Seminar 12
week 12 (19 December 2022 – 23 December 2022)

1. **Discussion the implementation of the following problems (that can be problems for the final practical exam):**
   - **implementation of syncronization mechanisms (lock, countdownlatch, semaphore, barrier, atomic operations),**
   - **implementations of new IO operations (buffered writing/reading, writing to a file)**
   - **implementation of some communications primitives (send/receive) between threads,**
   - **adding procedures to the ToyLanguage.**
   - **other constructions for the ToyLanguage**

2. **An example of Theoretical Exam from previous years:**
   1.(3p). Compare static vs non-static methods in Java.

   2.(3p). Given the following collection
   List<Integer> numbers = Arrays.asList(1, 2, 3, 4, 5, 6, 7, 8,9,10,11,12,14,15,16);
   Using Java functional style (Java streams),
   please write a program that is doing the following operations in the following order:
   a)eliminates all the numbers which are not multiple of 4;
   b)transform each remaining number into its succesor (eg. 4 is transformed into 5);
   c)compute the sum modulo 2 of the remaining numbers (eg. (9 +5) mod 2=0)
   d)transform the result into a list

   3.(3p). What is a Semaphore in Java.