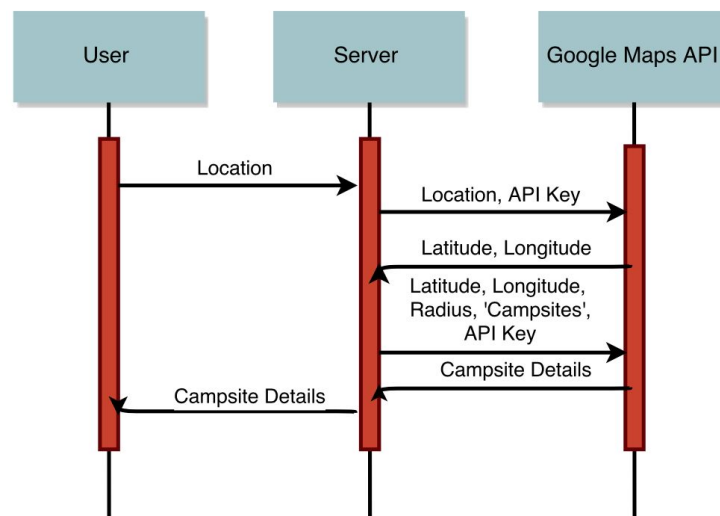
**Then** I am given a list of autocomplete suggestions

**When** I select a place from the autocomplete suggestions

**And** I press the “magnifying glass” (Search) button.

**Then** a Google Map is displayed with pins over all nearby campsites around the chosen location

**And** I am shown a more detailed list of these campsites with their address, phone number, rating and distance.



**Problem:** The available camping websites do not offer functionalities that allow NSW campers to search around their current location

**Feature:** Locate all campsites around the user's location

**As a user**

**So that** I can easily discover campsites around my location

**I want to** Search for campsites that are close to me

**Given** that I am on the "Home" screen.

**Or**

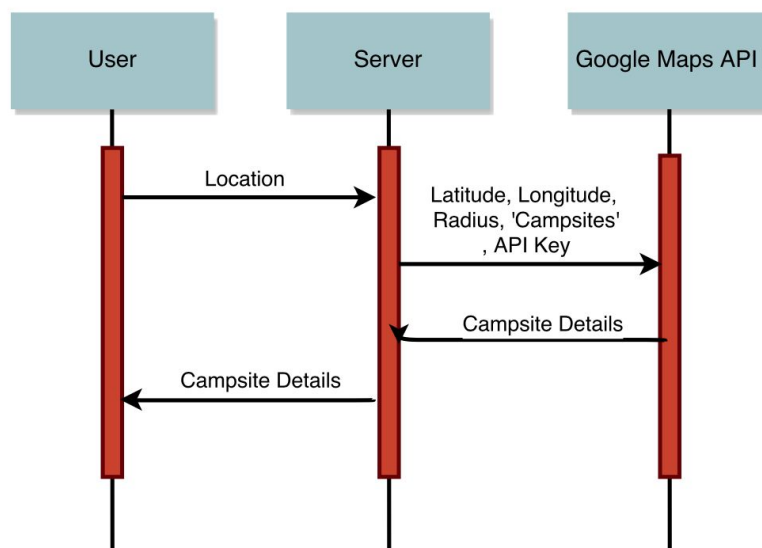
**Given** that I am on the "Campsite Search" screen.

**When** I press the "scope" (Nearby Me) button

**Then** a Google Map is displayed with pins over all nearby campsites around the chosen location

**And** a marker at my current location appears

**And** I am shown a more detailed list of these campsites with their address, phone number, rating and distance.



**Problem:** *The user may wish to explore campsites near any location without knowing any names.*

**Feature:** Automatically search for new campsites while scrolling Google Maps

**As a user**

**So that** I can discover campsites around a location I do not know

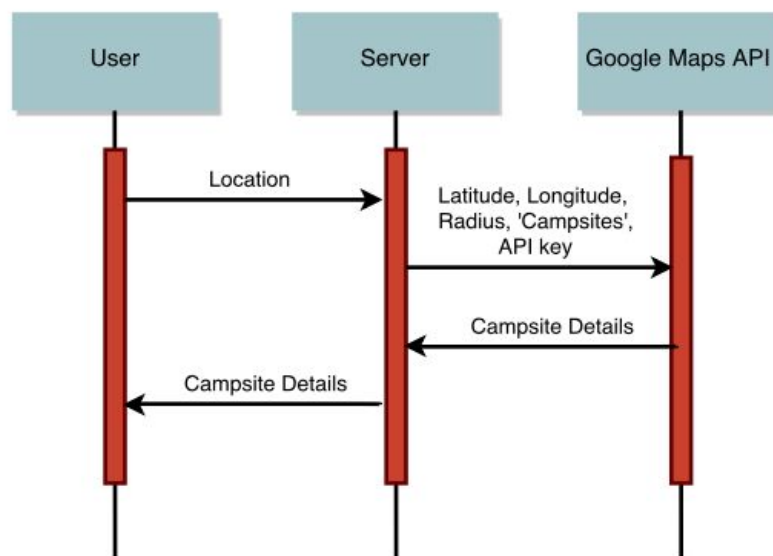
**I want to** view campsites at any location I choose without inputting a name

