CSE344 – System Programming
Homeowork 3 Report

1) How Did I Solve This Problem?

In this homework, I checked the first command line arguments. To satisfy the requirements I used to getopt function. Thanks to getopt function I got arguments in the proper way and I got the command line argument, for both named and unnamed semaphore files. After the get input file. I read the file line by line and store it the ingredients in the shared memory. After the line readed and added to shared memory, I checked the ingredients and I post the proper semaphores. I designed the main processes as a wholesaler. After that, I implement the smoker problem's pusher for my code. I used mutex for the pushers synchronizations. Than, chef processes controls the semaphores which is pushed by wholesaler and prepares güllaç. I used agent semaphore for the synchronization for the wholesaler and chefs. To collect total number of desert from chefs, end of the process I send the sigint signals to the chefs and exit them by their prepared number of deserts.

2) My Design Decisions
I use error check first mechanism.
I use both fork methods to create processes.
I use shared memory, semaphores and named semaphores.
I use chef struct to hold chefs id, and pid.

3) Requirements That I Achived
I think I achieved almost all the requirements. However, I may not have been able to achieve some requirements. (If the input file has 1 line there must be an empty line after that line)
My Files
Makefile - The makefile.
hw3named.c - Implementation with named semaphores.

hw3unnamed.c - Implementation with unnamed semaphores.

4) Some Outputs From Program

```
1    MS
2    FM
3    WS
4    SM
```

Image 1: Input File

Image 2: Output of hw3unnamed

```
chef 0 (pid 7254) is waiting for walnuts and sugar - charachter array:
chef 1 (pid 7255) is waiting for flour and walnuts - charachter array:
chef 2 (pid 7256) is waiting for sugar and flour - charachter array:
chef 3 (pid 7257) is waiting for milk and flour - charachter array:
chef 4 (pid 7258) is waiting for milk and walnuts - charachter array:
chef 5 (pid 7259) is waiting for sugar and milk - charachter array:
the wholesaler (pid 7253) delivers Sugar and Milk - charachter array: MS
the wholesaler (pid 7253) is waiting for the dessert - charachter array: MS
chef 4 (pid 7259) has taken the Milk - charachter array: MS
chef 4 (pid 7259) has taken the Sugar - charachter array: MS
chef 4 (pid 7259) is preparing the dessert - charachter array: MS
chef 4 (pid 7259) has delivered the dessert - charachter array: MS
the wholesaler (pid 7253) delivers Milk and Flour - charachter array: FM
the wholesaler (pid 7253) is waiting for the dessert - charachter array: FM
chef 3 (pid 7257) has taken the Milk - charachter array: FM
chef 3 (pid 7257) has taken the Flour - charachter array: FM
chef 3 (pid 7257) is preparing the dessert - charachter array: FM
chef 3 (pid 7257) has delivered the dessert - charachter array: FM
the wholesaler (pid 7253) delivers Walnuts and Sugar - charachter array: WS
the wholesaler (pid 7253) is waiting for the dessert - charachter array: WS
chef 0 (pid 7254) has taken the Walnuts - charachter array: WS
chef 0 (pid 7254) has taken the Sugar - charachter array: WS
chef 0 (pid 7254) is preparing the dessert - charachter array: WS
chef 0 (pid 7254) has delivered the dessert - charachter array: WS
the wholesaler (pid 7253) delivers Sugar and Milk - charachter array: SM
chef 4 (pid 7259) has taken the Milk - charachter array: SM
the wholesaler (pid 7253) is waiting for the dessert - charachter array: SM
chef 4 (pid 7259) has taken the Sugar - charachter array: SM
chef 4 (pid 7259) is preparing the dessert - charachter array: SM
chef 4 (pid 7259) has delivered the dessert - charachter array: SM
chef 0 (pid 7254) is exiting - charachter array: SM
chef 1 (pid 7255) is exiting - charachter array: SM
chef 2 (pid 7256) is exiting - charachter array: SM
chef 3 (pid 7257) is exiting - charachter array: SM
chef 4 (pid 7258) is exiting - charachter array: SM
chef 5 (pid 7259) is exiting - charachter array: SM
the wholesaler (pid 7253) is done (total desserts: 4) - charachter array: SM
```



```
chef 0 (pid 7304) is waiting for walnuts and sugar - charachter array:
chef 1 (pid 7305) is waiting for flour and walnuts - charachter array:
chef 2 (pid 7306) is waiting for sugar and flour - charachter array:
chef 3 (pid 7307) is waiting for milk and flour - charachter array:
chef 4 (pid 7308) is waiting for milk and walnuts - charachter array:
chef 5 (pid 7309) is waiting for sugar and milk - charachter array:
the wholesaler (pid 7303) delivers Sugar and Milk - charachter array: MS
the wholesaler (pid 7303) is waiting for the dessert - charachter array: MS
chef 4 (pid 7309) has taken the Milk - charachter array: MS
chef 4 (pid 7309) has taken the Sugar - charachter array: MS
chef 4 (pid 7309) is preparing the dessert - charachter array: MS
chef 4 (pid 7309) has delivered the dessert - charachter array: MS
the wholesaler (pid 7303) delivers Milk and Flour - charachter array: FM
the wholesaler (pid 7303) is waiting for the dessert - charachter array: FM
chef 3 (pid 7307) has taken the Milk - charachter array: FM
chef 3 (pid 7307) has taken the Flour - charachter array: FM
chef 3 (pid 7307) is preparing the dessert - charachter array: FM
chef 3 (pid 7307) has delivered the dessert - charachter array: FM
the wholesaler (pid 7303) delivers Walnuts and Sugar - charachter array: WS
the wholesaler (pid 7303) is waiting for the dessert - charachter array: WS
chef 0 (pid 7304) has taken the Walnuts - charachter array: WS
chef 0 (pid 7304) has taken the Sugar - charachter array: WS
chef 0 (pid 7304) is preparing the dessert - charachter array: WS
chef 0 (pid 7304) has delivered the dessert - charachter array: WS
the wholesaler (pid 7303) delivers Sugar and Milk - charachter array: SM
the wholesaler (pid 7303) is waiting for the dessert - charachter array: SM
chef 4 (pid 7309) has taken the Milk - charachter array: SM
chef 4 (pid 7309) has taken the Sugar - charachter array: SM
chef 4 (pid 7309) is preparing the dessert - charachter array: SM
chef 4 (pid 7309) has delivered the dessert - charachter array: SM
chef 0 (pid 7304) is exiting - charachter array: SM
chef 1 (pid 7305) is exiting - charachter array: SM
chef 2 (pid 7306) is exiting - charachter array: SM
chef 3 (pid 7307) is exiting - charachter array: SM
chef 4 (pid 7308) is exiting - charachter array: SM
chef 5 (pid 7309) is exiting - charachter array: SM
the wholesaler (pid 7303) is done (total desserts: 4) - charachter array: SM
```

Image3: Output of hw3named