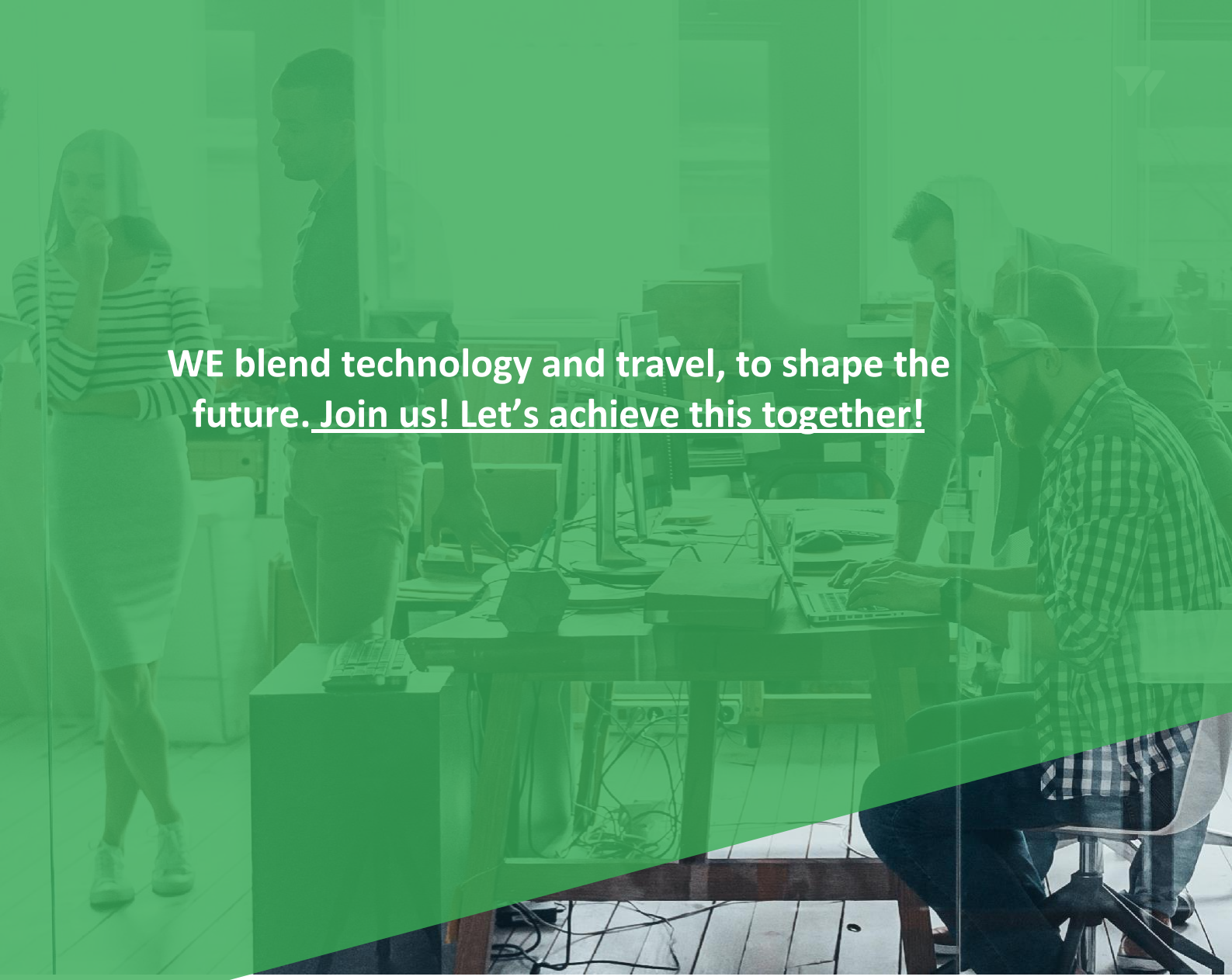

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Young Talent
Case Study 2

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SENARYOLAR

Sorting the Tasks of a Job for Having the Minimum Completion Time for the Job

Suppose a job consists of multiple tasks. And each task has a unit completion time associated with it. Also each task may have dependencies to other tasks of the same job in order to be completed.

We would like to calculate the minimum time required to complete the job and also find the order in which the tasks of the job need to be executed and completed to achieve the minimum completion time for the job.

Example

Job: J
Tasks: A, B, C, D, E, F

Task Dependencies:

- A, B and C tasks of Job J are all independently completable
- In order to complete task D of job J, task A of job J needs to be completed (D depends on A)
- In order to complete task E of job J, tasks B and C of job J need to be complete (E depends on B and C)
- In order to complete task F of job J, tasks D and E of job J need to be completed (F depends on D and E)

Task Completion Unit Times for Job J:

- A: 3 unit time
- B: 2 unit time
- C: 4 unit time
- D: 5 unit time
- E: 2 unit time
- F: 3 unit time

In this case, the minimum time for completing Job J, it takes 8 unit time with the order of the tasks of the job as [A, B, C, D, E, F].

You can choose any programming language to implement your solution.

Please, provide a very brief description and reasoning for your solution.

Note: Please consider only one worker to execute the tasks of the job. This simply means that scheduling of the tasks to multiple processing worker units is not expected to be incorporated into the solution for the sake of simplicity.

Good Luck 😊


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