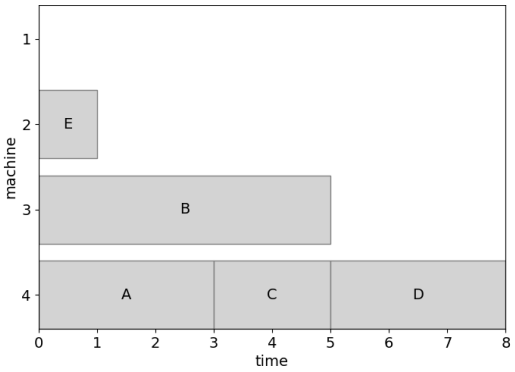
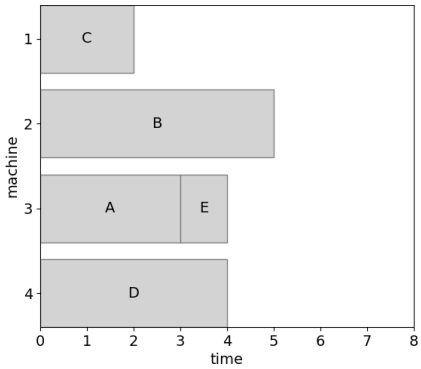
Makespan Schedule Explanation Questionnaire

This questionnaire should take less than ten minutes. This will judge the general ability to understand and explain makespan schedule. Makespan schedules consist of m machines and n jobs. Every job is assigned to only one machine for the schedule to be feasible. Each job has a processing time. The objective is to minimise the longest collective processing time. Machines and jobs are denoted by integers $1, 2, 3, ...$ and by letters $A, B, C, ...$, respectively. A schedule is optimal when the longest collective processing time cannot be earlier.



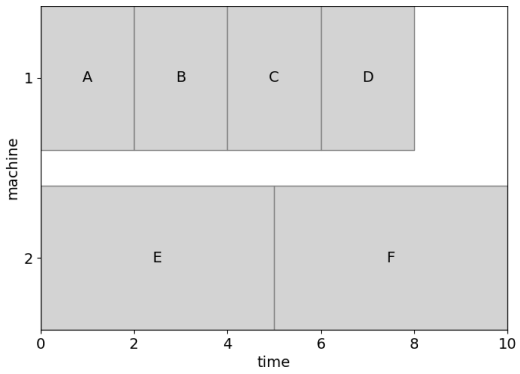
Schedule is not optimal because jobs A, C, D can be moved to machine 1.



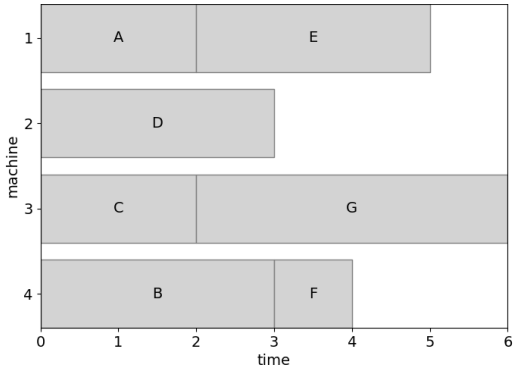
Schedule is optimal because no assignment can be improved.

Aim to spend at most one minute for each question. Some questions are difficult. Write your answers in the boxes.

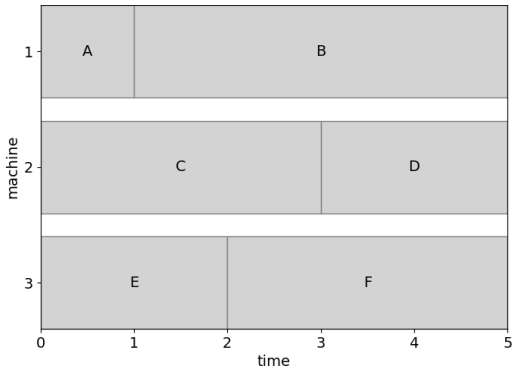
1. This schedule is not optimal. Suggest steps required to optimise this schedule.



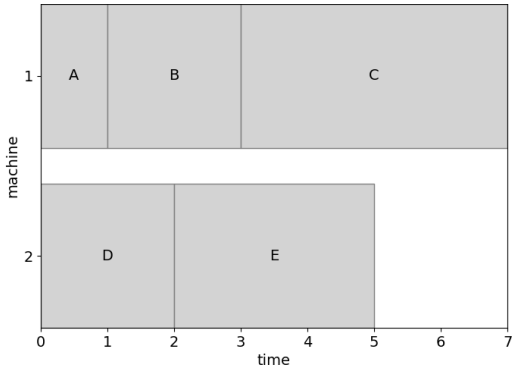
2. Is this schedule optimal? If not, suggest how it could be improved immediately.



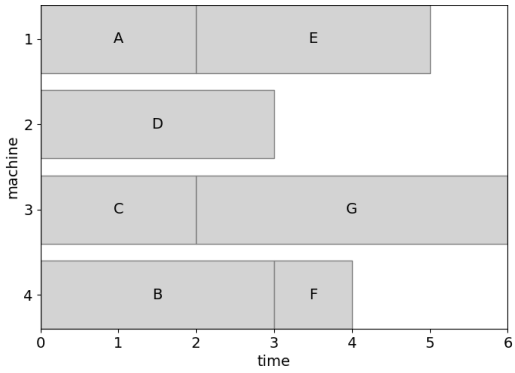
3. This schedule is optimal. Job A cannot be assigned to machine 1 or 2 anymore. How could the schedule be modified to agree with this constraint?



4. Either jobs C and D, or jobs B and E must be assigned to the same machine. Which constraint is results in a better schedule, and why?



5. A new job H of 5 time units needs to be scheduled. How could the schedule be modified to best accommodate this job?



Thank you for your time. Please send your answers to `myles.lee15@imperial.ac.uk`.