**Given** I am on the “Campsite Search” page

**And** the “Refresh campsites upon map movement” button is checked

**If** I drag the Google Maps screen

**Then** the campsite search is performed around the new centre of the map, and I am presented with different campsites on the map as well as in the “Campsite List”.





**Problem:** *The available camping websites do not allow users to search and sort campsites based on how far they are located from the chosen location*

**Feature:** Sort the list of campsites on the map by distance

**As a user**

**So that** I can determine whether a campsite is too far from my location

**I want to** sort the given list of campsites by distance

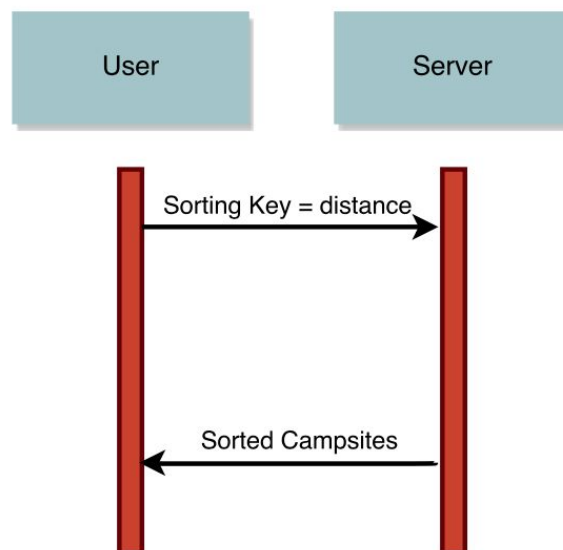
**Given** I am on the “Campsite Search” page

**And** I am being shown a list of campsites

**If** I click on the “Sort by:” drop down list

**And** I click “Distance”

**Then** the list of campsites is sorted by distance.



**Problem:** *The available camping websites do not allow users to search and sort campsites based on their rating from past reviews*

**Feature:** Sort the list of campsites on the map by Google Maps rating

**As a user**

**So that** I can determine whether a campsite has been voted highly and is desirable

**I want to** sort the given list of campsites by rating.

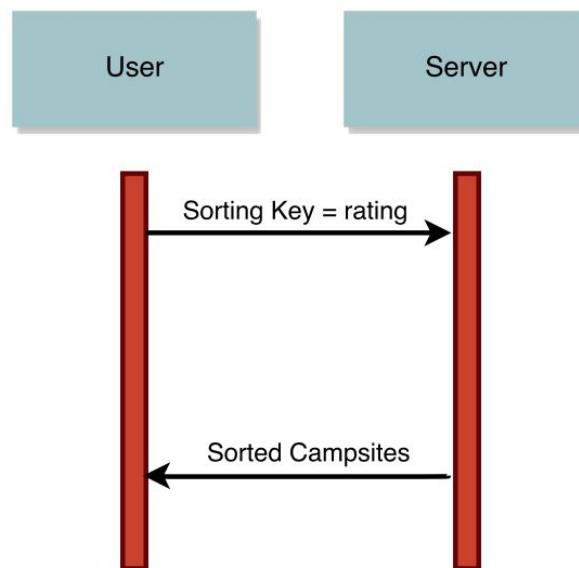
**Given** I am on the “Campsite Search” page

**And** I am being shown a list of campsites

**If** I click on the “Sort by:” drop down list

**And** I click “Rating”

**Then** the list of campsites is sorted by rating.



**Problem:** *A user may have a specific campsite in mind without knowing the exact location, and wants to view a list alphabetically to easily find it*

**Feature:** Sort the list of campsites on the map by name.

**As a user**

**So that** I can clearly examine all campsite options

**I want to** sort the given list of campsites by name.

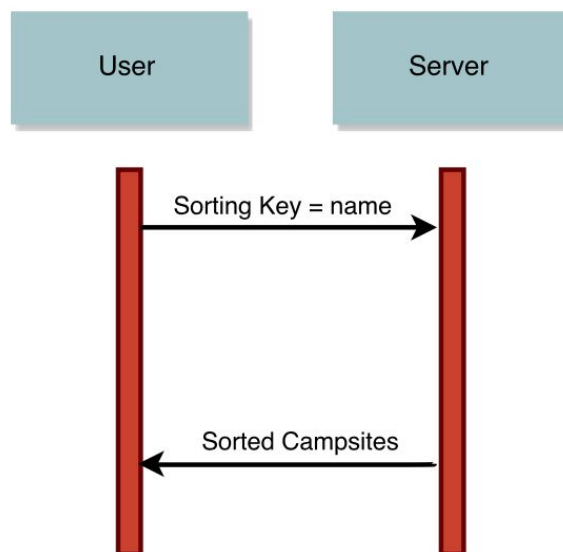
**Given** I am on the “Campsite Search” page

