

作業系統作業3

1083343

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完整功能列表

- 魚肉按照編號排入備料區以及冷凍庫
- 冷凍庫的肉品在10~30ms的隨機時間達成時離開冷凍庫準備入備料區但如果備料區沒有位置則重新放入冷凍庫
- 冷凍庫的肉品有保存期限，保存期限過期將肉丟掉(BONUS)
- 魚肉按照先進先出的順序進入切肉區
- 最後將切好的魚肉送入罐頭區

基本上老師要求的功能皆有做出來

```

s1083343_OShw3.cpp
其他檔案
13
14     vector<bool> dbc;
15     struct fish
16     {
17         int num;//number
18         int clock;//冷凍time
19         clock_t limit;//保存期限
20         int shape;//0:鮮魚 1:切割 2:罐頭
21         clock_t start;
22     };
23
24     pthread_mutex_t lock;
25     int m = 15;//鮮魚數量
26     int n = 5;//備料區大小
27     fish* buf = new fish[m + 1];
28     queue<fish> box;//備料區
29     queue<fish> air;//冷凍庫
30     void wait(int millisecond)
31     {
32         usleep(millisecond*1000); //<unistd.h> convert to millisecond
33     }
34
35     int gt(clock_t start)
36     {
37         clock_t end = (clock());
38         int timeused;
39         timeused = ((int)(end - start));
40         return timeused;
41     }
42
43
44     void* doSomething(void* data)
45     {
46         fish* temp = (fish*)data;

```

利用Struct來儲存所有的魚類資訊，讓魚可以擁有身份，包含編號、進入冷凍庫時間、肉品狀態(魚肉、切割魚肉、罐頭工廠)、保存期限

取得時間差的Fuction

BONUS

- 利用STRUCT來儲存魚肉的資訊然後寫一個Fuction來計算經過的時間如果超過保存期限則丟掉

```
bjergsen@bjergsen-VirtualBox: ~/s1083343_hw3
3038ms--Fish#8:fish is rotten(Abandon)
3073ms--Fish#6:enters to the factory (CANNER)
3089ms--Fish#6: leaves CANNER(Complete)
3134ms--Fish#9:fish is rotten(Abandon)
3136ms--Fish#10:fish is rotten(Abandon)
3168ms--Fish#15:enters to the factory (CANNER)
3183ms--Fish#15: leaves CANNER(Complete)
3223ms--Fish#11:fish is rotten(Abandon)
3252ms--Fish#14:enters to the factory (CANNER)
3268ms--Fish#14: leaves CANNER(Complete)
3337ms--Fish#13:enters to the factory (CANNER)
3355ms--Fish#13: leaves CANNER(Complete)
3447ms--Fish#12:enters to the factory (CANNER)
3465ms--Fish#12: leaves CANNER(Complete)
3536ms--Fish#0:enters the CUTTER
3539ms--CUTTER: cutting... cutting...Fish#0--140
3562ms--Fish#0: leaves CUTTER (complete 1st stage)
3629ms --Fish#0:waiting in the slot(cutted)
3649ms--Fish#0:enters the CUTTER
3651ms--CUTTER: cutting... cutting...Fish#0--260
3665ms--Fish#0: leaves CUTTER (complete 1st stage)
3704ms --Fish#0:waiting in the slot(cutted)
3723ms--Fish#0:enters the CUTTER
3724ms--CUTTER: cutting... cutting...Fish#0--170
```

遭遇的問題

- 安裝Pthread的問題(上網搜尋資料後解決)
- 未用lock跟Unlock造成卡在一起的問題(上網搜尋資料後學會使用lock)
- Time的問題(改用CPU Time來處理已解決)
- 魚肉先進入切割完成裝態然後才進入切割區塞車的問題(將CODE進行調整以及用pthread來完成)
- 魚肉編號的問題(發現pthread沒有回傳值的問題，利用pthread_join解決)
- 魚肉全部遺失的問題(因為保存期限過短因此全部丟棄)
- 魚肉不會進罐頭工廠的問題(將CODE進行調整以及用pthread來完成)
- 全部工廠同時運作的問題(無法解決)

詳細敘述

- 我的程式主要利用Struct來儲存所有的魚肉資訊，讓魚可以擁有身份，包含編號、進入冷凍庫時間、肉品狀態(魚肉、切割肉、罐頭工廠)、保存期限等等.....然後利用Queue先進先出的方式來完成肉品進入切割區的動作。對於Pthread以及Mutex的應用自認為做的不是很完整，沒有達到完整的平行處理，，有關於Pthread以及Mutex的應用，在自己盡力的程度下做出了現在的作業，在進入切利用Pthread讓魚肉進入切割區以及罐頭區。然後利用Mutex來讓魚肉可以在外面等待，讓魚肉可以不會塞車，可以在外面等待。然後由於Pthread不會有回傳值因此我利用Pthread_Join的方式來回傳0代表成功進入Mutex然後利用If回傳值為(0)然後讓他來改動魚肉的相關資訊



