# Final Project Diary

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# Specification

* Weekly diary entry
* Update for each day
* Reflection on the week section
* You need to keep a record of what you have learnt and the tasks you have been working on and have completed. Experience of Team work should also be included.

# Week 1: Settling Back and Starting the Final Year Project

This week marked my return to college, which came with many adjustments. Along with moving to a new town closer to campus, I had a full schedule of lectures, including a long first day from 9 am to 4 pm. While the transition was hectic, I also started focusing on my final year project.

I found out from friends that the project bank was made available, and students could now view potential projects on the Maynooth University website. To accept a project, we were required to meet with lecturers, so I began looking through the options. However, I felt a lot of pressure as many projects were already being taken, which led to feelings of anxiety and imposter syndrome, especially since I couldn’t immediately find a project that aligned with my interests.

While sitting in the lab with a mate after lectures, we were discussing how crowded the parking situation on campus was, which sparked the idea to create a project based on solving this issue. I recalled seeing a few lecturers open to students proposing their own projects, so I emailed some of them with my concept. Dr. Aiden Mooney was the first to respond and showed interest in my idea. I remembered him from my first-year CS161 Intro to Computer Science class, and we set up a meeting to discuss my proposal.

Before the meeting, I prepared a document outlining my initial ideas for a parking check-in/check-out system. My initial thought was a mobile app that students could use to check in and out of parking spaces. However, I realized not many would use the check-out feature, as there was no incentive. I considered location-based check-out options and shared these variations with Dr. Mooney during our meeting. He suggested that a web app might reach a larger audience and raised a key point about ensuring accuracy, even if only a few users were utilizing the system. We also discussed adding a feature where users could indicate how busy a parking lot is upon arrival.

After reflecting on the meeting, I had some second thoughts and wondered whether I should have chosen a more structured project where guidance would be clearer. However, I decided to stick with my idea and began preparing by familiarizing myself with the necessary technologies. I downloaded JetBrains WebStorm and successfully linked it with my GitHub repository after a bit of troubleshooting. I also set up initial folders and documentation, including brainstorming ideas and writing a project report to get back into the routine of reporting and planning.

# Week 2: Brainstorming and Balancing Responsibilities

This week, I didn’t make significant progress on my final year project due to other duties at home that required most of my attention. Additionally, I focused on catching up with some lecture material and continued exploring options for my project. Despite feeling some pressure from seeing other students dive deep into their projects, I knew my priorities at home were more important, and I still made small steps forward.

I brainstormed ideas and bounced some off my friends, which was helpful for refining my project direction. I also watched some videos about integrating a map using Python, which looked particularly interesting. The idea was to add pins or markers to a map (or a picture imported from Google Maps), which could be filled with data. I considered applying this concept to a map of Maynooth for my project, but I had already set up WebStorm, not Python, for my development environment.

Although I didn’t work much on the technical side this week, I still chipped away at ideas and concepts. I also reminded myself that with the way I’ve structured my modules—6 in the first semester and only 2 in the second semester—I’ll have more free time later in the year to focus more intensively on the project.

# Week 3: Testing Frameworks and Designing Wireframes

This week, I really focused on my project. I had initially planned to meet with the lecturer guiding me, but due to a missed email, we couldn’t coordinate our schedules. However, we’ve now set a recurring meeting for next week to ensure we stay on track.

In the meantime, I spent a lot of time researching and testing various frameworks that could be useful for completing my project. I tested Angular, React, Bootstrap, and plain JavaScript/HTML. I eventually settled on Bootstrap because of its simplicity and flexibility. The components in Angular felt too complicated for my needs, while Bootstrap allowed me to easily import what I needed to make the page look good.

With Bootstrap, I was able to set up a nice index page that included a graph showing the busiest times for parking, a heading, and check-in/check-out buttons. However, I quickly realized I had jumped too far ahead without a clear design plan, so I paused and decided to create a wireframe for the project to better visualize the layout.