**And** I am being shown a list of campsites

**If** I click on the “Sort by:” drop down list

**And** I click “Name”

**Then** the list of campsites is sorted by name.



**Problem:** Current camping website options do not provide users with an in-depth resource to inform users of all basic information about a chosen campsite

**Feature:** Provide more details of a particular campsite

**As a user**

**So that** I can determine whether a particular campsite fits my needs

**I want to** view more detailed information about a campsite including: photos, the address, phone number, website URL, facilities, directions and weather.

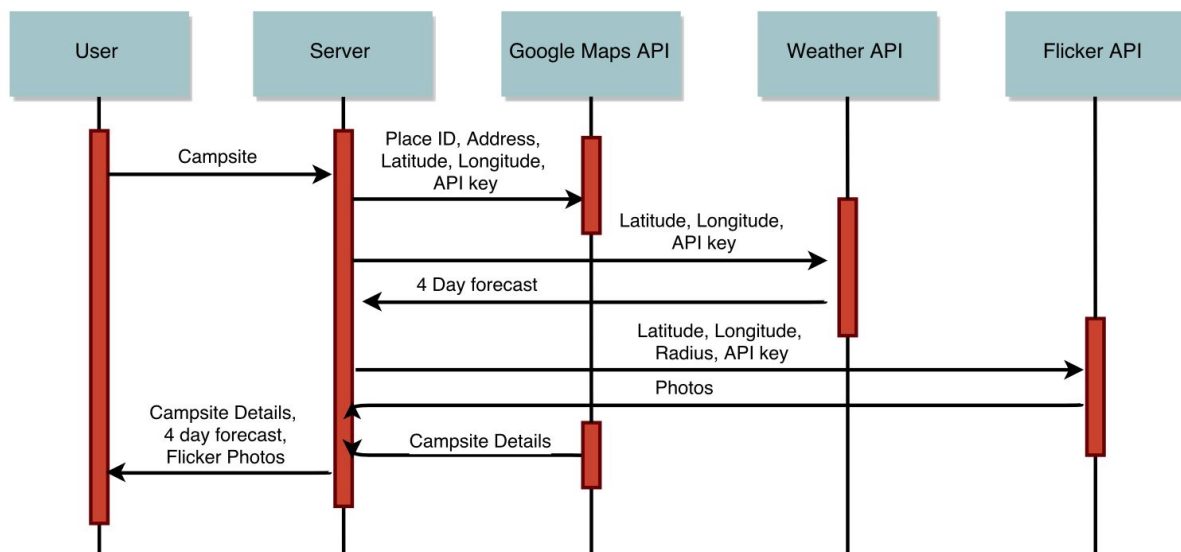
**Given** that I am on the “Campsite Search” page

**And** campsites are being presented to the user.

**If** the user clicks the “View More” button on the left panel list

**Or** if the user clicks one of the campsite pins and then clicks on the campsite name

**Then** the user is redirected to the “Campsite Information” page, where the user is provided more information about the campsite.



**Problem:** Once a suitable campsite has been located, it is difficult to subsequently get directions to the site.

**Feature:** Get directions to a selected campsite.

**As a user**

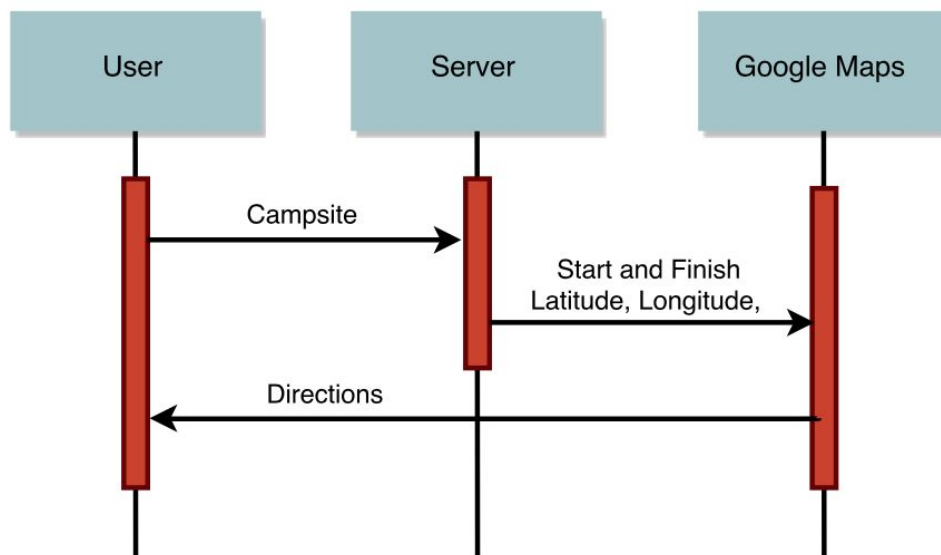
**So that** I can know the time and direction to navigate to a selected campsite

