



# Assessment Guide

## Design Journal – 20 %

### Task

A *design journal* serves as a logbook for your design project work. Design journals serve many purposes:

- *Creativity and communication*: An aid for inventiveness in the design process and a valuable source to collect material to communicate the design.
- *Legal*: Keeps an official record of information that can be used as evidence in legal disputes, such as intellectual property or safety incidences.
- *Operations*: Tracks the process for convenient monitoring and handover of important information.

It is a place where you can discuss your design ideas, reflect on your experiences, collect research findings and much more. There is no exact way to write a design journal. However, a good rule of thumb on what to include is:

*If it is related to your design project work, then it's okay to include in your journal*

Here is a long (but non-exhaustive) list of things you could include: meeting minutes, project schedules (i.e. Gantt chart), screenshots of your team's planner, scrum board, team task assignments, annotated concept sketches, desk research findings, pictures, case-study analysis, mind maps, moodboards, new design ideas, diagrams, tables, infographics, referenced screenshots with source links, results of team discussions, personas, user journey, etc.

Keep in mind that this is a professional document, so do not include funny photographs of your dog or diary entries of what you had for breakfast. Also, do not copy in-class materials. If required, link to those and reference them appropriately.

The rest of this document provides further instructions and guidance, while Table 1 summarises key assessment details.

**Table 1** Summary of crucial assessment details

Type	Individual submission
Submission	Microsoft Teams Class Notebook
Due date	End of Week 5 – 8:00 PM, Friday 14 October
Weighting	20%
Marking	Marked by the demonstrator and moderated by coordinators
Late entries	Entries made after the due date are ignored

# Marking

The assessment will be marked by a course demonstrator and moderated by course coordinators. This marker may not be your workshop demonstrator to avoid bias in marking. The submission is worth 20% of your final grade. Marks and feedback will be returned within two weeks of submission. The marking rubric outlines how your journal will be marked. Please read it and the rest of this guide carefully.

**Table 2** Marking rubric.

Concept Design					
<b>Missing</b>	<b>Incomplete</b>	<b>Partial</b>	<b>Systematic</b>	<b>Evidence based</b>	<b>Innovative</b>
Entries show little to no effort made or are simply copied from class materials.	Entries show an <b>incomplete</b> exploration of the design project, with minimal consideration of users and concepts. Missing all the processes in the level above.	Entries show only a <b>partially systematic</b> exploration of the design project, with little analysis of users and concepts. Missing 1 or more of these processes below: 1) User research 2) User problem definition and requirements 3) Concept generation which considers the user 4) User testing plan	Entries show a <b>systematic</b> exploration of the design project including <i>all</i> the processes below. 1) User research 2) User problem definition and requirements 3) Concept generation which considers the user 4) User testing plan	Entries justify design decisions using <b>evidence</b> from user research and include <i>all</i> the processes below: 1) User research 2) User problem definition and requirements meet a gap identified in research 3) Generated a series of concepts and justifies selection using evidence from research 4) User testing plan, to gather data on concepts in future	Entries prove the use of a systematic evidence-based process and an <b>innovative</b> concept solution for the considered user, demonstrating the novelty by providing evidence of the market gap or superiority to existing solutions. 1) User research 2) User problem definition and requirements meet a gap identified in research 3) Generated a series of concepts and justifies selection using evidence from research 4) User testing plan, to gather data on concepts in future 5) Provide evidence of market research and originality
0	4	8	12	16	20
Project Management and Teamwork					
Most weekly journal entries are missing, entries show little to no effort made. They also seem to be a <i>disengaged</i> team member.	Some weekly journal entries are missing. Entries do not include meeting minutes and a project schedule. However, they seem to be making an <i>unsatisfactory</i> contribution to the team.	A journal entry is made at least once a week. Does not include meeting minutes or a project schedule. However, they seem to be making a <i>satisfactory</i> contribution to the team.	Several journal entries are made each week. Includes meeting minutes and a project schedule. They also seem to be making a <i>reasonable</i> contribution to the team.	Numerous journal entries are made each week. Consistently includes meeting minutes, documents their work, and actively uses a project schedule with contingencies. They also seem to be making a <i>significant</i> contribution to the team.	Numerous journal entries are made each week. Consistently includes meeting minutes, documents their work, and actively uses a project schedule with contingencies. They also seem to be making an <i>outstanding</i> contribution to the team.
0	1	2	3	4	5
Communication					
Most weekly journal entries are missing, entries show little to no effort made.	Entries are <b>rarely</b> : 1) Coherent, concise and relevant to the project work. 2) Well-structured and formatted making it easy to read. 3) Making use of figure to effectively communicate ideas. 4) Referencing external sources used.	Entries are <b>sometimes</b> : 1) Coherent, concise and relevant to the project work. 2) Well-structured and formatted making it easy to read. 3) Making use of a variety of figures to effectively communicate ideas. 4) Referencing external sources used.	Entries are <b>mostly</b> : 1) Coherent, concise and relevant to the project work. 2) Well-structured and formatted making it easy to read. 3) Making use of a variety of figures to effectively communicate ideas. 4) Referencing external sources used.	Entries are <b>almost always</b> : 1) Coherent, concise and relevant to the project work. 2) Well-structured and formatted making it easy to read. 3) Making use of a variety of figures to effectively communicate ideas. 4) Referencing external sources used.	Entries are <b>always</b> : 1) Coherent, concise and relevant to the project work. 2) Well-structured and formatted making it easy to read. 3) Making use of a variety of figures to effectively communicate ideas. 4) Referencing external sources used.
0	1	2	3	4	5

# Submission

Make sure to keep all your journal entries within your student section of the Class Notebook. The Class Notebook is the third tab on the top of the general channel in your DESN2000 Teams instance (see figure below). Within this tab, you will find a journal section with your full name. Only journals kept in the 'Design Journal' folder under your name in the Class Notebook are eligible for marking.