I found a drag-and-drop wireframe maker online, which made the design process much smoother. Creating the wireframe reminded me of my time at ESB, especially the use of headers, hero blocks, and three-column blocks. The wireframe included a header, a hero section with a left-aligned photo, H1 and P tags on the right, and two call-to-action buttons for checking in and out. Below that, I left space for the graph, which could later be refined.

The wireframe approach helped me realize that I could include a dropdown bar for selecting different car parks, allowing users to see how busy each one is and when it might be free. Additionally, after talking with a peer, I got the idea to upload my weekly diary entries to my GitHub repository, so my lecturer can easily track my progress and catch up on what I’ve been working on.

# Week 4: Adding Interactive Maps and Backend Setup

This week marked a major leap forward in my project, but it didn’t come without challenges. After developing the wireframe last week, I tried to translate it into a working layout on my site. While I didn’t manage to perfectly match the design, I discovered something called Leaflet, which allowed me to integrate an interactive map into my project—a feature I’d been particularly concerned about.

Getting the interactive map set up and working was a significant relief, as it had been one of the most complicated aspects I anticipated. I configured the map to focus on Maynooth, which was a major achievement. Being able to see it in action felt like a breakthrough after a lot of trial and error. This was a high point in my week, giving me the momentum to continue pushing forward.

In addition to the map, I also began setting up the backend, which turned out to be far more challenging than I initially thought. I spent a significant amount of time establishing a MongoDB database and building the necessary backend infrastructure. This included creating directories for backend functionality, setting up environment files (.env), writing the seed script (seed.js), and getting the server running via server.js and package. Json. I also structured the backend folders correctly, which involved learning the intricacies of backend development, as this was still relatively new territory for me.

Debugging became the theme of the week, as almost every step in setting up the backend came with its own set of problems. The process of connecting MongoDB to my application was particularly difficult, as I ran into multiple errors related to configuration, database connections, and package dependencies. In some cases, I had to repeatedly check my code and research various issues online. Even something as simple as getting my live server to run was challenging I had to kill processes running on certain ports and restart the server multiple times. It felt like a constant back-and-forth between fixing one issue and encountering another.

These repeated debugging sessions were exhausting and, at times, demoralizing. I spent hours staring at error logs, reconfiguring files, and testing different setups, only to see things still not functioning as expected. It was hard to stay motivated when progress felt slow, and I started to feel the pressure of falling behind.

However, the silver lining was finally getting the interactive map working smoothly on my site. That moment was a huge win for me because it was the feature I’d been most anxious about. With the map integrated successfully, I was able to create a new page where the map is displayed once the “Check In” button is pressed. I also spent some time fine-tuning the site’s appearance with CSS, making sure everything looked cleaner.

In summary, while the week was tough and at times demoralizing due to the extensive debugging, seeing the interactive map come to life was a huge relief and gave me a renewed sense of confidence in moving forward with the project.

# Week 5: Setting Up GitLab and Adding Parking Pins

This week was a positive one for my project, especially after an informative meeting with my project supervisor, Aidan Mooney. He gave encouraging feedback, noting that I was doing well, which really boosted my confidence. During the meeting, Aidan also mentioned that the university has its own GitLab domain and recommended I use that instead of GitHub. This would make it easier for examiners to track my weekly progress.

After the meeting, I immediately dove into setting up my GitLab account using my university email. The interface was quite similar to GitHub, but I faced several issues trying to link it with my existing project. I suspect the problem was due to my previous setup with GitHub, and this led to a lot of frustration. I spent considerable time watching videos on GitLab and troubleshooting the errors I encountered. My primary goal for the week was to get GitLab fully set up, and after what felt like endless debugging, I finally got it working.

Once GitLab was functioning, I shifted my focus to organising my project better. A peer suggested creating a new branch for my diary, and I initially followed that advice. However, after some time, I realized it wasn’t the best approach, as managing branches for my weekly diary entries created unnecessary complexity. Instead, I decided to place my diary in a dedicated directory in the main branch, which streamlined things and removed the annoying "merge branches" notification.

