Scheduling Programme User Guide

# Overview

The scheduling program

Putting rubrics here for reference. To remove before submission

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| Problem can only be feasibly solved with computer programming with enhanced productivity and effectiveness  Sufficient use cases to cover affected processes and additional use cases for advanced scenarios  Use cases adopt proper algorithmic thinking  Usage of appropriate basic Python data structures and user-defined data structures  More advanced searching and soring algorithms or attempt to optimize algorithms  Data persistence to files  Appropriate CUI with prompts, cues, feedback message and input data validation |

# Set up

Employee database with the file name “employee.csv” and job databased with the file name “job.csv” must be unzipped and placed in the same folder as the main python program and the supporting library “class\_function.py”

The employee database must contain information of each employee in a row in the below sequence separated by comma:

* Employee ID – integers only
* First Name
* Last Name
* Hourly Rate – numerical values only
* Total Hours per day – numerical values only
* Competency – numbers only
* Craft – can only be “Machinery”, “Metals”, or “Instrument/Electrical”

The job database must contain information of each job in a row in the below sequence separated by comma:

* Job ID
* Job Name
* Start Date – must be in the format of d/m/yyyy, e.g. 15/2/2023
* Completion by Date – must be in the format of d/m/yyyy
* Resources required – in hours, numerical values only
* Total Cost – numbers only
* Craft - can only be “Machinery”, “Metals”, or “Instrument/Electrical”

# Classes

Add in Unified Modeling Language graph?

# Functions

## Upload employee/job database

### Upload employee database

If “employee.csv” is present in the same folder with the right format, a list of employee object will be created and stored in the variable list\_of\_employees.

At the same time, a calendar in the form of dictionary – calendar\_resource\_dict will be created from 31 Dec 2022 to 31 Dec 2042, the calendar contains the available resource each day in the duration stated above in the below data structure.

### Upload job database

If “job.csv” is present in the same folder with the right format, a list of employee object will be created and stored in the variable list\_of\_jobs.

## Add/Remove Employees or Update Job(s)

### Add an employee to database

Follow the program prompt and enter the following details, separated by commas: Employee ID, First Name, Last Name, Hourly Rate, Total Hours Per Day, Competency, Craft, Employee Start Date in yyyy-mm-dd

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| --- | --- |
| Sample input | Sample output |
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### Remove an employee from database

Follow the program prompt and enter Employee ID and Last Day of Work in yyyy-mm-dd with commas separating each input

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| Sample input | Sample output |
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### Update existing job details

Not yet written

## Schedule a job

Follow the program prompt and enter the following details, separated by commas: Job Name, Start Date in yyyy-mm-dd, Due Date in yyyy-mm-dd, Resources Required in hours, Total cost, Craft Required

The program will call for the *scheduleJobCheck* function and check the earliest possible day where workers from the right craft has hours available to fulfil the resources required, and whether job can be completed before its due date given the earliest possible start date. If it is feasible, program will prompt user to confirm before proceeding for actual job scheduling.

The actual job scheduling is conducted via the *scheduleJob* function, where the required resource is subtracted from the available hours of the respective craft workers in the calendar dictionary. The program will output the job number, job name and the resource requirement.

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| --- | --- |
| Sample input | Sample output |
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## KPI

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## Additional functions

* Print out the work lineup and free hours for a particular employee in the next 1 month