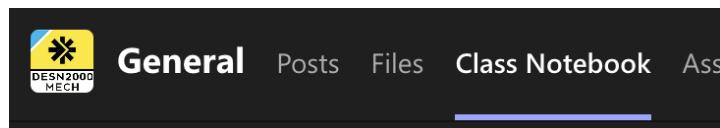


Figure 1. Location of the Class Notebook within your course Team

Screenshots in the appendix provide better guidance on how to do this.

Your journal is an active record of your design work. Keep your journal up to date, and your demonstrator will mark it shortly after the due date. There is no need for manually submitting your journal by the deadline, as the journal is a live document that should be continuously updated as you work on the project.

## Guidelines

There is no one *right* way to write a design journal. However, there are some practices you can adopt to improve the overall quality of your journal.

### Structure

It is recommended that you organise your journal entries into weeks using the page structure. The appendix provides a few examples of how you could do this. However, you are free to structure your journal however you see fit.

### Format

In general, you should avoid large blocks of text. These walls of writing can make it difficult to quickly extract crucial information. Your marker will have limited time to assess your work, so you should make it easy to digest:

*"Lastly, for the sake of the markers, please make the format such that it is easy to follow and read (headings and subheadings are strongly recommended)"*

Rachel Townsend – DESN2000 journal marker in 2020

Use headings, paragraphs and dot points to break up your text. You may also format the text to emphasise essential points: bold, coloured or highlighted texts works well. Figures can also be used to break up long, monotonous passages. However, purely cosmetic figures should usually be avoided.

### Figures

Images and photos often communicate design better than text. Consider using these regularly within your design journal. Take screenshots or photographs of your mindmaps, drawing, whiteboards, CAD models, sketches, prototype tests and so on. And then put them in your journal!

When you insert a figure, be sure to caption, label and reference it appropriately. For example:

**Fig. 1 A picture of a car. Source: picturesofcars.com**

## Videos

The OneNote platform only allows you to link videos stored on another online platform. To add videos, you will first have to upload somewhere else then include a shareable link in your journal. This process can be a bit slow, so it is generally best to avoid videos or only use them when completely necessary.

## Logbook

The journal is an active record of your project work. It is a live document that should be actively updated as you work on the project instead of being retrospectively filled in just before the due date. Try to form the habit of keeping the record up to date. The authenticity of this is usually quite apparent to markers.

## Referencing

You do not need to use a formal referencing system such as IEEE or Harvard. At a minimum, you should provide a link to the source document. However, when you include other references, you cannot present it as your own work (i.e., plagiarise).

## Appendix

The appendix provides examples for:

- 1) Navigating Teams and Class Notebook
- 2) Design journal structures
- 3) Design journal entries

The assessments and projects have updated since, so do not copy these examples directly.

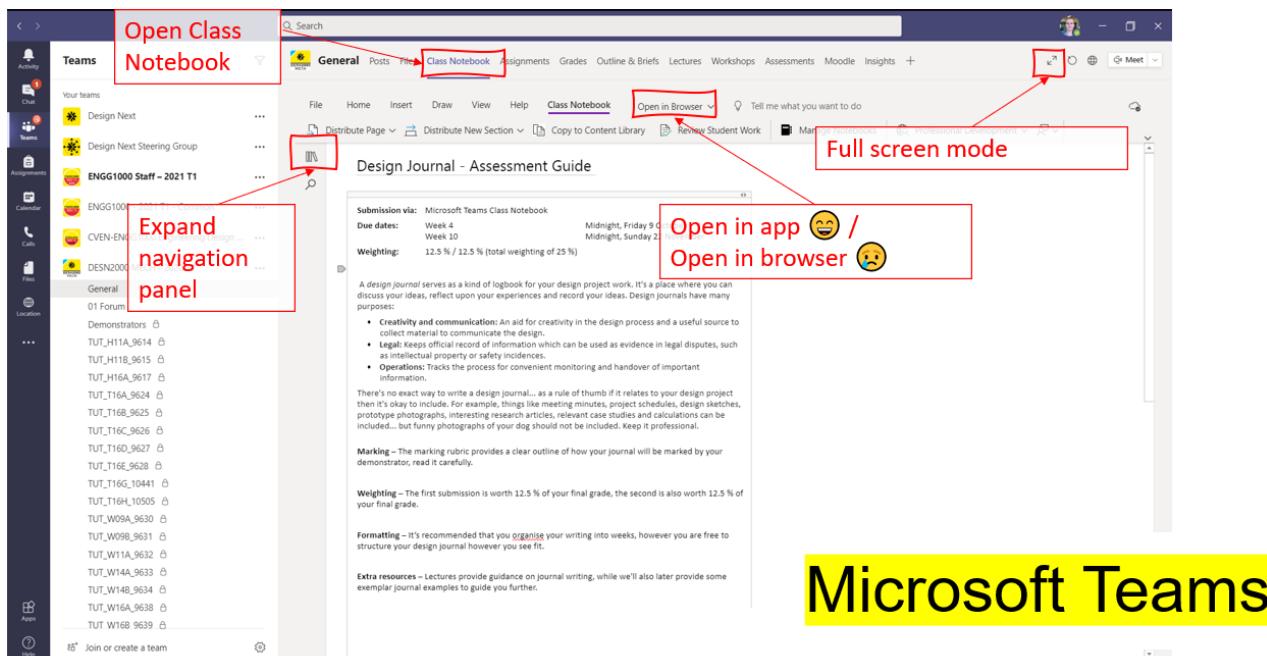


Fig. 2 Highlights navigation to the Class Notebook section of Microsoft Teams and points out other useful buttons.

