GIT Department of Computer Engineering
CSE 344 – Spring 2022

HOMEWORK 3  #Report

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## How Did I Handle the Problem?

First of all, I defined semaphore values for all chefs, ingredients, pusher values and desserts. Then I created and handled a proccess for all chefs and pusher values.I made them wait in the wait() part of the material they were looking for, by putting each of them in an infinite while according to their own values.

## Parent Child relationship

I ran my Agent value as the parent. So each time I read two materials from the file and write them to the shared_memory and increase the semaphore values of these materials, so that the pushers in the child related to this material start to process, and after the pushers finish their operations, the Chef enters from the wait state he is in and prepares his dessert. After the process is finished, it sets the agent value to Post, allowing the agent to continue to receive material from the file.

## Return Desert Value

After each chef makes a dessert, it increases its own local variable. And after the material in the file is finished, all of the chefs exit by setting a flag value. The value they exit is the number of desserts they have made. The agent collects these returned values with waitpid() and prints the most.

```
waitpid(shmemChefs[i].childsPid,&status,0);
total += WEXITSTATUS(status);
```

**Test Cases**

```
okan@okan-ABRA-A5-V16-4:~/Desktop$ ./hw3unnamed -i inputFilePath
chef0 (pid 48436) is waiting for W and S
chef1 (pid 48437) is waiting for F and W
chef2 (pid 48438) is waiting for S and F
chef3 (pid 48439) is waiting for M and F
chef4 (pid 48440) is waiting for M and W
chef5 (pid 48441) is waiting for M and S

the wholesaler (pid 48435) delivers M and F
the wholesaler (pid 48435) is waiting for the dessert

chef3 (pid 48439) has taken the M
chef3 (pid 48439) has taken the F
chef3 (pid 48439) is preparing the dessert
chef3 (pid 48439) has delivered the dessert
MF

the wholesaler (pid 48435) delivers F and W
the wholesaler (pid 48435) is waiting for the dessert

chef1 (pid 48437) has taken the F
chef1 (pid 48437) has taken the W
chef1 (pid 48437) is preparing the dessert
chef1 (pid 48437) has delivered the dessert
FW

the wholesaler (pid 48435) has obtained the dessert and left

the wholesaler (pid 48435) delivers W and S
the wholesaler (pid 48435) is waiting for the dessert

chef0 (pid 48436) has taken the W
chef0 (pid 48436) has taken the S
chef0 (pid 48436) is preparing the dessert
chef0 (pid 48436) has delivered the dessert
WS

the wholesaler (pid 48435) has obtained the dessert and left
chef5 (pid 48441) is exiting
chef3 (pid 48439) is exiting
chef4 (pid 48440) is exiting
chef2 (pid 48438) is exiting
chef0 (pid 48436) is exiting
chef1 (pid 48437) is exiting

the wholesaler (pid 48435) is done (total desserts: 3)
```

```
okan@okan-ABRA-A5-V16-4:~/Desktop$ ./hw3named -i inputFilePath -n sem5
chef0 (pid 48506) is waiting for W and S
chef1 (pid 48507) is waiting for F and W
chef2 (pid 48508) is waiting for S and F
chef3 (pid 48509) is waiting for M and F
chef4 (pid 48510) is waiting for M and W
chef5 (pid 48511) is waiting for M and S

the wholesaler (pid 48505) delivers M and F
the wholesaler (pid 48505) is waiting for the dessert

chef3 (pid 48509) has taken the M
chef3 (pid 48509) has taken the F
chef3 (pid 48509) is preparing the dessert
chef3 (pid 48509) has delivered the dessert
MF

the wholesaler (pid 48505) delivers F and W
the wholesaler (pid 48505) is waiting for the dessert

chef1 (pid 48507) has taken the F
chef1 (pid 48507) has taken the W
chef1 (pid 48507) is preparing the dessert
chef1 (pid 48507) has delivered the dessert
FW

