Engineering Journal (Log) – Guide

This Engineering Journal is **NOT about after-thought documentation** of your work. It is a **dated log to show your progress,** starting right from the design to deployment.

Engineering, including hardware and software development, is a cyclic process. However, there must be a good level of design work/ project planning before any implementation is done. Prototyping in software and hardware steps is also a part of the design stages. Good record-keeping serves as an excellent tool for:

- Reference for future issues or clear reference for yourself and others.
- Allowing you and others to verify your work.
- Reproduce design accomplishments or confirm test results.
- Reflect on new ideas, challenges, and solutions.

An informative journal is essential in any engineering and research work, especially when it is a teamwork. When you work as a team member, it's your responsibility to maintain an engineering journal.

RoboCupJunior heavily stresses education over competition. Competition is just a vehicle to achieve its primary goal – educate pre-college students by fostering Artificial Intelligence (AI) and robotics research. Thus, an informative log should be a requirement of all engineering work.

What goes in your Engineering Journal

Preamble:

- Table of contents
- Introduce the operational logistics, i.e. means of communication, meeting frequency, location, etc.

What should be in the daily log:

1. **DATE & NAME**
    a. The day when the work takes place & the one who writes this page of the log

2. **Tasks done today**
    a. may be formulated at different levels of abstraction ranging from high-level, strategic concerns, implementation, testing, etc.
    b. be concise — don't write paragraphs!

3. **Issues and solutions**
    Sample table (add/modify columns and rows as needed):

	Issues	Solutions
Hardware		
Software		

Reminder This can be extremely helpful to record an anomaly, and remind and mark caution.

4. **New Ideas / Planning**
    a. Design work (this is particularly important before implementation)
    b. New findings, ideas, any follow-up, etc.
    c. Implications on the project plan, deciding on upcoming tasks

    Example: Collection of design concepts:
    - CAD if it is hardware. It does not need to be professional quality, but just good enough for you or others to reference in the future.
    - redesigns, plans, and schematics
    - flowchart or UML
    - calculations, innovations, and test results

5. **Figures/Drawings/Tables** (this is particularly valuable)
    a. Use numbered labels for figures (i.e., graphs and illustrations) and tables, so you can refer to them more easily within the text
    b. It's best to place figures and tables where they are referenced in the text
    c. Numbered labels and captions should be placed underneath figures but above tables.

6. **Research**
    a. Should include all the references to investigation work that you use or spark your ideas

Dos and Don'ts

Do's	**Don'ts**
● **Be concise**. You are **not** going to write an essay. No long paragraph. ● Bullet-point your summarized ideas to keep ideas organized. ● Sometimes, keywords may be sufficient. ● Try to summarize each point in less than 20 words – for easy lookup. ● Diagrams, Sketches of your designs, etc.	**It's NOT a document done as an afterthought.** No long paragraph. You are not writing essays.

Don't know what to put in the journal?

Ask yourself these questions:

- What information do I need to write here for me and others to be able to reproduce and verify my work?
- Will the information be good enough for me and others to reference if the same issues arise later?

Some samples of good vs useless information:

POOR (not helpful):	**GOOD :**
Planning today	Go here to see the plan. (i.e., hyperlink to your design plan).
Started my code	Create the high level framework for : ● Navigation portion (just prototypes) ● Abstracted APIs (just prototypes) ● The simulation text map (just prototypes) ● GitHub
Finish up navigation portion today	Complete B.F.S. backtracking. Have tested with a 10×10 map. See the map. (i.e., hyperlink to the map image). Still need more sample maps to test.
A lot of issues today. Finally fix them.	Can't get around the 90-degree turn. Can't quite see the S-victim if it is sideways. Encoder math doesn't work… - *show your calculation even if it is not working* - draft math work is fine too. **Remember: this is a log, NOT a formal document.**