I also created several issues in GitLab to help me stay organised and provide a clear structure for the tasks I need to complete. This proved to be really useful, especially when I returned to the project later in the week after handling some assignments. Having the issues outlined allowed me to quickly pick up where I left off and dive into a specific task.

The main task I chose to work on was placing pins on the map for parking locations in Maynooth. I added multiple parking areas, including staff and general parking, as well as external locations like the Maynooth gas pitch. This felt like tangible progress, as I could now see the parking locations mapped out, which is a core feature of my project.

Overall, despite the challenges with GitLab setup, the week was productive, and I feel like I’m getting closer to a solid foundation for my project.

# Week 6: Mid-Term Focus, Gantt Chart, and Redesigning the Project Layout

This week was our mid-term break, which gave me extra time to focus on my project. Although I had other commitments, including starting a new part-time job to help cover college expenses, I still managed to make substantial progress.

One of my initial tasks was to organise my project files, so I added my report to the main directory, making it easy to push updates to GitHub. A peer suggested that I add a Gantt chart to help visualize my project timeline, so I researched how to create one. The Moodle section for the final year project had a description of what they wanted in a Gantt chart, so I tried several online tools. However, most of them either lacked essential features or had critical tools locked behind a paywall, which was incredibly frustrating.

After some searching, I discovered JetBrains YouTrack, which turned out to be more than just a Gantt chart tool. It offers various project management features, including dashboards, agile boards, reports, and issue tracking. Diving into YouTrack made me realize that I needed to go back and create a clear list of tasks, define dependencies, and set realistic timelines. I accounted for factors like part-time work, exams, and other responsibilities to create a basic timeline, which made building the Gantt chart much easier. Once I organised my tasks, visualizing and managing my workload became much more straightforward. I also added my supervisor, Aidan Mooney, to the YouTrack project, allowing him to stay updated on my progress.

With my project structure in place, I resumed work on my index page. I initially tried to find Bootstrap templates that matched my wireframe, but I didn’t have much luck. So, I decided to build it from scratch. I removed the check-out button, added a navbar, and introduced a background image with a call-to-action button over it for checking in. Below that, I included a graph displaying the overall parking occupancy, along with a basic footer.

These changes in the CSS affected the map.html page, so I spent some time adjusting it to ensure it functioned correctly. The map is now the focus of the page, and I used different colours to represent recommended (blue), occupied (red), and other parking spots (green). I also modified the user flow so that the questionnaire appears after the user clicks “Confirm Parking” on the map.html page, rather than right after checking in.

During this redesign, I encountered an error where a dark overlay appeared on the screen, preventing users from answering the questionnaire. After some troubleshooting, I managed to fix this issue with CSS adjustments.

Overall, this week was productive, and I feel like I’ve made meaningful progress toward structuring and refining my project.

# Week 7: User Feedback and Feature Enhancements

After meeting with my mentor, Aidan Mooney, and showing him the progress from the last two weeks, I was relieved and encouraged by his positive feedback. He was impressed with the development so far and advised me to gather user feedback by asking people to try out my project. Following his suggestion, I invited students to test the project, and the feedback I received was incredibly valuable and exceeded my expectations.

One student mentioned wanting the ability to choose specific parking locations and found the questionnaire questions confusing. They also didn’t fully understand the map icons and colours and missed additional content on the index page. Another student found the map challenging to understand and suggested a more accessible way to show occupancy, such as using colour or shape. Since they are colourblind, they recommended using circle size to represent busyness, which could be easier to interpret. They also suggested language options for accessibility and proposed a login feature to distinguish between staff, students, or visitors, which could also help collect data. Additionally, they thought it would be beneficial to have Google Maps directions embedded within the map window, with a reroute option.

