Name:

Model-based Decision Support

Exam 6 (home assignment)

Till June 9, 2016

Especially for those interested in Advanced Planning and Scheduling (I expect all of you ;-)) I have prepared a special home assignment. I have designed this home assignment in summer 2014. Up to now there was some student field testing but there it is still possibly that there are some obstacles and shortcomings. Keep me informed if you have any problems.

The goal of this home assignment is to get some practical experience in sequencing and scheduling. GAMS acts as a mediator; I intend limiting GAMS programming to a necessary minimum. At TISS I provide you the GAMS code "FMS_AutonomousProductionPlan.gms", where at the moment two jobs have to be scheduled at 3 stations (excluding input and output stations).

Design a scheduling problem with up to 3 jobs and four to six stations (including input and output stations six to eight stations). Provide this scheduling problem to the GAMS Code; u'll find a description how at the beginning of the GAMS code. Additionally, please add one job with the given individualized sequence of operations

For Z use the last digit of your student enrolment number, Y the last but one digit, and X the last but two. The sequence of stations for this individualized job is:

- Input -> O1 = X (modulo 3) + 2
  -> O2 = MAX {(O1 + 1 + Y(modulo 2)) (modulo 5) ; 1}
  -> O3 = O1 – 1 -> Output

- And if Z is even, then mirror the sequence to Input -> O3->O2->O1->Output.

Example ….793: Input –> 3 -> 1 -> 2 -> Output
….794: Input -> 2 -> 1 -> 3 -> Output

After computation, the information for the optimal schedule u'll find in the continuous variable family t; t(operxy) is the time when the AGV loads job x from the output buffer of machine (station) mu(y). IB(operxy), OB(operxy), tm(operxy) store the time job x staying in the input buffer, output buffer and processing at machine mu(y). The job x enters the FMS system at t(operx1) and exits it at t(operxUnloadstation).

Document your scheduling problem and the optimal schedule.[1] [2] If it was not possible to compute a solution, would you please document your chosen scheduling problem and describe the problems occurred so that I would be in a position to improve the assignment.

Remark: On June 9, Mr. Stiefsohn and his colleagues (MCP Consulting) join our class and discuss APS from their professional viewpoint.

[1] If you went the extra mile and provided an illustration of the solution, it would be fine but not necessary.
[2] Please, don't deliver mere GAMS listing prints