the wholesaler (pid 48505) has obtained the dessert and left

the wholesaler (pid 48505) delivers W and S
the wholesaler (pid 48505) is waiting for the dessert

chef0 (pid 48506) has taken the W
chef0 (pid 48506) has taken the S
chef0 (pid 48506) is preparing the dessert
chef0 (pid 48506) has delivered the dessert
WS

the wholesaler (pid 48505) has obtained the dessert and left
chef4 (pid 48510) is exiting
chef0 (pid 48506) is exiting
chef5 (pid 48511) is exiting
chef2 (pid 48508) is exiting
chef1 (pid 48507) is exiting
chef3 (pid 48509) is exiting

the wholesaler (pid 48505) is done (total desserts: 3)
```

```
okan@okan-ABRA-A5-V16-4:~/Desktop$ ./hw3unnamed -i inputFilePath
chef0 (pid 48635) is waiting for W and S
chef1 (pid 48636) is waiting for F and W
chef2 (pid 48637) is waiting for S and F
chef3 (pid 48638) is waiting for M and F
chef4 (pid 48639) is waiting for M and W
chef5 (pid 48640) is waiting for M and S

the wholesaler (pid 48634) delivers M and F
the wholesaler (pid 48634) is waiting for the dessert

chef3 (pid 48638) has taken the M
chef3 (pid 48638) has taken the F
chef3 (pid 48638) is preparing the dessert
chef3 (pid 48638) has delivered the dessert
MF

the wholesaler (pid 48634) delivers F and W
the wholesaler (pid 48634) is waiting for the dessert

chef1 (pid 48636) has taken the F
chef1 (pid 48636) has taken the W
chef1 (pid 48636) is preparing the dessert
chef1 (pid 48636) has delivered the dessert
FW

the wholesaler (pid 48634) has obtained the dessert and left

the wholesaler (pid 48634) delivers W and S
the wholesaler (pid 48634) is waiting for the dessert

chef0 (pid 48635) has taken the W
chef0 (pid 48635) has taken the S
chef0 (pid 48635) is preparing the dessert
chef0 (pid 48635) has delivered the dessert
WS

the wholesaler (pid 48634) has obtained the dessert and left

the wholesaler (pid 48634) delivers M and S
the wholesaler (pid 48634) is waiting for the dessert

chef5 (pid 48640) has taken the M
chef5 (pid 48640) has taken the S
chef5 (pid 48640) is preparing the dessert
chef5 (pid 48640) has delivered the dessert
MS

the wholesaler (pid 48634) has obtained the dessert and left

the wholesaler (pid 48634) delivers F and S
the wholesaler (pid 48634) is waiting for the dessert
```

```
the wholesaler (pid 48634) delivers M and W
the wholesaler (pid 48634) is waiting for the dessert

chef4 (pid 48639) has taken the M
chef4 (pid 48639) has taken the W
chef4 (pid 48639) is preparing the dessert
chef4 (pid 48639) has delivered the dessert
MW

the wholesaler (pid 48634) has obtained the dessert and left

the wholesaler (pid 48634) delivers W and F
the wholesaler (pid 48634) is waiting for the dessert

chef1 (pid 48636) has taken the W
chef1 (pid 48636) has taken the F
chef1 (pid 48636) is preparing the dessert
chef1 (pid 48636) has delivered the dessert
WF

the wholesaler (pid 48634) has obtained the dessert and left

the wholesaler (pid 48634) delivers S and M
the wholesaler (pid 48634) is waiting for the dessert

chef5 (pid 48640) has taken the S
chef5 (pid 48640) has taken the M
chef5 (pid 48640) is preparing the dessert
chef5 (pid 48640) has delivered the dessert
SM

the wholesaler (pid 48634) has obtained the dessert and left

the wholesaler (pid 48634) delivers S and M
the wholesaler (pid 48634) is waiting for the dessert

chef5 (pid 48640) has taken the S
chef5 (pid 48640) has taken the M
chef5 (pid 48640) is preparing the dessert
chef5 (pid 48640) has delivered the dessert
SM

the wholesaler (pid 48634) has obtained the dessert and left
chef5 (pid 48640) is exiting
chef4 (pid 48639) is exiting
chef2 (pid 48637) is exiting
chef3 (pid 48638) is exiting
chef0 (pid 48635) is exiting
chef1 (pid 48636) is exiting

the wholesaler (pid 48634) is done (total desserts: 11)
```