**I want to** be presented with a map to the campsite.

**Given that** I am on the “Campsite Information” page

**If** the user clicks on the “Get Directions to Campsite” button

**Then** the user is redirected to a map giving road directions from their location to the required campsite.



**Problem:** Once a suitable campsite has been located, it is difficult to subsequently share this with others.

**Feature:** Sharing a campsite on social media.

**As a user**

**So that** I can show other travelers a campsite.

**I want to** share a campsite on facebook or twitter

**Given that** I am on the “Campsite Information” page

**And** I click either the Facebook or Twitter button

**Then** the campsite page will be shared on the social media of choice

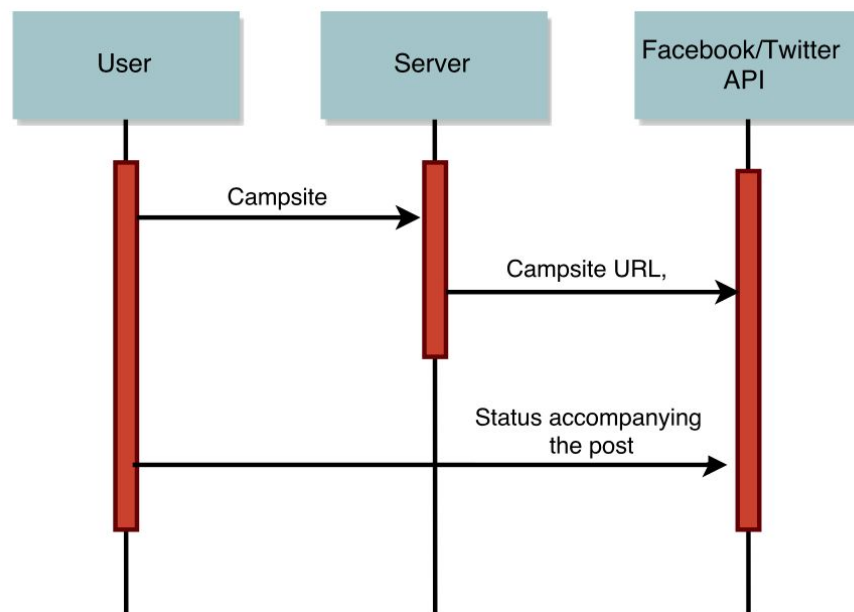
**Given that** I am on either Facebook or Twitter

**And** I am on the user’s home page

**Then** I can see a link to the shared campsite

**If** I click the link to the webpage

**Then** I am redirected to the “Campsite Information” page for the specified campsite.





**Problem:** Once a suitable campsite has been located, it is difficult to find facilities that are nearby, including: shops, service stations and medical facilities.

**Feature:** Find facilities near the selected campsite

**As a user**

**So that** I can find and navigate to different facilities of choice near a selected campsite.

**I want to** know what shops, service stations and medical facilities are near the campsite

**Given that** I am on the “Campsite Information” page for a selected campsite

**And** I scrolled down to the “Nearby Facilities” map section

**Then** I am shown a map with pins for shops, service stations and medical facilities

**If** I click on a pin

**Then** I am shown the name, address, phone number, whether it is open currently as well as trading hours.

**If** I click “Direction”

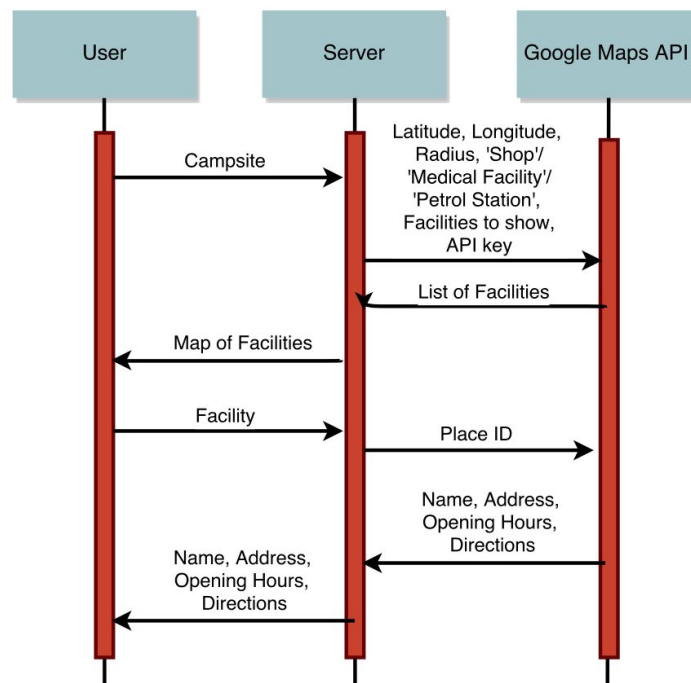
**Then** I am shown the directions from the campsite to the facility.