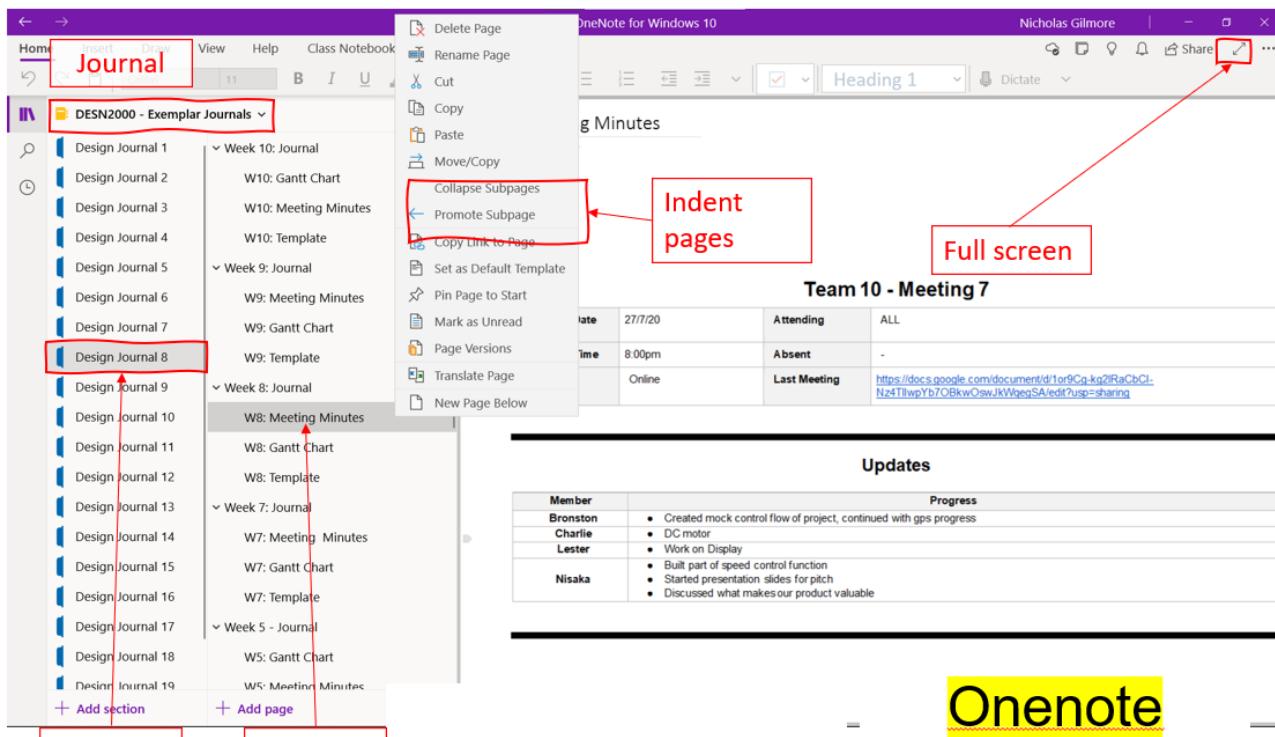


Fig. 3 Highlights navigation and formating options within Class Notebook

Fig. 4 Example journal structure. Page used for weeks, with sub-pages for topics or days.

**Structure**

The screenshot shows a sidebar on the left with a tree view of journal entries from Week 4 to Week 10. The main content area is titled "W10: Meeting Minutes" and contains a "Week 10" icon. A red arrow points from the sidebar to the "Week 10" icon. The main content area also features a yellow box labeled "Structure". Below the title, there is a table for "Team 10 - Meeting 9" with columns for Meeting Date (6/8/20), Attending (ALL), and Room (Online). The "Last Meeting" column contains a link: <https://docs.google.com/document/d/1or9Cq-kq2lRaCbCl-Nz4TlwpYb7OBkwOswJkWaegSA/edit?usp=sharing>. Below this is a section titled "Updates" with a table showing progress for members Bronston, Charlie, Lester, and Nisaka.

Fig. 5 Example journal structure. Page used for each weeks entry, with dedicated pages for project management items: Gantt chart and meeting minutes.

**Structure**

The screenshot shows a sidebar on the left with a list of weekly entries from Week 1 to Week 10. The main content area is titled "Week 1 - Project Introduction" and contains a timestamp of Friday, June 05, 2020, 3:04 PM. A red arrow points from the sidebar to the "Week 1" entry. The main content area also features a yellow box labeled "Structure". Below the title, there is a photograph of a light rail train at a station. A red arrow points from the sidebar to the photograph. The main content area also includes a "Day-By-Day Update" section for 31<sup>st</sup> May 2020, which contains a list of bullet points about the student's first experience with Microsoft Teams and the course outline. Another red arrow points from the sidebar to this update section. A third red arrow points from the sidebar to the "Week 10" entry in the sidebar.

Fig. 6 Example journal structure. Simply a page each week, with a descriptive title.

**Structure**

Simple page structure, with numbered headings used to segment work in a report style

**Week 1**  
 Friday, June 26, 2020 1:51 PM

**Week 2** →

**Week 3**

**Week 4**

**Week 5**

**Week 7**

**Week 8**

**Week 9**

**Week 10**

**Friday, 5th of June, 2020** →

**Focus**  
 This week's focus is **team formation and initial ideas**. I will also conduct research on **existing solutions and products** on the market for intelligent trans

**1.0 Progress Report** →

**1.1 Team Creation** →

As the teams were created for us prior to the start of the course, this was the first interaction between group members. Consequently, our first team meeting involved get first task. The first task consisted of brainstorming ideas for our project (developing an intelligent rail stop interface) and setting up project management tools such as a job

**1.2 Ideas that Came To Mind**

List of ideas that came to mind during brainstorm -

1. Push notifications for delays or cancellations of enabled services.
2. Smart accessibility information.
3. Real-time capacity of services.
4. Real-time location of services.
5. Real-time pricing.
6. Using smart device for payments processing (i.e. using phone as opal card).
7. Pinning favorite services.
8. (Accessibility) contact station staff through application.
9. Automatic balance top up.
10. On demand blocking/unblocking of transport cards through the application.
11. Planning trips from a departure location to a destination location.

