DESN2000 (Computer Engineering) 2025 T2
Design journal (20%)

Last updated: 10.06.2025

Task

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

- *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 incidents.
- *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*.

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, new design ideas, diagrams, tables, infographics, referenced screenshots with source links, results of team discussions, etc.

For this assessment, focus on the following design problems:

1. Given only four buttons for user input, how would you enhance the user experience?
2. With a constrained LCD, what strategies would you use to improve usability & clarity?
3. Considering limited CPU power and RAM on the microcontroller, how would you design the firmware to ensure efficiency and responsiveness?
4. What advanced features would you introduce to make your design stand out?

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	Submit to Moodle
Due date	Wednesday Week 7 – 11:59 PM
Weighting	20%
Marking	Marked by the demonstrator and moderated by coordinators
Late entries	Flat -5% penalty per day

Marking

The assessment will be marked by a course demonstrator and moderated by the course coordinator. 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 Mark distribution.

Component	Marks
1. Given only four buttons for user input, how would you enhance the user experience?	10%
2. With a constrained LCD, what strategies would you use to improve usability & clarity?	10%
3. Considering limited CPU power and RAM on the microcontroller, how would you design the firmware to ensure efficiency and responsiveness?	10%
4. What advanced features would you introduce to make your design stand out?	20%
5. Project Management and Teamwork	25%
6. Communication	25%

Marking criteria for the user interface (buttons and display) (20%)

- Evidence of multiple initial design ideas and features for the user interface have been considered with the perspective of the user in mind
- Research into existing solutions has been done, and where there is a gap, innovative solutions have been proposed
- Evidence of a detailed complete design is shown which includes but is not limited to button and LCD design
- The design is practical and feasible. E.g., it is possible to implement with the available resources
- All finalised design decisions are sufficiently detailed and justified.

Marking criteria for performance (efficiency and responsiveness) (10%)

- Hardware features in the microcontroller and the development board have been effectively used in the design
- Features such as interrupts are being used where appropriate
- Data structures are designed to fit within the existing memory and are sufficiently justified
- Algorithms are designed efficiently to match the limited CPU power available and are sufficiently justified

Marking criteria for advanced features (20%)

- 1 very challenging yet very impressive feature, or 2 moderately difficult yet interesting features, or 4 relatively easy yet sufficiently advanced features

- Detailed explanation of the chosen feature's design, considering feasibility and practicality of implementation
- Evidence of market research and originality is presented in the design consideration of these advanced features
- Consideration of alternative features and the justification of the chosen feature/s design over such alternatives
- Proposal of potential methods for users and stakeholders to validate the design features

Table 3 Marking rubric.

1. Given only four buttons for user input, how would you enhance the user experience?					
Entries show **little to no effort** made.	Entries **rarely** demonstrate the marking criteria for the user interface	Entries **sometimes** demonstrate the marking criteria for the user interface	Entries **mostly** demonstrate the marking criteria for the user interface	Entries **almost always** demonstrate marking criteria for the user interface	Entries **always** demonstrate the marking criteria for the user interface
0	2	4	6	8	10
2. With a constrained LCD, what strategies would you use to improve usability & clarity?					
Entries show **little to no effort** made.	Entries **rarely** demonstrate the marking criteria for the user interface	Entries **sometimes** demonstrate the marking criteria for the user interface	Entries **mostly** demonstrate the marking criteria for the user interface	Entries **almost always** demonstrate marking criteria for the user interface	Entries **always** demonstrate the marking criteria for the user interface
0	2	4	6	8	10
3. Considering limited CPU power and RAM on the microcontroller, how would you design the firmware to ensure efficiency and responsiveness?					
Entries show **little to no effort** made.	Entries **rarely** demonstrate the marking criteria for performance	Entries **sometimes** demonstrate the marking criteria for performance	Entries **mostly** demonstrate the marking criteria for performance	Entries **almost always** demonstrate marking criteria for performance	Entries **always** demonstrate the marking criteria for performance
0	2	4	6	8	10
4. What advanced features would you introduce to make your design stand out?					
Entries show **little to no effort** made.	Entries **rarely** demonstrate the marking criteria for advanced features	Entries **sometimes** demonstrate the marking criteria for advanced features	Entries **mostly** demonstrate the marking criteria for advanced features	Entries **almost always** demonstrate marking criteria for advanced features	Entries **always** demonstrate the marking criteria for advanced features
0	4	8	12	16	20
5. Project Management and Teamwork					
Most weekly journal entries are missing, entries show little to no effort made.	Some weekly journal entries are missing. Entries do not include meeting minutes and a project schedule.	A journal entry is made at least once a week. Does not include meeting minutes or a project schedule.	Several journal entries are made each week. Includes meeting minutes and a project schedule.	Numerous journal entries are made each week. Consistently includes meeting minutes, documents	Numerous journal entries are made each week. Consistently includes meeting minutes, documents their work, and actively

They also seem to be a *disengaged* team member.	However, they seem to be making an *unsatisfactory* contribution to the team.	However, they seem to be making a *satisfactory* contribution to the team.	They also seem to be making a *reasonable* contribution to the team.	their work, and uses a project schedule. They also seem to be making a *significant* contribution to the team.	uses a project schedule with contingencies. They also seem to be making an *outstanding* contribution to the team.
0	5	10	15	20	25
6. Communication					
Most weekly journal entries are missing, entries show little to no effort made.	Entries are **rarely:** 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 **sometimes:** 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 **mostly:** 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 **almost always**: 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 figure to effectively communicate ideas. 4) Referencing external sources used.	Entries are **always:** 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	5	10	15	20	25

Format

Your journal is an active record of your design work (from research to concept generation). Keep your journal up to date from week 2 to week 5, by collecting, reviewing and visualising your design process in a complete and well-presented report. In week 6, you will have time to review your process and finalise your report.

The report in PDF format is to be submitted by each student on Moodle. Late penalties will be applied as per the course outline policy (flat -5% penalty per day).

Page limit: The main body of the Design Journal is limited to **20 pages**. Note that the length limit excludes the title page and summary, biography and appendix.

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: have a structure, define and follow a format, use different tools to visualise your process and outcomes.

Structure

It is recommended that you organise your journal entries into the steps of your design journey.

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 a limited time to assess your work, so you should make it easy to digest:

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 work well. Figures, maps, and graphs are essential for good storytelling and the synthesis of your process.

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 with your comments and reflections.

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

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 progressive 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 them as your work (i.e., plagiarise).