**If** I click on the “Show” buttons under “Nearby Facilities”

**Then** the map will show only the facility chosen

**If** I click on the “Show All” button under “Nearby Facilities”

**Then** the map will show all the facilities



**Problem:** *Users may wish to return back to the “Campsite Search” page with previous search results remaining.*

**Feature:** Allows users to return to the “Campsite Search” page from the “Campsite Information” with the previous search criterias remaining

**As** a user

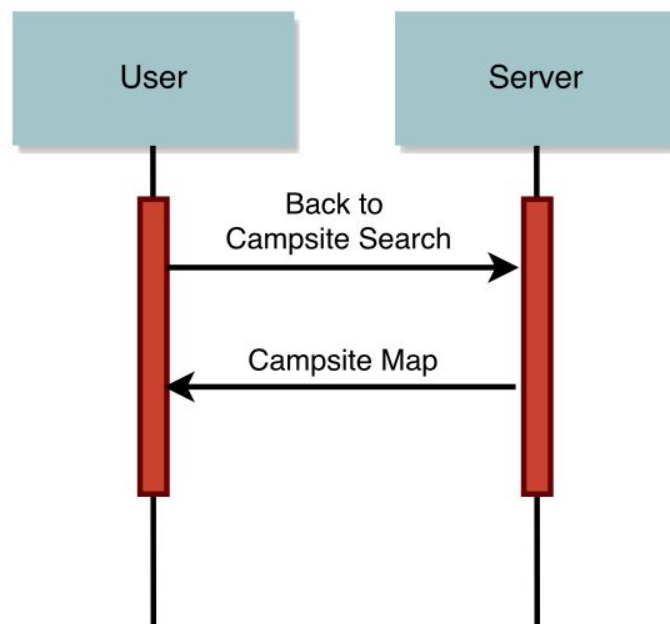
**So that** I can return to the “Campsite Search” page.

**I want to** be able to go to make another campsite search with the previous search options

**Given that** I am on the “Campsite Information”

**And** I click the “Go Back” button at the top left of the page

**Then** I am redirected to the “Campsite Search” page with the previous search options



**Problem:** *Different web pages and videos must be opened to learn more about camping.*

**Feature:** Provide users basic information about camping

**As a user**

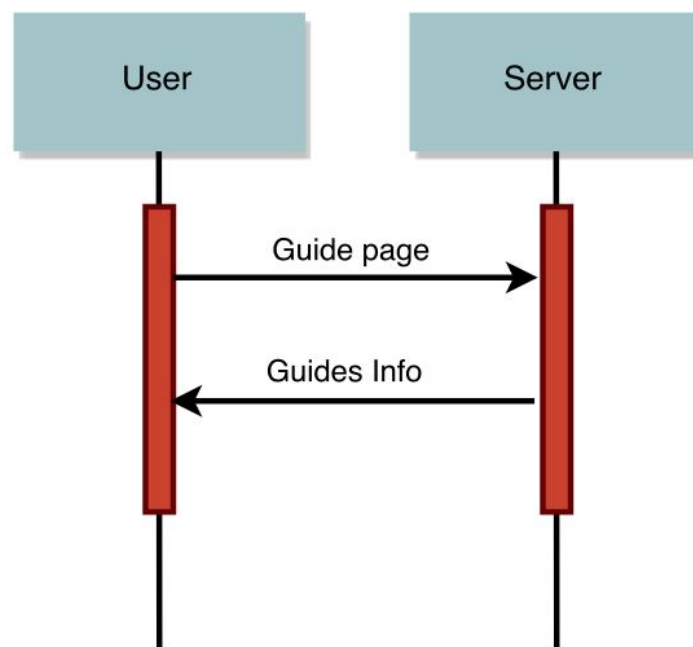
**So that** I can learn the basics on camping and the different equipment to bring.