A third student reiterated the need for selecting specific parking and suggested the ability to choose parking based on class location. Lastly, another student didn’t notice the widget on the index page and found the graph unclear about what it displays. They requested a larger map and suggested making parking recommendations more obvious, along with integrating Google Maps for navigation.

I translated each of these points into tasks to address in my project. Based on this feedback, I spent the rest of the week implementing some of the suggestions. I added more parking spaces to each location and updated the backend to reflect the remaining spaces based on user check-in data from the confirmation questions. I also integrated Google Maps for navigation, allowing users to get directions to the suggested parking areas. Additionally, I included a widget on the index page to indicate parking busyness. When clicked, it navigates the user to a detailed graph at the bottom of the page, providing more insights.

This week was productive, and the user feedback provided a clear path for further improvements. Next week, I plan to continue integrating additional feedback and suggestions to enhance the project further.

# Week 8: Supervisor Feedback, UI Enhancements, and Outreach to Parking Services

This week, I had another meeting with my supervisor, Aidan Mooney. He gave me positive feedback on my progress so far and provided several valuable suggestions for improving the project. These included adding accessibility spots to the map and using cookies to mark the type of user (staff, student, or visitor) to tailor the experience. He also recommended reaching out to Maynooth University’s parking services to inform them about my work and gather any suggestions they might have.

Following his advice, I emailed the parking services team. Their response was very positive, and they agreed to let me demonstrate the site/app, provided they obtained permission first. This was encouraging, as it opened the door to potential collaboration and further feedback to refine the project.

On the development side, I focused on improving the user interface of the index page. I added new sections for visitor parking information and parking permit details, grouping them within the same block. Each section now includes call-to-action (CTA) buttons: one directs users to the parking permit page, and the other takes them to the map highlighting visitor parking spaces.

I also worked on redesigning the graph on the index page to give it a more modern and clean look. I updated the colours of the bars to indicate how busy each parking area is, with red representing “busy,” orange for “moderately busy,” and green for “not busy.” These changes improved the clarity and visual appeal of the graph.

While refining the layout, I encountered a persistent issue where I couldn’t get each section to occupy 85% of the screen height, allowing users to see there was more content below without overwhelming the view. After hours of debugging, I discovered the problem was due to Safari’s zoom setting being at 50%. Once I adjusted it back to 100%, the layout displayed as intended.

Additionally, I added a gradient background that transitions through different colours for each section, enhancing the visual flow from top to bottom. To complete the redesign, I introduced a new footer containing more detailed information and links, making the site more comprehensive and user-friendly.

This week’s progress brought both technical and collaborative advancements, setting a strong foundation for further refinement and user engagement.

# Week 9: Progress Amidst Challenges and Finalising the Interim Report

This week started slow for my project, as I struggled with tiredness and a lack of motivation due to assignments and my new part-time job. However, once I got into the work, I found myself enjoying it and made some meaningful progress.

On the technical side, I focused on fixing bugs related to the location check-in functionality. This was an essential update to improve user interaction and reliability. I also added a new “Plan Your Journey” feature, which was discussed in a previous meeting with my supervisor. This feature allows users to plan their parking based on their location and arrival time. If any changes occur to the parking availability for their selected spot, the system notifies them in real time. This addition enhances the app’s usability and responsiveness, making it a more valuable tool for users.

Another significant task this week was finalising my interim report. Initially, I had spent too much time on its aesthetics, which resulted in it being overly long. To condense it, I reformatted the content into paragraphs and removed bullet points to streamline the presentation. Midway through the process, I discovered that the template for the interim report had been updated to include a literature review, which was frustrating as I had just completed a version. However, after researching how to write a literature review, I realised it wasn’t as challenging as I expected and completed it quickly.

After several email exchanges with my supervisor, Aidan Mooney, I incorporated his feedback and ensured the report met the project requirements. By the end of the week, he expressed that he was happy with my progress and gave me the go-ahead to submit the interim report.

Despite the initial lack of motivation, this week ended productively, with both technical and academic milestones achieved.