

Operating Systems (Server) Team Project Assignment (Worth 20%)

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Objectives

You are required to work in teams of about **three** people. Where there is an odd number of students, there will be one team of **four** students.

The project problem is to analyse and explain ONE of the solutions to the *Dining Philosophers* problem using the **ThreadMentor** software package as described on the ThreadMentor e-book website. You should access that website to learn about ThreadMentor:

<http://www.cs.mtu.edu/~shene/NSF-3/e-Book/>

Summary of Tasks Required

A summary of the main tasks required by you and your team is as follows:

- Download and read through the Dining Philosophers problem code given on the ThreadMentor e-book website
- Learn about C++, ThreadMentor and the Dining Philosophers problem, and then understand the code
- Compile the code, and run the resulting program using the ThreadMentor visualisation tool, analysing the code at various steps in the execution
- There are three types of solutions to the Dining Philosophers problem presented on the ThreadMentor e-book website:
 - Mutual Exclusion Locks solution
 - Semaphore solution
 - Monitor solution.
- You should read about **ALL** of these solutions, and then choose **ONE** to study.
- For your chosen solution, write a report describing and visualising the execution of the program, in addition to describing the source code.
- When running the programs, take appropriate ThreadMentor screenshots and code snapshots, and include these in your report along with a description and explanation of what they represent.

Deliverables

Each team must produce the following deliverables by their lab session in Week 12 of the semester; (i.e. Week 12 is week beginning 28th April):

- A report in OpenOffice.org ODT format, of approximately 3000 words as described above. All sources used for both text and diagrams **must** be referenced properly; including websites¹. This means you must use proper citation **within the text** of your report. If you don't understand what this means, it is **your** responsibility to ask me. **Note**: plagiarism will result in a zero mark, in addition to the matter being referred to the Head of Department of Informatics.
- Give a **10 minute** OpenOffice Impress ('Powerpoint-type') presentation on the project in E124, to include a demonstration and verbal description of the running program.
- Please **DO NOT** spend time in your presentation giving a general explanation of what the Dining Philosophers problem is. We will all know what it is by that stage! **You will lose marks if you do this.**
- Reports should be typed with a spacing of no less than one and a half. Each student is advised to retain an additional hard-copy for future study. Please upload your team report plus presentation as a single gzipped tarball to the moodle website, on or before the deadline.

Grading

This project will be awarded a total of **20%** of the marks for the OS(Server) module, split equally between the presentation and the report. Grading of team members will be equal, except in circumstances where it becomes apparent that some team members are not contributing adequately. The following are **guidelines** of the criteria to be used for grading each project:

- Research: demonstrating that you have engaged in a reasonably broad and in-depth research of the project subject
- Understanding and discussion of topic: demonstrating in your presentation and report that you understand the subject and that you are able to discuss it using appropriate technical language
- Originality: showing an interesting an original approach
- Professional style in both presentation and report: Use of title page, consistent styles, page numbers, tables of contents, etc.
- Adherence to word limit in the report: being brief is just as much a skill as being able to waffle!
- Inclusion and proper use of references in both report and presentation: You must provide citations within the text of your report and presentation. Please do not use

¹ Please do not use Wikipedia as a reference; instead, if you do use Wikipedia as an information source, please go to the original references cited within those Wikipedia pages.

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Questions?

If you have questions or if some aspect of the project is unclear, please e-mail me, or ask me in class.

Ends.