**1.3 Exciting Ideas**

For our group, the most exciting ideas were related to the smart accessibility information. The transport system has already had a lot of time and money spent on developing improvements to accessibility are still being made – as a result, this area allows us to experiment with new ideas and develop an easy to use accessibility software interface. Capacity/location and pricing excite us as we wonder how we can play around and improve these features.

**1.4 Ideas Realistic for this Course**

**Fig. 7 Example journal structure. Pages used for each week, and then numbered headings used to organise entries.**

A link of our meeting minutes has been attached. We will take minutes whenever we meet and plan to take turns recording minutes. This folder will be updated to include all minutes of our group meetings.



←

has also made a project time line that we can update as we progress with our project.

## Week 2 Research (8/6/20)

Our group has a document for relevant research so we don't waste time all researching the same things. Nobody else has uploaded any information yet I decided to research acceleration and breaking speeds. Some discoveries include:

- Deceleration usually  $1-1.1 \text{ m/s}^2$  in order to be efficient without straining passengers falling
- Emergency breaking usually approximately  $1.5 \text{ m/s}^2$ . This puts a large strain on the breaking system and risks unsecured objects and passengers falling.
- <https://www.sciencedirect.com/topics/engineering/braking-performance#:~:text=When%20a%20train%20is%20under,of%20the%20emergency%20braking%20distance.&text=The%20emergency%20braking%20deceleration%20of,is%201.1%20m%2Fs%2>
- The delay and strain put on the tram by breaking means that many tram systems optimize traffic lights for the tram. I will have to do more research on this and consider if it is within the scope of our assignment to consider factors like this.
- Some information on stopping distances of Trains, <https://dl.acm.org/doi/pdf/10.5555/563780.563784>
- Trams are slower and can often break faster due to their smaller size however this is still relevant information and shows the very large distances required for trams to come to a complete stop

Questions raised - to discuss these at our group meeting on Thursday

- What sort of breaking should be triggered by failure to press the dead-man switch
- How close should an object be for tram to commence emergency breaking, vs minor breaking or sounding horn
- We can't stop for every possible threat as our system should run efficiently, however safety is a priority.

To gain some inspiration I did a small amount of research on some of the world most effective existing tram systems. A stand out system was the Lyon trams in France.



Figure 1 – Lyon Tram network

The following article gives a brief overview of the aspects of this expansive tram system that makes it so good. Hopefully we can take some inspiration from already well implemented systems.  
<https://www.railway-technology.com/projects/lyon/>



Figure 2 – Lyon Tram

Meeting minutes and a project schedule included

Headings used to structure writing

Evidence of effective teamwork, effective division of labour

Clear record of initial research efforts, with some reflection on key functions and priorities.

Use of photographs to visualise ideas. Caption and source also included.

**Fig. 8 Example journal. Note the use of dot points, inclusion of source links and use of visuals to break up the text.**

**Group meeting 18/6/20** 

   
18\_6\_2020  
Minutes

Heading and date included to structure response

Meeting minutes included

Our first priority was to decide on a relevant problem statement. We had all come up with individual problem statements to compare

- [REDACTED] an embedded tram driving system which focuses on safety, efficiency and reliability in 10 weeks that wins the contract to supply them.
- [REDACTED] an embedded driving system for light rail that meets efficiency and safety requirements within a 10 week period.
- [REDACTED] light rail tram driving systems are reliant on tram drivers for speed control and risk assessment. Although, tram drivers are susceptible to fatigue and other human limitations. An efficient and reliable embedded driving system needs to be designed that ensures the safety of parties on the tram and surrounding areas. As well as providing extensive diagnostic information and capabilities to allow for repairs, monitoring and crash analysis.
- [REDACTED] design an embedded drive system that could be realistically implemented in a tram. The system will focus on making the tram as safe, reliable and efficient as possible within realistic hardware, cost and time constraints.
- Team problem statement- Design a contract winning embedded tram driving system which focusses on safety, efficiency, and reliability in 7 weeks within hardware, cost and time constraints.

The task for the week three was to come up with as many ideas as possible and decide of some ones that should be implemented in a successful implementation.

The original ideas document is attached below and includes all of our rough ideas

Effective design processes. Record of LOTS of ideas generation, and table to systematically breakdown and prioritise functions

Idea	Contribution to safety	Contribution to reliability	Contribution to efficiency	Bonus (e.g. it's a differentiator for our system)	Total Implementation?
Energy minimization, E.g. when coming to red light, stop power before applying brakes	1	3	5	5	14
Sensors for maintenance usage	5	5	3	3	16
Sensor for object collision	5	5	1	3	14
Speed regulation as we need to determine input voltage	5	5	5	5	20
Anti-lock braking system(E.g. PWM)	5	2	3	5	15
Backup battery, for data retention in case of power failure	0	4	0	2	6
Regen breaking for storing power for fail safe	0	0	4	5	9
Real time information network of position of other trams	3	1	3	5	12
Diagnostic software user interface	2	5	2	5	14
Real time interpretation of external and internal sensors to warn if something is going to break	4	4	2	4	14
Algorithm to respond to prevent object collision	4	1	1	5	11
Automatic speed regulation	3	5	4	5	17
Virtual map and GPS driving. The tram has a virtual map which is loaded with speed	3	5	5	5	18

Fig. 9 Example journal. Note meeting minutes have been embedded as separate documents.

12/7/20 - Calculations and pseudo code

Assuming that the tram starts decelerating from 50km/h and decelerates at 1.6m/s<sup>2</sup>.  
 50km/h is given to us in specification and research indicates that 1.6 m/s<sup>2</sup> is a maximum stopping distance of a tram.  
 $V = u + at$  and  $s = \frac{1}{2} at^2$   
 $50\text{km/h} = 13.889 \text{ m/s}$   
 This means that the train stops in a distance of 60 meter's.

This information is extremely important as sensors used for safety systems have limitations in terms of distance that need to be taken into consideration when choosing sensors.

