Exercise Sheet IX (Homework)

Exercise 1: Resources

There are 3 periodic Tasks $T^k = (\Delta t_{exec}{}^k; \Delta t_{per}{}^k; \Delta t_{allocR}{}^k; \Delta t_{useR}{}^k)$; k=1 ... 3 .

- $\Delta t_{exec}{}^k$ is the execution time (CPU) for each job of task k,
- $\Delta t_{per}{}^k$ is the period time of the tasks (defines the deadlines accordingly),
- $\Delta t_{allocR}{}^k$ defines the time difference between the start time of a job and the point in time when the resource is requested to be allocated by the job,
- $\Delta t_{useR}{}^k$ is the usage time (time period in which the resource is needed by the job. After this time period the resource will be released for the use by other jobs).

Remark: In contrast to the CPU C the resource R usually is non-interruptible!

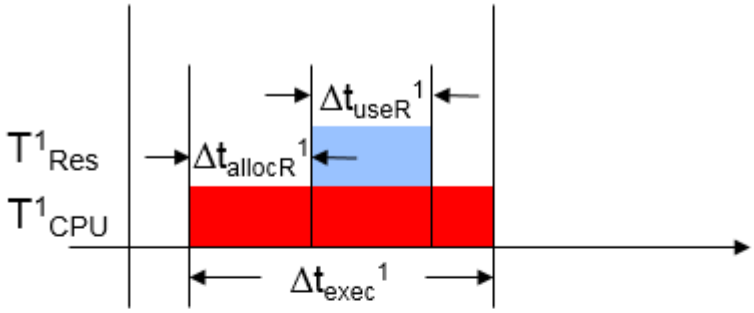

Fig. 1: Job with use of a resource R

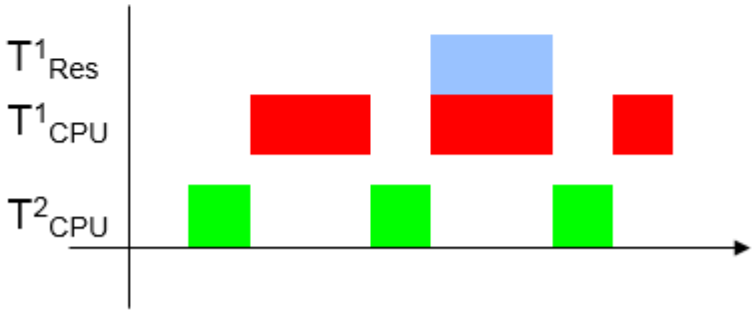

Fig. 2: RMS with use of a resource R by T^1

Please do a schedule for:

$T^1(5; 15; 2; 2)$; $T^2(2; 10; 1; 1)$; $T^3(7; 23; 1; 2)$
with RMS (including resources) without additional resource management.
Use Row 2 in the template for the usage of the resource!

Exercise 2: Resources

(a) Do a schedule for the tasks (the usage of the resource can't be interrupted)
T^1 (5; 14; 0; 0); T^2 (2; 10; 1; 1); T^3(8 ;23 ;3 ; 5) and
show, that there is a resource conflict.