**I want to** be able to learn about camping on the same website that provides campsites

**Given that** I am on any page on the website

**And** I click the “Guides” button on the menu bar at the top of the page

**Then** I am redirected to the “Guides” page where information about camping is provided



**Problem:** *Current camping website options do not provide users with an all-in-one website that allows them to view equipment required for camping*

**Feature:** Provide users different types of camping equipment

**As a user**

**So that** I can easily view camping equipment without opening and searching for a new website.

**I want to** be able to easily find and buy camping equipment without searching online

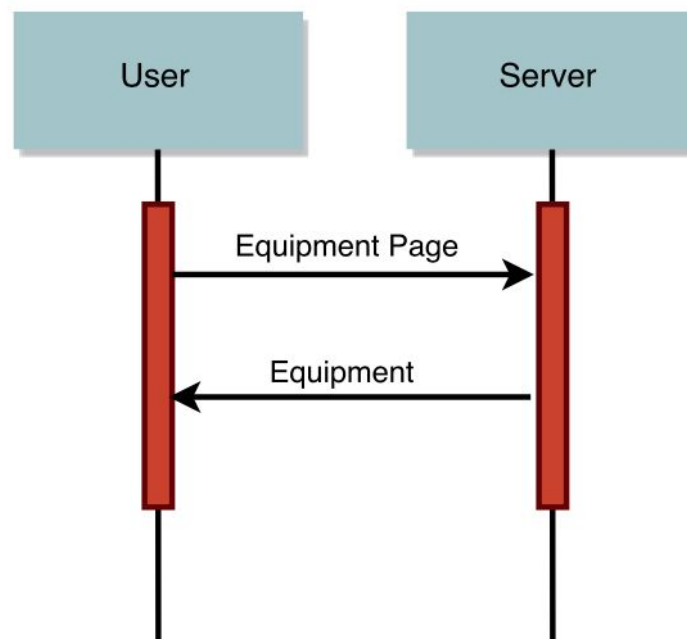
**Given that** I am on any page on the website

**And** I click the “Equipment” button on the menu bar at the top of the page

**Then** I am redirected to the “Equipment” page where different types of camping equipment are sorted

**If** I click on the image or text of the interested type of equipment

**Then** I am redirected to a page with the prices for the interested camping equipment



**Problem:** *Users may wish to return back to the “Home” page.*

**Feature:** Allows users to return to the “Home” page

**As** a user

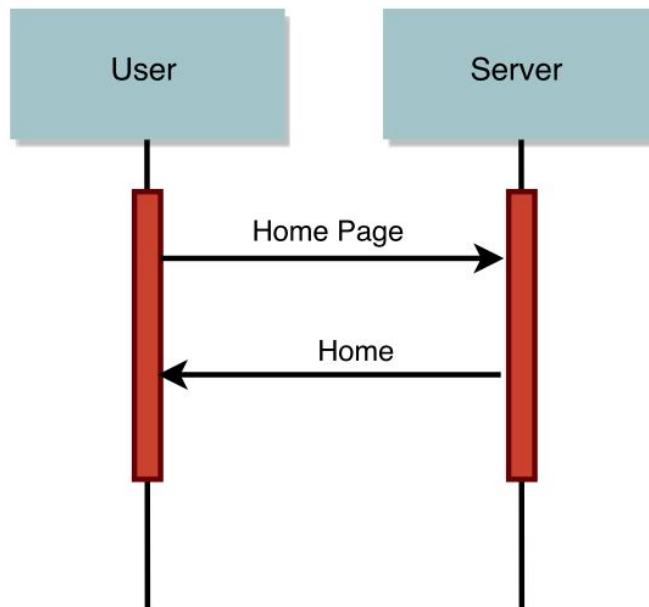
**So that** I can return to the “Home” page.