The inputs for the emergency braking function will be a  
 • sensor that detects the wheels locking (W) with an input of 1 for locked and 0 for not locked  
 • Speed of train or speed of wheel to ascertain when train has stopped

Outputs  
 • Brake on or off

```
While(1){
    If (s > 0){
        If (w == 1) {
            B = 0;
            Delay(E) ; Time delay should be just long enough for brakes to unlock
            B = 1;
        }
    }
}
```

In arm this could be written

Emergency_Brake	Ldr r0,=S	;load the value of the speed
	Ldr r1, [r0]	;comparisons with 0 happen more than once
	Cmp r1, #0	;compare speed with 0 – will probably need a mask
	Bgt Emergency_Brake	;if stopped just loop until system restarted

DelayE	Ldr r0,=w	;load wheel lock, this should also be a one bit input
	Ldr r1, [r0]	
	Cmp r1, #1	;if wheel is locked
	Ldr r2, =B	;load address of the brake input
	Addne r3, #1	;if wheel is locked will set B to low if not set to high
	Str r3, [r2]	
	Beq DelayE	;loop until unlocked

	B Emergency_Brake	;loop forever
--	-------------------	---------------

Fig. 10 Example journal entry. Working through the design process and including assumptions.

## Likelihood x Consequence

30\_7\_2020  
Minutes

**Week 10**  
**3/8/20-coding**

After a very busy week I finally have had the opportunity to start coding my deadmans switch response. I have encountered a few problems. The first is that I don't know how to communicate with my sensors, I will have to make some assumptions. I am going to assume that sensors are slave devices to my arm board, make up some chip selects for them and use SWI interfacing.

My second problem is that I don't know how to write interrupt handlers in C, but the functions I am writing would be very difficult to construct in assembly. My temporary fix to this problem is to branch and link to a C function from my assembly function.

My third problem is that I don't know how to configure an interrupt on the rising/falling edge of the button. I don't have a solution for this and so will have to discuss it in our group meeting later tonight.

**Meeting**  
  
 This meeting was mostly taken up by trouble shooting each-others code. However, hopefully we all know what we are doing now and the rest of the coding shouldn't be much work. We managed to find the code that enables interrupts for the push button and I have put this enabling of interrupts in my main function. Currently my main function doesn't actually do anything and its contents should definitely be contained in some start u code section. We are hoping to combine the code sections in which the main function controlling speed would be used as the main.

03\_8\_2020  
Minutes

Fig. 11 Example journal entry. Example reflection on technical challenges.

## Payment methods idea before Tuesday Meeting

Saturday, 20 June 2020 11:58 PM

*Comment: These are some interesting ideas for different payment methods I found via research*

Caption used to explain context / purpose of table

Payment Method	Example/description
Contactless cards	Opal card
GPS Tracking	<ul style="list-style-type: none"> <li>User downloads app on smart phone and registers an account</li> <li>Touch in at the beginning of the journey and then touch out</li> <li>Used in Germany</li> </ul> <p>There were four ways of touching in or out using a smart phone:</p>  <ol style="list-style-type: none"> <li>use near field communication (NFC) at contact point</li> <li>scan two-dimensional barcode at contact point</li> <li>enter unique number of contact point in app</li> <li>use location of smart phone</li> </ol> <p>Source: <a href="https://www.transproticket.com/touchandtravel">https://www.transproticket.com/touchandtravel</a></p>
Apple pay/Android pay/Samsung pay	<ul style="list-style-type: none"> <li>User has an account linked to these services with a card</li> <li>User uses their device to pay via these methods</li> </ul>
Self-ticketing QR	<ul style="list-style-type: none"> <li>Select start destination and end destination</li> <li>User buys the ticket beforehand and then shows the driver</li> <li>Tickets can be bought beforehand and then "activated"</li> </ul>

Table used to clearly summarise relevant research information

Source of the reference is included

Fig. 12 Example journal entry. Table used to organise information effectively.

## Design Journal Week 3

Friday, June 05, 2020 3:00 PM

Date of entry included

Heading used to provide clear structure / context to writing

### Overview of Week 3 Progress and Plans

Bold text used to highlight key information

- Out of the ideas that we generated in the first two weeks, there were **three ideas that we narrowed down our research to**. The ideas we were keen to implement were:
  - Adjusting stop times depending on passengers waiting on platform (i.e. the more the passengers, the longer the stopping time)
  - Accessibility considerations (specific interrupt if a less able person is boarding)
  - Timer to show time until next stop
- The **method we used to select the top two ideas** was to check them against three main criteria as show in the matrix below.

	Realistic	Achievable	Cost-effective
Adjusting monorail stop time	✓	✓	✓
Accessibility considerations	✓	✓	✓
Timer to show time until next stop	✓		

Simple matrix used to evaluate concepts based on main design objectives, demonstrating a reasonable design process

- Using this method, we decided that the first two ideas were most likely to be implementable for the project and thus got a go ahead from the both of us. I then created a visual to picture these ideas

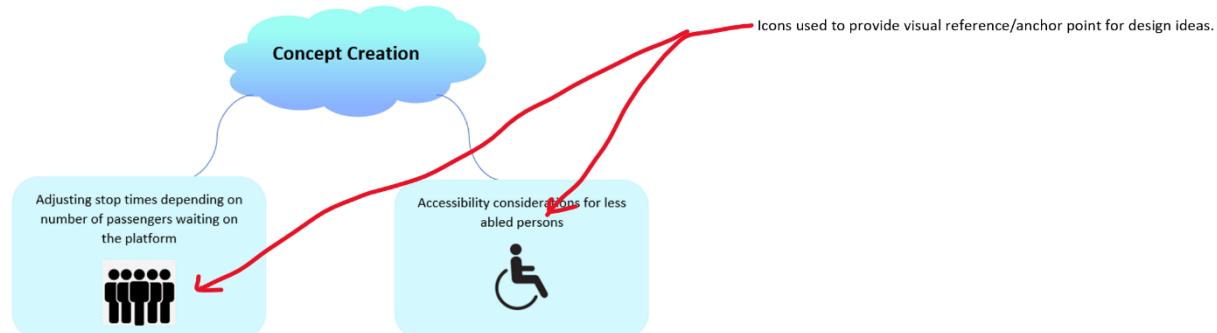


Fig. 13 Example journal entry. Well formed and effective use of figures.

