

HW 7: due 12/9

Job Shop Scheduling Report:

The assignment involves two problems from the job shop scheduling material. The two job shop scheduling problems are:

1. A machine shop fabricates and paints various household metal products. Currently there are six items in the machine shop that must be completed. The times (in hours) required for completing the two production processes on each item are given below:

ITEM FABRICATING PAINTING

A	6	4
B	9	12
C	7	5
D	8	9
E	2	6
F	6	3

- Using Johnson's Rule, schedule these 6 jobs.
- Show the schedule on a Gantt Chart.
- Calculate mean flow time, waiting time and idle time.

2. A grinding machine in a job shop had no jobs in the waiting line at 7:59 A.M. The machine operates 24 hours a day. The following jobs arrived during the next several hours.

JOB	PROC.	ARRIVAL TIME	DUE DATE	NO. OPS.	TOTAL PROC.
	TIME	IN SHOP	AFTER ARR.	AFTER GRIND	TIME AFTER GRIND
	(hrs.)		(hrs.)		(hrs.)
A	3	8:00 A.M.	24	2	16
B	2	10:15 A.M.	18	3	14
C	4	11:10 A.M.	4	0	0
D	3	11:45 A.M.	36	9	27
E	4	12:02 P.M.	6	1	8
F	1	2:15 P.M.	14	0	0

Schedule these jobs as they would be through time. For example, at 8:00 A.M. only job A is in the waiting line, so any rule will schedule it to start then. The next job to arrive is B, at 10:15 A.M. and so on. Assume no prior knowledge of when jobs will arrive. Use the following heuristic rules:

- Shortest Processing Time (SPT) with First Come First Served (FCFS) to break ties.
 - Earliest Due Date (EDD) with FCFS to break ties.
 - Slack Time per Remaining Operation (ST/O).
- Assume jobs cannot be interrupted once they have begun and

that there is no setup time. Compute and comment on the difference in these rules concerning flow time, lateness, and work in process inventory (waiting times).