1. Reading

Study Classical IPC Problems (Chap 2.3 [T06])

2. The Dining Philosophers Problem

(a) In the solution to the dining philosophers problem (Fig.2-20), why is the state variable set to HUNGRY in the procedure take_forks?

(b) Consider the put_forks in Fig.2-20. Suppose that the variable state[j] was set to THINKING after the two calls to test, rather than before. How would this change affect the solution?

(c) Write a solution for the dining philosophers problem with N philosophers and N-1 shared tickets using:
   1. Semaphores (hint: adopt the faulty code of Fig 2-19)
   2. Monitors (hint: semaphore variable \rightarrow conditional variable).

NB: Don't forget to comment your code.

3. Fast Food Restaurant

A fast food restaurant has four kinds of employees: one order taker, who takes customers' orders; two cooks, who prepare the food; three packaging specialists, who stuff the food into bags; and four cashiers, who give the bags to customers and take their money. Each employee can be regarded as a communicating sequential process (thread).

(a) Which IPC problem is hidden in this story?

(b) Download the code from the Exercices' tab on the course's website:
   - try to understand the program's structure;
   - run the program and study its output.

4. The Reader-writer Problem (Optional)

In the solution of the Reader-writer problem (Fig.2-21), a writer has to wait until no more reader is active. Write a solution in which, when a reader arrives and a writer is waiting, the reader is suspended behind the writer.

NB: Don't forget to comment your code.

5. Minix project

Phase three, Part one.

Document your project by writing a short report. The report must include the modified Minix source code, comments, a description of the algorithm and all test scenarios going with a personal conclusion. Prepare a demonstration including an oral explication of your work.
6. Hand out

Questions 2, 3 and 4:
Put all your files in a repertory called "04_Name_FirstName", compress it in .tgz or .tar.gz format and upload it on the Upload's tab on the course's website.

Question 5:
Put all your files in a repertory called "03_Name1_Name2", compress it in .tgz or .tar.gz format and upload it on the Minix Project's tab on the course's website.

7. References