SMALL SNIPPET OF THE MAIN CODE FOR EMERGENCY STOP EMULATION

```
//CODE FOR EMERGENCY STOP
emergency_stop: ;called if during running time the hash key gets pressed
    in temp, SREG
    push temp

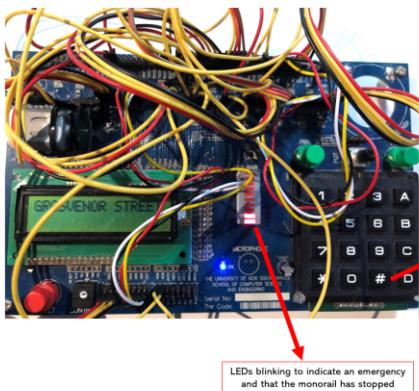
    rcall hash_check ; checks if the '#' key was pressed during the trip
    mov temp, hash_flag
    cpi temp, 1
    brne emergency_stop_ret

    ldi temp, 0 ; if it has been stopped, stop motor
    sts OCR3BL, temp

    rcall sleep_100ms ; debouncing
    rcall sleep_100ms
    rcall sleep_100ms
    clr hash_flag ; clear the hash flag so we can press '#' again to start motor again
```

Includes snippet of code to clearly explain technical function of design and provide a clear record of work

EMERGENCY STOPPING DISPLAYED ON THE BOARD



Effective use of images / captions to clearly communicate design

On pressing the hash button again, the monorail will resume its travel

LEDs blinking to indicate an emergency and that the monorail has stopped

- Finally, we decided to **conduct the design and user evaluation** for our project by comparing it against the criteria mentioned in the Monorail Emulator Marking Scheme guideline. This allowed us to assess our progress so far and figure out what design features were still to be implemented.

Use of technical/user requirements to evaluation concept.

- In preparation for the pitch due in week 9 and the final presentation in week 10, we **planned to divide up the tasks and assign different responsibilities** to each other to ensure all work can be completed by the deadlines set. This involved splitting up the sections that my partner and I were going to talk about in the pitch as outlined in the meeting minutes. I was assigned to create a PowerPoint and my partner was assigned to create a visual of the emulator design and record the video. We also planned to demonstrate our final project on the Friday of Week 10 and aimed to have everything implemented and ready for testing by the Thursday of that week.

Effective division of labour demonstrating effective teamwork

Fig. 14 Example journal entry. Screenshot with annotations, and bold text to emphasise ideas.

**User Research**

██████████ did separate user research for the general assistance feature. I decided not to research implementation methods and we are still in the earlier stages of our project.

**General Assistance Feature**

- Lost and found
- Official help (crime reports made more safely)
- Special needs/general assistance
- Reporting issues (bad smell, dirty seats, wet floor...)
- Feedback (?) (this could include feedback on the general light rail experience + feedback on the application)

**How it's currently done:**

- Passengers who have lost items on the tram can report it by:
  - Phone (02) 8584 5288 from Mon-Fri (8:30 AM - 5:00 PM)
  - Submitting a lost property query on <https://www.transdevsydney.com.au/talk-to-us/lost-property-form/>
- Passengers should call 131 444 to report a crime or 000 in case of emergencies (no options specific to public transport crimes or provided).
- Passengers who require a ramp to board can use the wheelchair boarding zone. Passengers use the Emergency Help Point button to alert the driver that they require the boarding ramp at the next stop.
- Passengers can report vandalism by calling 131 500 or on [transportnsw.info](http://transportnsw.info)
- Graffiti can be reported to NSW Graffiti Hotline on 1800 707 125
- General light rail feedback can be given using this form <https://transportnsw.info/contact-us/feedback/light-rail-feedback> or by calling 131 500

**How we can do it:**

- Make it easier for passengers to access all of the above by combining all features under a single tile/section in the app.
- Make the General Assistance page customisable to make it easier for passengers to access relevant features. E.g. most students who use the light rail wouldn't require the special needs/general assistance feature while passengers with special needs or parents with trams would need to access it more frequently.

Evidence of effective teamwork through dividing up tasks  
Use of colour to organise ideas  
Research is clearly summarised, relevant to the project, well referenced and demonstrates a breadth of research.  
There is then a thoughtful reflection on how this raw research may influence the design

Fig. 15 Example journal entry. Use of heading, highlighting and dot points. Also conducting user research.

## Meeting Minutes

Saturday, 1 August 2020 4:25 AM

Participants: ██████████  
Time: 5PM to 7PM 15/07/20  
We went through our user story mapping and made a start to creating the domain model based on each sprint on the mapping. We also discussed what we needed to do for the deliverable coming up soon.

Participants: ██████████  
Time: 4PM to 6PM 16/07/20  
We made some mockups during this time, most importantly of the payment system, and discussed what design tool we should make our prototype with, deciding on an app called MockPlus. We also tried setting up the repository but had issues with the set up. We scheduled a meeting for the following day.

Participants: ██████████  
Time: 8PM to 9PM 17/07/20  
We discussed what changes needed to be made for the domain model, as well as discussing progress on the Hifi prototype.

Participants: ██████████  
Time: 5PM to 5:35 PM 19/07/20  
Since two members are working on the prototype (██████████), we discussed how to merge the different sections together, and what needed to be changed and added for the prototype.

Participants: ██████████  
Time: 6PM to 9 PM 19/07/20  
We made finishing touches to the prototype and asked family members to quickly go through the prototype to test it. We also discussed what needed to be finished for the SDS - what we needed to do was finish typing up the sprint plan and polish the domain model. We then recorded the demo.

