

IN5570/IN9570 Distributed Objects Mandatory Assignment 1 – Oblig1

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Introduction

Initially, you should run the **hi-ho** example, which can be found under **Example Code** on the course website. We prefer that you come to the TA sessions or lectures for getting answers to questions.

Exercise 1 – Barriers

Program a **cyclic barrier** in Emerald with a test program that has four processes that are waiting for the barrier several times. Make your cyclic barrier work similar to a cyclic barrier in Java. However, only provide the `await` method, which blocks the caller until the required number of processes have called `await` whereafter they all are allowed to continue and the barrier is reset. Create print statements that provide information about when a process tries to pass and again when the process has passed. Finally, create a process that triggers the barrier three times. Run the program.

Deliver the program, the output, and any comments that you might have.

Exercise 2 – Producer/Consumer Bounded Buffer Hoare Style

Program a **producer/consumer** bounded buffer with Emerald. For a description of bounded buffer, see Hoare's article on Monitors. Send the sequence 1 . . 30 through the buffer where the producer waits 100 ms (hint: use `delay`) every third time and the consumer waits 100 ms every fifth time. Create print statements that provide information when an item is inserted into and removed from the buffer. For the bounded buffer, use an array with space for a maximum of two items.

Deliver the program, the output, and any comments that you might have.

Exercise 3 – Kilroy timing: local and on Planetlab

The task is to change the `kilroy.m` program so that it can do proper timing as required and then run it on a set of machines and measures how many machines it can visit per second.

You are to do this with two different sets of machines:

The first set is at least three machines at a single site, *e.g.*, at Ifl or at some Planetlab site that has 3 machines at the same site.

The second set is at least four Planetlab machines that are at least 100 km away from one another.

Deliver the program, the output, and any comments that you might have.

Delivery

The deadline is **Wednesday February 22nd 2023 at 23:59:00**.

The assignment must be done individually and submitted in devlry. In addition to the source code, you should deliver a `.txt` file with the output from a run of the program, and a PDF with any comments that you have on the three exercises.

Good luck—and have fun!