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A Study of the Synchronisation and Concurrency Issues in the Dining Philosophers’ Problem completed using the ThreadMentor Visualisation Tool

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**Submission date:** *18/MARCH/2024*

Declaration Page:

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Author: Habiba Nour Dated: 18/MARCH/2024

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Note: Please make sure that you use proper citation within the body of the text of your report + include the reference cited in the References section at the end. It is **not** sufficient simply to list the references at the end. See:

<https://libguides.ucd.ie/harvardstyle/introduction>

# Introduction (Steven)

## Background

* Concurrency and Synchronisation Issues in OSes (Steven)
* Mutex Locks (Rochelle)
* Semaphores (Habiba)
* ThreadMentor (Piotr)

## The Dining Philosophers Problem (Habiba)

## Outline/Layout of your Report

* In section 2, we describe “this”. In section 3, we describe “that”…
* Tie the sections together: *briefly* describe how they are related

# <Your Solution>

* Theory/How it works (Rochelle)
* ThreadMentor: (Piotr)
  + Makefile(Piotr)
  + Explanation of “Tags” and other ThreadMentor issues related to your solution (Piotr)

# Results and Analysis (Piotr & Steven)

Screenshots of a **single** program run, to include:

* Several History Graph screenshots + proper captions
* Screenshots of highlighted code corresponding to various ThreadMentor tags for Philosopher threads in the History graph above + proper captions
* Screenshots of main ThreadMentor window showing relevant and corresponding information relating to the above.
* Screenshots of Thread Status window showing relevant and corresponding information relating to the above.
* Detailed descriptions in the text of what is happening to each of the Philosopher threads making reference to the screenshots.

# Conclusions (Habiba & Rochelle)

Technical conclusions about your solution; for example:

* “our solution avoids a specified problem”, or
* “our does had a specified problem”
* Advantages/Disadvantages of our solution

The conclusions should **not**include things like: “I loved this project!”, “I hated this project!”, “I learned x, y and z on this project”. These things should go in the Personal Reflections section.

# References

The references listed here **must** be cited within the text of your report.

It is not good enough simply to list the references here and have no citations in the text – marks **will** be lost if you leave out the citations or if you use Wikipedia as a reference source.

# Appendix: Personal Reflections

* A brief summary of what you learned
* What you liked about the project
* What you didn’t like about the project
* What would you have done differently if you could do it again
* Any other recommendations/feedback for the Lecturer and/or future Students

# Appendix: Project Planning and Management

(Ask if we can put Diary here)

* Gantt chart
* Description of your Gantt chart
* How you managed the project on a week-to-week basis