



Discrete Mathematics—Spring 2023

Guidelines on Projects

The deadline for completion of your project is Monday, 17/04/2023 at 11:59PM. Please submit a zipped folder with your report (pdf file) and code to the *Projects* module on Canvas. If your project did not involve any coding, submit your report as a pdf file.

Your report:

Its first page should be the title page (the title of your project + your name(s) + date). The “actual” report starts on Page 2. The document should be at least 4 pages long. The “actual” report (at least 3 pages long) should be written in **12 point Times New Roman font** and should be structured as follows:

For coding questions (Projects 1, 2, 3):

- **Introduction:** describes/explains the problem you are solving. Why do you think this problem is relevant? Also tell the reader the structure of the rest of the document.
- **Methods: what did you do?**
This section is all about what you did to solve the problem. You should include and explain fragments of code here. After reading your *methods* section, a reader should be able to understand and reproduce your solution to the problem.
For example, if you solved a logic puzzle, you need to explain what you translated each clue into Prolog.
- **Results: what did you find?**
You present your findings here. Run your code, include screenshots of the results, and comment on them.
- **Discussion: what does it mean?**
This is where you discuss your findings. Are the results what you expected? Did you get any key insights?
For example, if you solved a logic puzzle, are your results with Prolog the same as what you obtained when you solved the problem manually?
- **References**

For non-coding questions (Projects 4, 5, 6):

- **Introduction:** describes/explains the problem you are investigating. Why do you think this problem is relevant? Also tell the reader the structure of the rest of the document.

- **Background**

Here, you provide background information for your topic. You may include:

- a) Info on theories, concepts, terms, and ideas that your reader (aka me) may be unfamiliar with and will require you to provide any definition/additional explanation.
- b) Any historical data that need to be shared in order to provide some context? You may answer questions like: when and where was the concept/method you are investigating first introduced? How was it used then and how is it used now?

Do not forget to cite relevant papers.

- **Literature review**

(Write this section only if your question is Project 6)

A literature review is a survey of scholarly sources on a specific topic. It provides an overview of current knowledge, allowing you to identify relevant theories, methods, and gaps in the existing research.

You essentially need to do some digging (say, on Google Scholar) and write a literature review on the early machines devised to solve problems in logic.

Definitely, do not forget to add citations.

- **Methodology**

(Write this section only if your question is either Project 4 or Project 5)

This section is all about what you did to solve the problem.

For example, if you are minimizing circuits, this is where you include your K-map tables. Also, please perform simulations using a tool such as [Logisim](#) and include screenshots that show that your circuit works as expected for various inputs.

If you are tiling a checkerboard, do not forget to first include a proof by induction that a $2^n \times 2^n$ checkerboard ($n \in \mathbb{Z}$) with one square removed can be tiled using right triominoes.

- **Conclusion:** emphasize your key points for the last time.
- **References:** compulsory.

What you will be submitting:

- For coding questions: A zipped folder with your report and a well-commented Python/Java/Prolog code.
- For non-coding questions: Your report.