**I want to** be able to go to the “Home” page

**Given that** I am on any page on the website

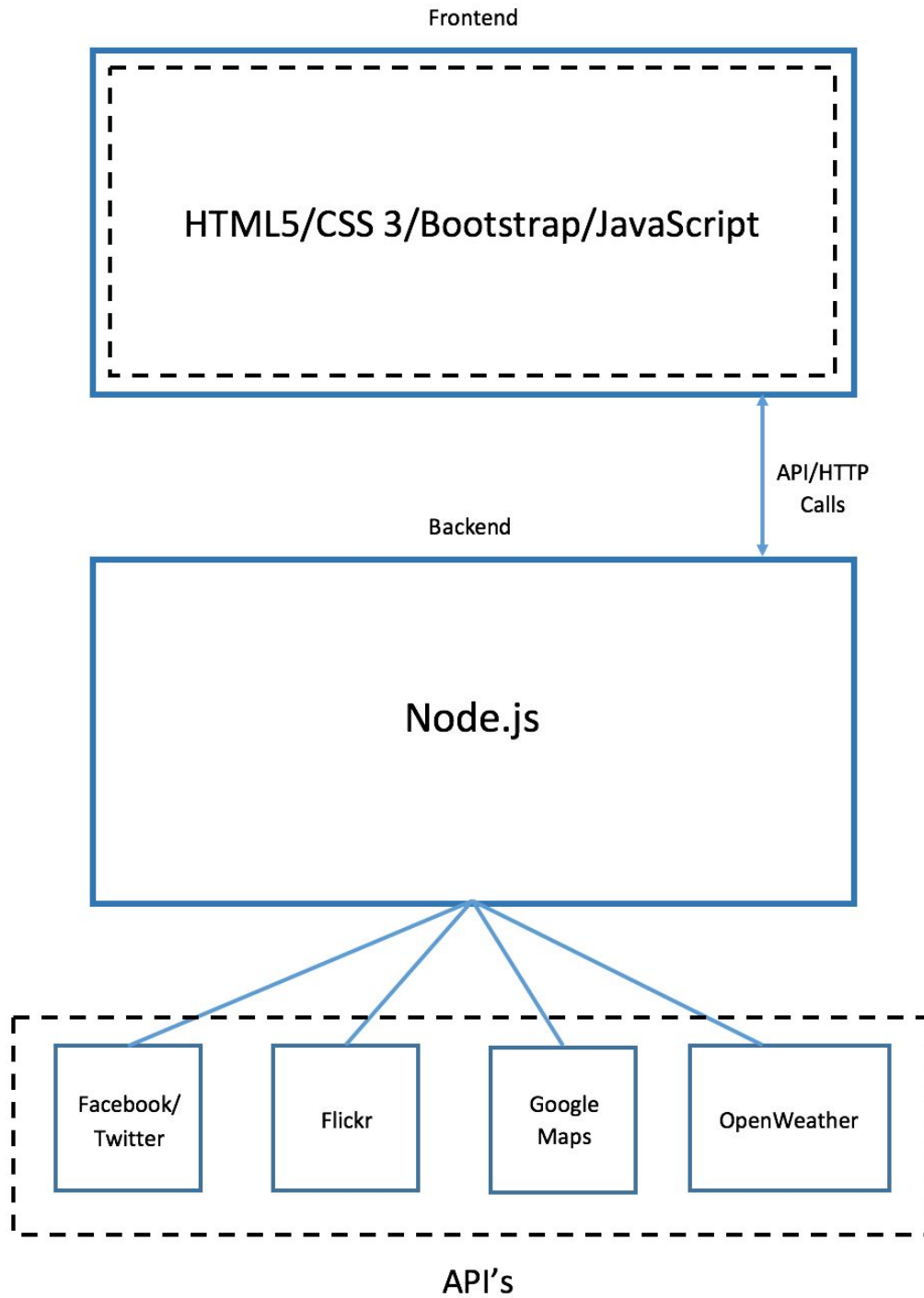
**And** I click the “Home” button or the “Tent” icon on the menu bar at the top of the page

**Then** I am redirected to the “Home” page



# *Design and implementation*

## Software Architecture





Software components:

- **Frontend:** For the frontend of our website, we agreed that it would be imperative for the aesthetic to present a simple and clean layout for users who would not be familiar with the site or the idea of camping. Thus, with the obvious choices of HTML5 and CSS3, we chose to work with the Bootstrap framework, an extremely simple and clean CSS framework that is easy to implement.
- **Middleware:** No middleware was required for any functionalities within our website. While we had originally decided to use AngularJS, we realised that there was simply not enough time to learn a vast number of frameworks, and thus chose to work with vanilla Javascript which still fulfilled the functions that we wanted in our website.
- **Backend:** Node.js implemented with the Express module was chosen for the backend of our website, which was used to handle external API calls as well as routing dynamic URLs. We opted to use Node.js over other backend frameworks such as Django for a number of reasons. Node.js is an open source, cross-platform runtime environment for developing server-side and networking applications perfect for our uses. Node.js applications are written in JavaScript, and can be run within the Node.js runtime on OS X, Microsoft Windows, and Linux, making it easy to develop cross-platform as the members of our team develop in different operating systems. Node.js also provides a rich library of various JavaScript modules which simplifies the development of web applications using Node.js to a great extent. The most notable of these is Express, which was used to rapidly speed up the initial development of the application by setting up the basic structure of our website's files.
- **External API's:** We made use of several API's in the development of the camping website.
  - **Facebook:** The Facebook API is used to share campsites found on the website, which could be done by clicking a 'Share' button found on every campsite information page..
  - **Twitter:** The Twitter API is used to share campsites found on the website in a similar fashion to the Facebook share button.
  - **Google Maps:** The Google Maps API is used extensively around the website. It is used on the "Campsite Search" page to locate campsites in a particular region, and display them both on the map and in a more detailed list form. It is used again on the "Campsite Information" page to display the proximity to: shops, petrol stations and medical facilities. Moreover, it is also required when displaying more information about a campsite - such as its address, pictures and rating.