Quick meeting minutes with key information:

- Participants
- Time
- Date
- Brief record of activities

Evidence of effective teamwork.

Evidence of effect design processes.  
User story mapping, quick mockups and testing prototypes

Fig. 16 Example journal entry. See examples of concise meeting minutes.

## Team Brainstorming during workshop

Thursday, 18 June 2020 2:14 PM

← Title and date provide context for this section

### Stakeholders

#### Owners

- Cheap
- Everyone else to be happy

#### Users

- Reliable in terms of time predictions
- Payment system that is secure
- Easy to use
- Necessary features

Headings and dot points provide a clear structure

#### Personnel

- Reliable
- Easy to maintain

#### Politicians

- Users are happy
- Reliable
- Cheap

### Opportunities

Streamline people's journeys

Reduce physical ticket machine/booth use, lowering congestion  
Get paid  
Improve our project management and development skills  
Make Sydney look better in the world and national stage

### Constraints

Budget

Time

User Capacity/Demand

Stop Location

Internet Capacity

Hardware

Light Rail Reliability

### Uncertainties

Assumptions:

- Weekly spec additions
- We don't know which features users would find most valuable
- We don't know what tools personnel would prefer to use to maintain the platform
- We don't know how much building the application would cost
- Unable to know all possible uncertainties before we encounter them
- Lack of motivation - late completion
- We don't know what payment methods would be suitable
- We don't know what platform this program will run on.

Clear evidence of effective teamwork with a clear breakdown of task.

Task also demonstrate effective design processes, through carefully researching the problem.

### Research

- Survey information - ask on microsoft teams/UNSW discussion group
- Desk research - looking on the Internet (Opal travel, government website)
- Research sharing between teams
- Survey people online/friends who may not necessarily use the light rail but may use comparable systems

### Plan

- Design a survey (e.g. google forms) : Angela
- Come up with questions on the survey: All team members (Deadline monday)
- Send out this survey to others: All team members
- Analyse survey results
- Research online about different payment methods (e.g. paypal, credit/debit)
- Research options for tracking how a passenger has gotten on/off a stop e.g. will they have to tap off, will the app track their location : Xiyang/Bob
- Research online on how Opal travel works?/ Government website

Fig. 17 Example journal entry. Effective use of headings and dot-point to segment an otherwise large block of text.

## Week 9

30 July 2020 21:56

**Meeting Notes**

Date 27/07/2020 Duration 2 hours 20 min

Attendees

- [REDACTED]
- [REDACTED]
- [REDACTED]

**Summary of events**

- I added a navigation bar and top bar to the Figma prototype with new icons and placement of icons.
- [REDACTED] made some changes to the prototype design (the Saved Routes page was updated).
- [REDACTED] fixed fonts and formatting.
- We added General Assistance pages to the prototype.

**Work produced during meeting**

Updated map page:

Succinct meeting minutes  
Headings used to clearly structure response  
Individual task assignments would be good to include also  
Use of visuals

Fig. 18 Example journal entry. Note the use of coloured heading to highlight and organise information.

### Personas

We collected 20 responses for the survey. The majority of survey participants were university students and middle aged professionals. I then analyses the results to identify issues faced by passengers when using public transport and the Opal payment system.

Evidence of effective design process through conducting research surveys of users

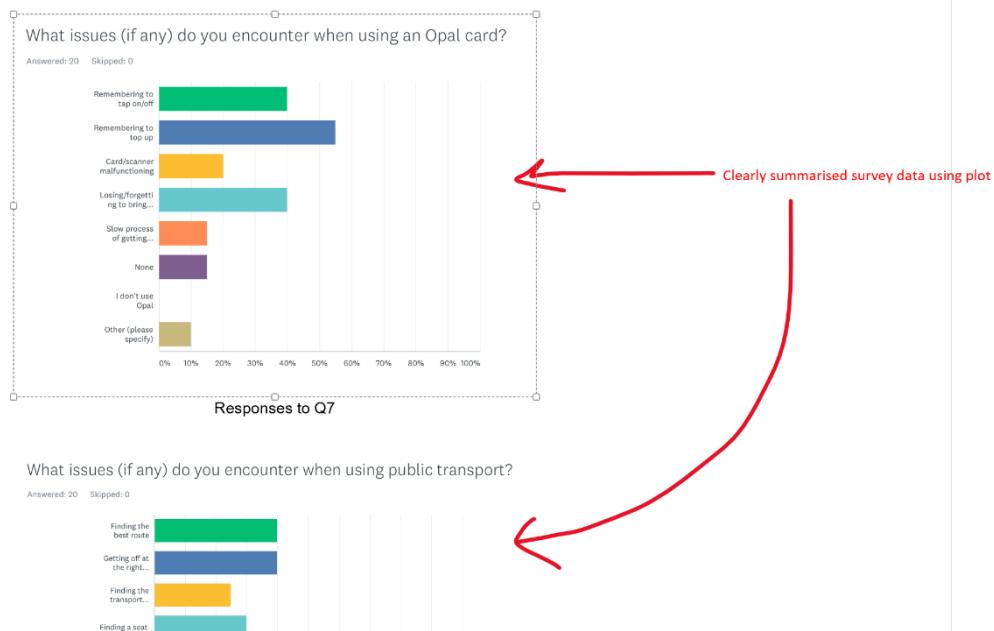


Fig. 19 Example journal entry. Note the use of data visualisation to summarise information in an accessible way.

