

CPSC 457- Principle of Operating Systems
Assignment 4
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Input 1

- First In First Out
 - Average Turnaround Time: 15.64 seconds
 - Average Waiting Time 3.64 seconds
- Round Robin
 - Average Turnaround Time: 17.27 seconds
 - Average Waiting Time 5.27 seconds

Input 2

- First In First Out
 - Average Turnaround Time: 5.4 seconds
 - Average Waiting Time 2.4 seconds
- Round Robin
 - Average Turnaround Time: 6.8 seconds
 - Average Waiting Time 3.8 seconds

I created a dynamic queue to store the students coming to the restaurant. The implementation can be found in the "include/queue.h" file. The queue is a generic thus it can be used to store any type of data type and in this case, it is used to store a student type. The queue can dynamically grow and shrink using the push and pull method. Where the queue is deleted, it safely deletes each node in its clean up method.

As we can see from the results, first in first out performs better than round robin on average. FIFO has much better waiting time than round robin and FIFO also beats round robin in turnaround time by a little. FIFO benefits people who come first and if they take long the person next pays for it. While round robin balances this issue by putting a limit on eating time to equalize waiting time but this increases the overall waiting time.

Input 1

First In First Out

ID: 0
Turnaround Time: 12
Waiting Time 0

ID: 1
Turnaround Time: 12
Waiting Time 0

ID: 2
Turnaround Time: 12
Waiting Time 0

ID: 3
Turnaround Time: 12
Waiting Time 0

ID: 4
Turnaround Time: 16
Waiting Time 4

ID: 5
Turnaround Time: 16
Waiting Time 4

ID: 6
Turnaround Time: 16
Waiting Time 4

ID: 7
Turnaround Time: 16
Waiting Time 4

ID: 8
Turnaround Time: 20
Waiting Time 8

ID: 9
Turnaround Time: 20
Waiting Time 8

ID: 10
Turnaround Time: 20
Waiting Time 8

Round Robin

ID: 0
Turnaround Time: 12
Waiting Time 0

ID: 1
Turnaround Time: 14
Waiting Time 2

ID: 2
Turnaround Time: 14
Waiting Time 2

ID: 3
Turnaround Time: 16
Waiting Time 4

ID: 4
Turnaround Time: 18
Waiting Time 6

ID: 5
Turnaround Time: 20
Waiting Time 8

ID: 6
Turnaround Time: 20
Waiting Time 8

ID: 7
Turnaround Time: 20
Waiting Time 8

ID: 8
Turnaround Time: 20
Waiting Time 8

ID: 9
Turnaround Time: 18
Waiting Time 6

ID: 10
Turnaround Time: 18
Waiting Time 6