Problem 3 (20 points): A repair unit working at a local Delta hangar is currently charged with the repair of 5 airplanes $A_1, \ldots, A_5$. The estimated repair times, in days, for each of these airplanes are 5, 7, 4, 3 and 4. Furthermore, the cost of idle time for each of these airplanes, in \$10,000 per day, are 20, 15, 30, 25 and 20. Assuming that the considered repair unit can work on only one airplane at a time, determine a schedule for working on these airplanes that will minimize the total "idleness" cost incurred for the company.

Let C_i denote the completion time of the repair of the i-th airplane.

Then, the incurred total "idleness" cost will be $\sum_{i=1}^{5} w_i C_i$, where w_i is the daily cost of idleness for these airplanes.

Then, as we explained in class, this cost will be minimized by scheduling the airplanes according to the "weighted SPT" rule, i.e., in increasing sequence of the ratios t_i/w_i.

Hence, the corresponding schedule can be computed as follows

Airplane	1	2	3	4	5
t_i	5	7	4	3	4
w_i	20	15	30	25	20
t_i/w_i	0.25	0.467	0.133	0.12	0.2

So, the optimal schedule is: 4, 3, 5, 1, 2