- **Weather:** The OpenWeather API is used to display a 4-day weather forecast on every campsite information page for the next 4 days.
- **Flickr:** The Flickr API is used to obtain images for any campsites that the Google Maps API did not have images for. These images were only used as a last resort as they were often not relevant as we were only able to search by latitude and longitude with no extra filters.
- **Relationship between components:** Our client-side javascript displays information such as the Google Map with campsite locations. When there is a GET request for a specific campsite information page, the place ID of the campsite is passed into our server-side Node.js via a query string, where we are able to obtain all required information and then pass this data back out to the view to display to the user.
- **Deployment:** The website is deployed on heroku and can be accessed via this URL: <https://sengwasd.herokuapp.com/>

## Key Technologies

- **Programming Languages:** HTML5, Javascript, JQuery, and JSON.
- **Frameworks:** Node.js, Bootstrap.
- **Node.js modules:** Express, Hogan.js
- **Libraries:**
  - **Unslider:** <http://unslider.com/>
  - **jQuery.sortElements:** <https://github.com/padolsey-archive/jquery.fn/tree/master/sortElements>
- **APIs:** Google Maps, Flickr, Twitter, Facebook, OpenWeather

## Benefits of Design

There were many benefits of our design. Firstly, through the use of Bootstrap implemented with CSS 3, we were easily able to develop a simple but elegant user interface at tremendous speeds that would be impossible to accomplish with just CSS and HTML.

Secondly, since our implementation stack was MEAN we could use the same JavaScript on the front and backend, differentiating itself from the LAMP stack. This flexibility aided in the development of the project significantly as only a single language was needed to learn. Even though we never ended up requiring MongoDB or AngularJS, only working in Javascript for both the server-side and client-side code made the project a lot less complicated.

# *Team organisation and reflection*

## Responsibilities of the team

Initially, team 'wasd' thought the best way of compartmentalising the project was to split it between backend and frontend. Two members would attempt backend and three would work on front-end. However, after the initial progression of the project we found that most of the work was involved in the middle to front end and more resources were required. As such, it was decided that all members would work on frontend and backend with the split-up happening between pages. i.e. each member would work on a page.

## Overall Thoughts

Overall, all members of team 'wasd' were immensely proud of the product which we created. We felt we found an appropriate target audience (first time campers) and we developed a website for this target audience which was easy to use with no unnecessary functionalities. Though our project is basic, we believe it would be beneficial to any people with a desire to go camping. Much was learnt through this project both coding and teamwork-wise.

## Issues Encountered

The main problems encountered with the "Explore NSW" website were related to the API interfaces. The first issue which team "wasd" noticed was the limitation of 10 calls to the Google Maps API per second. This means that if the user drags the screen fast enough and exceeds the 10 call limit per second, some data would simply not display until refreshed. Another major issue that was not foreseen until late in development was Google Map's difficulty in displaying only points of interest such as service stations and tourist attractions.

While our team had many ideas at the beginning of the semester, we were not able to fulfil all of these due to time and knowledge constraints. Our equipment page was planned to be a vast store containing equipment from many websites, but unfortunately with our limitations we were only able to implement a basic Google search as our final result.

Another issue that plagued the group at the beginning of the project was our low skill level developing in the MEAN stack. While we planned to initially use MongoDB to store campsite information in a convenient and easily retrievable format, we realised that this

was simply far too difficult to integrate with the Google API. Many hours were lost trying to integrate a database into our project using Mongoose, which could have potentially saved us from calling the Google API too many times, but was unfortunately too difficult to implement. As well as this, AngularJS was planned to be used to handle basic functions of our website, such as sorting information. However, this was also difficult to learn in such a short time-span, and we were able to implement workarounds that still fulfilled our needs without using AngularJS.

## What would we do differently?

There are several choices that were made early on in the project that we feel were mistakes. The first was not exposing ourselves to more sophisticated tools to help keep track of issues and bugs. The amount of time spent discussing and querying each other for information was far greater than the learning curve for a piece of software such as: “Exceptional” or “Sifter”.

Furthermore, team ‘wasd’s discussions took place mainly over Facebook chat. This textual communication made it difficult to clearly articulate our needs and requirements. If we were to begin the project again, we would likely meet more as a group to discuss our progress together.

We would also implement a proper database using either MongoDB or SQLite to handle the calling of information for different campsites. This would have saved us from going over the query limit for the Google API, and would have made our project more scalable.

If more time was available, we would be able to further develop our project. The images on our “Campsite Information” page could have been found more efficiently and also filtered out to allow for more relevant images. Our hard coded facilities on the “Campsite Information” page would have been found by searching relevant camping websites and campsite description would have been added were there more time.