Report for TPK4186 assignment 2

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Contents

Modules

Batch.py
Buffers.py
Productionline.py
Unit.py
Producrtionline.py

Packages

- numpy
- itertools
    - conda install -c conda-forge itertools

Tasks

Each of the function's functionalities are further explained within the files.

2.1 Production Line

Task 1

The encoded structures can be found under Batch.py, Buffers.py, Unit.py and Productionline.py.

Task 2

The printer function can be found under Productionline.py

Task 3

The actions and the simulator is implemented in Productionline.py
The structures for the scheduler are implemented as a part of the units under time, and the production line manages the times.

Task 4

Tests performed on batches
Batches of size 20

- test for 20 wafers
    - Task41output.txt
- test for 60 wafers

        - Task42output.txt
    - test for 1000 wafers
        - Task43output.txt

Batches of size 30

- test for 1000 wafers
    - Task44putput.txt

Task 5

This task is implemented in Productionline.py
Task5output.txt shows the actions for dynamic loading batch size 50.

Task 6

This task is implemented in Productionline.py
Task6output.txt shows the last ordering heuristic for batch size 50.

Instead of suggesting an ordering heuristic, we find the ordering heuristic by brute forcing all possible combinations of both batch sizes and unit priority heuristics. Thus combining task 6 and 7.

Task 7

This task is implemented in Productionline.py
Task7output.txt shows the production schedule for our optimal solution.

Our optimal solution took 5664.7 time units. It had a batch size of 37. Unit1 prioritizes input buffer 1 over 3 over 6 over 9. Unit 2 prioritizes input buffer 5 over 7 over 2. Unit 3 prioritizes 4 over 8.