lea.schoenberger [☺] tu-dortmund.de
christian.erdmann [☺] tu-dortmund.de
nils.hoelscher [☺] tu-dortmund.de
jan.pham [☺] tu-dortmund.de

Exercises for
Embedded Systems
Wintersemester 19/20

Exercise Sheet 5 (Practice)

(10 Points)

Please note: Solutions to the theory assignment must be submitted (individually or in pairs) until 15.11.2019 at 10:00 AM (mailbox in OH16, ground floor, in front of room E16). Submitting solutions via mail is *not* possible. Discussion: 18.-22.11.2019.

1 Preparation (3 Points)

Please note: The solution to this assignment must be submitted!

Previous to the exercise session, read chapters 1, 3.2.4 and 3.2.6 of the OIL specifications. Answer the following questions:

a.) Which is the purpose of the OSEK standard that is served by the OIL language?

b.) Of which data type are priorities? Which value indicates the lowest priority? (Please note that a higher value must be chosen in our experiments.)

c.) Which attributes can be defined multiple times per task?

2 OIL Language (7 Points)

Use the credentials you received at the beginning of the exercise session for logging in. Down In the CI-Lab, log in using the credentials you received. Open the folder containing the material for the current exercise session (if in doubt, ask your tutor). In the folder `ev3osek/example/OILExercise`, a .c file is located in which the following three tasks with a runtime of 2 seconds each are defined:

- Task τ_1: The LED flashes in green.
- Task τ_2: The LED flashes in orange.
- Task τ_3 : The LED flashes in red.

For the task priorities, it holds: $\tau_1 > \tau_2 > \tau_3$.

Open the file `oiltest.oil` in your text editor of choice and complete it such that the following schedule is realized. Please note that the LED flashes in red while EV3OSEK boots. However, the program starts when it flashes in green.

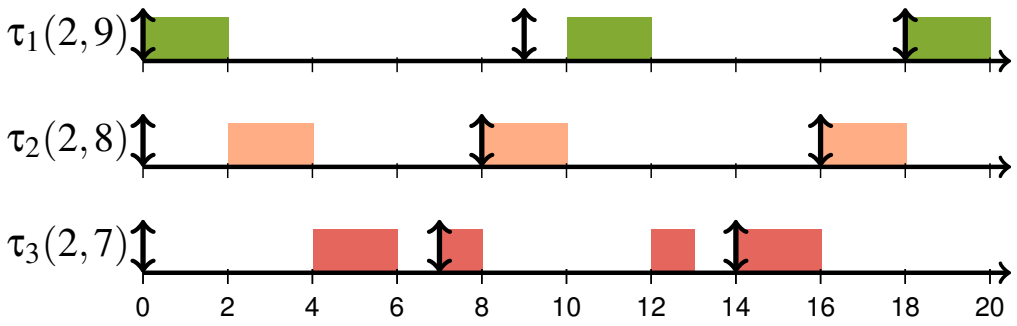

Abbildung 1: Target schedule. **Please note:** τ_2 is not preempted by τ_1 at time 9, although τ_1 has a higher priority.