Schedule / Task Distribution

Tuesday, 28 July 2020 8:35 PM

	Coding	pitch
<input type="radio"/> Homepage, Trip details e.g. map US 2.11	<input type="radio"/> Script 08/01 <b>HM</b>	
<input type="radio"/> View Trip on payment screen, notifications US 3.2, 3.3 08/03 <b>AC</b>	<input type="radio"/> Slides 07/11 <b>AC</b>	
<input type="radio"/> Trip history, change account to concession (i.e. apply for concession) US 3.4, 3.8 08/05 <b>XS</b>	<input type="radio"/> Come up with 3 problems we can solve and evidence that there is a problem e.g. statistics on the problem and how our solution works to solve 07/29 <b>XS</b> <b>TP</b>	
<input type="radio"/> Trip planning - Styling. Show seats per trip, real stop names (from open data csv perhaps) US 2.4, 2.5 08/08 <b>TP</b>	<input type="radio"/> Record pitch 08/01 <b>AC</b> <b>HM</b> <b>XS</b> <b>TP</b>	

Fig. 20 Example journal entry. Note the use of Microsoft Planner to assign tasks and improve project management.

(R1) User Story Mapping

```

graph TD
    FLP[Frequent light rail passenger] --- Activities[Activities]
    Activities --- Payment[Payment]
    Activities --- Timetable[Timetable and Capacity]
    Activities --- MS[Missing Steps]
    Activities --- GA[General Assistance]
    Activities --- FS[Finding Seats]
    Activities --- L[Login]
    Activities --- P[Privacy]
    
    Payment --- MP[Make payments using any method of choice]
    Payment --- PTA[Pay for frequent trips in advance]
    Payment --- VIM[View timetable]
    Payment --- LFS[Look for free spaces available on the train]
    Payment --- CS[Check if it is safe to get on the train to obey social distancing rules]
    Payment --- RAS[Receive alert when close to destination]
    Payment --- RA[Request general assistance]
    Payment --- CTI[Connect to the emergency services]
    Payment --- RS[Reserve seats]
    Payment --- MA[Make and access account]
    Payment --- SL[Sharing location]
    
    Timetable --- RASD[Receive alert when close to destination]
    Timetable --- NC[Notify light rail staff of any needs and demands required of assistance]
    Timetable --- AE[Alert emergency services via a chat feature]
    Timetable --- RAEP[Report issues on the light rail]
    Timetable --- RL[Register and Login]
    Timetable --- AL[Allow location tracking during emergencies]
    
    MS --- RI[Report issues on the light rail]
    MS --- RAEP
    
    GA --- RS
    GA --- MA
    GA --- RL
    GA --- AL
    
    FS --- SRRD[Select route and days for each trip]
    FS --- VRS[View the timetable of the nearest station]
    FS --- DACS[Display approximate count of vacant seats]
    FS --- CRN[Check if number of people on the train has exceeded the limit]
    FS --- CIR[Customise the trip to receive alerts]
    
    L --- SPD[Save payment details and frequently visited routes to account]
    L --- EAD[Edit account details]
    
    P --- HPRD[Have payments for frequent destinations deducted from my account weekly]
    P --- CPFR[Cancel payments or apply for refunds]
  
```

Heads and colour used to clearly structure response

Hybrid use of human-centred and technical design processes

(R2) Functional and Non-Functional Requirements

No.	Functional	Non-Functional
US1	<ul style="list-style-type: none"> <li>The system needs to allow users to customise the app to their needs.</li> <li>New users can access an interactive tutorial to learn about main features.</li> <li>Users can access help mode at any time to refresh their memory/learn about new features.</li> </ul>	<ul style="list-style-type: none"> <li>Saved pre-sets can be loaded while offline.</li> <li>Readability: components would scale according to the size of the device and orientation.</li> </ul>

Fig. 21 Example journal entry. Note the use of figures.

## Desk Research

Thursday, 18 June 2020 2:09 PM

Comment: this is desk research I did in my own time.

### Research into users

11.1 million users

#### A Comparison of Monthly Opal Trips

L

##### Monthly Comparison

	Select month	Base month	Difference	Difference %
L1 Dulwich Hill Line	146,605	808,423	-661,818	-81.9%
L2 Randwick Line	144,181	0	144,181	
L3 Kingsford Line	132,955	0	132,955	
Newcastle Light Rail	19,652	103,747	-84,095	-81.1%

Figure 1: Data of Light rail trips. Source: <https://www.transport.nsw.gov.au/data-and-research/passenger-travel/light-rail-patronage/light-rail-patronage-monthly-comparison>

Quick heading to explain the purpose of this section.

Table and graph used to quickly summarise quantitative research. Figures are captioned and sources included.

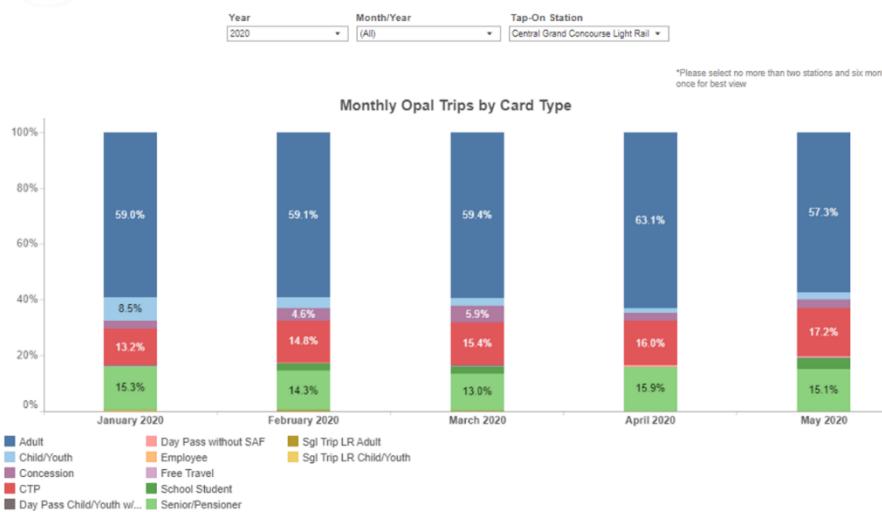


Figure 2 light rail patronage: <https://www.transport.nsw.gov.au/data-and-research/passenger-travel/light-rail-patronage>

Fig. 22 Example journal entry. Note use of headings, captions, references and figures.