

# Work Scheduling Optimization - How to Use

## Introduction to the Application

Work Scheduling Optimization Application / Project was developed for optimising the annual work scheduling warehouses, the idea of the project is to build an end to end solution using only Open Source tools (libraries). The purpose of the App is to bring the best optimization solution using Artificial Intelligence together with an easy and friendly UI for the end user.

The problem that the App solves is Open-Shop Scheduling problem with some additional constraints, the following mathematical expression represent the definition of the problem

$$O_m \mid r_j, prec, pconc \mid \sum w_j U_j$$

The current version of the application does not solve that problem due to information security restriction, the current version solves the Job-Shop problem as it defines in [Google Or-tools page](#).

## User Input

At this tab the user defines the following:

1. number of machines / workers he has for the current scheduling problem.

Please enter the number of the Machines and Workers

Number of Machines A	Number of Machines B	Number of Workers A	Number of Workers B
----------------------	----------------------	---------------------	---------------------

In the current version the first session input doesn't become any constraints and won't change the final solution.

## 2. Jobs Input

Upload the file with the Jobs needed to be scheduled

Drag and Drop or [Select Files](#)

Input\_Job.csv  
2022-06-04T18:12:24.182000

Inset X axis data  
Select...

Inset Y axis data  
Select...

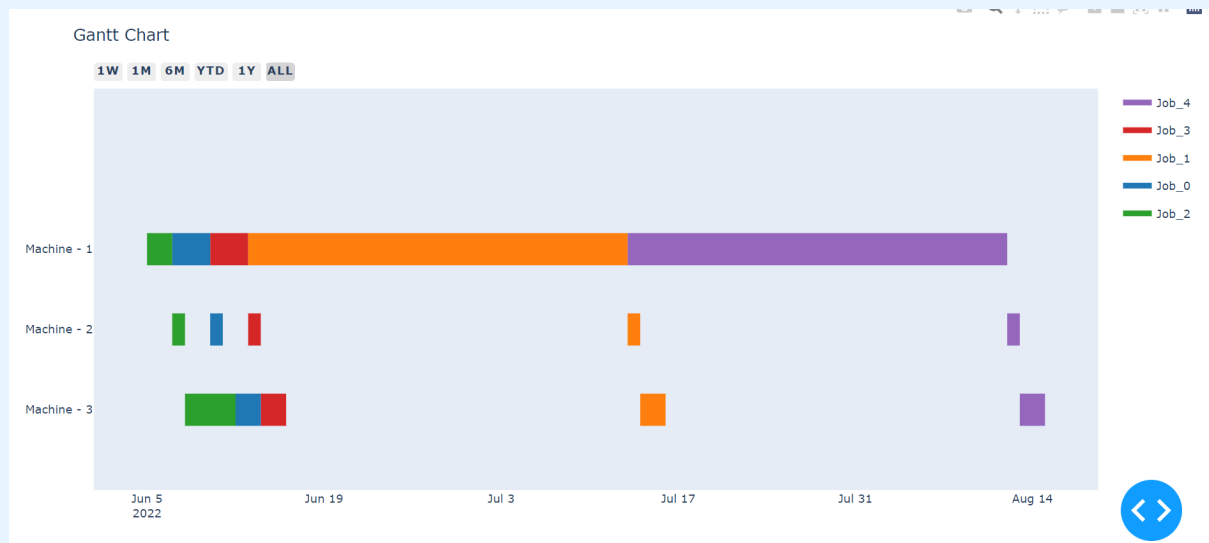
CREATE GRAPH

Job_Id	Priority	startTime	endTime
1	1	1/1/2020	1/1/2020

The user needs to upload the Input\_job.csv file as the columns definitions with his jobs information.

## Solution Output

At the Solution Output tab the user will view his solution results for the scheduling problem, using the Refresh button the data will be updated according to the last data that the user had updated (the application saves the last data in the internal DB for user convenience).



## Environment Configuration

At this tab the user will define his tasks (task is action that needs to be processed on a machine as part of a Job) and Machines properties. Some of the current information does not relevant for the Job-Shop problem as it is in the current version.

Jobs properties

Drag and Drop or [Select Files](#)

Job\_Pro.csv

2022-06-05T15:09:31.799000

Inset X axis data

Select...

Inset Y axis data

Select...

CREATE GRAPH

Job_Id	Task_type	ReleaseTime	Time-m1	Time-m2	Time-m3	Resource-1	Resource-2	K-by
1	1	1/1/2020	3	1	2	3	2	4

Machines properties

Drag and Drop or [Select Files](#)

Machine\_Pro.csv

2022-06-03T14:02:58.176000

Inset X axis data

Working\_day

Inset Y axis data

resource\_id

CREATE GRAPH

resource_id	Working_day
r_id_1	230
r_id_2	101