

Problem 3: Walkers as threads 15%

We want to illustrate how walkers move in the forest in a different way by letting each walker be a thread and have the time it takes to walk a path be "simulated" by `Thread.sleep()`. Take a copy of your solution to problems 1 and 2. Remove the simulator and the classes `PrioKo` and `Aktivitet`. The forest with crossings and paths is constructed as in problem 1. Your main modifications are in the class `Turgaaer`. This class used to be an `Aktivitet`, but shall now be a thread. In addition, you must add two methods to the class `Kryss`. You must also modify the main method, and its class should be renamed to `TestTradSimulator`. The main method shall start the threads but does not need to wait for them to finish.

Concerning all of problem 3: The end result is supposed to be executable, but that is not expected. You may use the `java.concurrent` library.

In this version of the program, a walker is supposed to sit down and rest a bit at each crossing; the duration is either 1, 2, 3, 4 or 5 minutes selected randomly. There is a limited number of seats at the crossings (for example, 4, defined by a static constant `ANTALL_SETER` in `Kryss`) and these available seats are just represented by a single integer. When a walker comes to a crossing, you must ensure that only one walker at a time can check for a free seat. Make a method called `turgaaerKommer()` ("walker arriving") in `Kryss` to do this checking. If there are no seats available, the walker must wait in the method.

When the walker has obtained a free seat, the method returns to the `run()` method and the walker rests using `Thread.sleep()`.

Once the resting period has finished, the walker calls a method again to give up his or her seat. Then, the method decides (as in problem 1 and 2) along which path to proceed and which crossing this will lead to. The thread (i.e., the walker) calls `Thread.sleep()` again, and the period of sleeping is proportional to the time it takes to reach the next crossing. For instance, if it takes 20 minutes to walk to the next crossing, the program may call `Thread.sleep(20 * 1000)`.

The thread should terminate after 2 hours simulated time.

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Write the complete program with the walkers as threads.

End problem 3

Uploading problem 3: Upload a zip file with all the files required for the main method in `TestTradSimulator` to work. The zip file shall be named `Oppgave3.zip`.