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6310ms--Fish#5:enters to the factory (CANNER)

6329ms--Fish#5: leaves CANNER(Complete)

bjergsen@bjergsen-VirtualBox:~/s1083343_hw3\$ g++ s1083343_0Shw3.cpp

bjergsen@bjergsen-VirtualBox:~/s1083343_hw3\$./a.out 15 5

875ms--CUTTER: under maintenance.

896ms-- CANNER: under maintenance.

897ms-- CANNER: under reviewing together...

898ms-- CUTTER: under reviewing together...

910ms--Fish#1:waiting in the slot

947ms--Fish#2:waiting in the slot

973ms--Fish#3:waiting in the slot

998ms--Fish#4:waiting in the slot

1024ms--Fish#5:waiting in the slot

1247ms--Fish#1:enters the CUTTER

1263ms--CUTTER: cutting... cutting...Fish#1--240

1278ms--Fish#1: leaves CUTTER (complete 1st stage)

1326ms --Fish#1:waiting in the slot(cutted)

1366ms--Fish#2:enters the CUTTER

1368ms--CUTTER: cutting... cutting...Fish#2--110

1383ms--Fish#2: leaves CUTTER (complete 1st stage)

1426ms --Fish#2:waiting in the slot(cutted)

1451ms--Fish#3:enters the CUTTER

1453ms--CUTTER: cutting... cutting...Fish#3--170

1487ms--Fish#3: leaves CUTTER (complete 1st stage)



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```
1451ms--Fish#3:enters the CUTTER
1453ms--CUTTER: cutting... cutting...Fish#3--170
1487ms--Fish#3: leaves CUTTER (complete 1st stage)
1532ms --Fish#3:waiting in the slot(cutted)
1561ms--Fish#4:enters the CUTTER
1562ms--CUTTER: cutting... cutting...Fish#4--200
1589ms--Fish#4: leaves CUTTER (complete 1st stage)
1632ms --Fish#4:waiting in the slot(cutted)
1659ms--Fish#5:enters the CUTTER
1661ms--CUTTER: cutting... cutting...Fish#5--190
1674ms--Fish#5: leaves CUTTER (complete 1st stage)
1714ms --Fish#5:waiting in the slot(cutted)
1740ms--Fish#1:enters to the factory (CANNER)
1804ms--Fish#1: leaves CANNER(Complete)
1997ms--Fish#6:waiting in the slot
2068ms--Fish#2:enters to the factory (CANNER)
2102ms--Fish#2: leaves CANNER(Complete)
2215ms--Fish#15:waiting in the slot
2301ms--Fish#3:enters to the factory (CANNER)
2321ms--Fish#3: leaves CANNER(Complete)
2364ms--Fish#14:waiting in the slot
2401ms--Fish#4:enters to the factory (CANNER)
2417ms--Fish#4: leaves CANNER(Complete)
2457ms--Fish#13:waiting in the slot
```




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```
2301ms--Fish#3:enters to the factory (CANNER)
2321ms--Fish#3: leaves CANNER(Complete)
2364ms--Fish#14:waiting in the slot
2401ms--Fish#4:enters to the factory (CANNER)
2417ms--Fish#4: leaves CANNER(Complete)
2457ms--Fish#13:waiting in the slot
2490ms--Fish#5:enters to the factory (CANNER)
2506ms--Fish#5: leaves CANNER(Complete)
2550ms--Fish#12:waiting in the slot
2585ms--Fish#6:enters the CUTTER
2587ms--CUTTER: cutting... cutting...Fish#6--250
2604ms--Fish#6: leaves CUTTER (complete 1st stage)
2650ms --Fish#6:waiting in the slot(cutted)
2675ms--Fish#15:enters the CUTTER
2677ms--CUTTER: cutting... cutting...Fish#15--130
2704ms--Fish#15: leaves CUTTER (complete 1st stage)
2763ms --Fish#15:waiting in the slot(cutted)
2792ms--Fish#14:enters the CUTTER
2794ms--CUTTER: cutting... cutting...Fish#14--290
2809ms--Fish#14: leaves CUTTER (complete 1st stage)
2854ms --Fish#14:waiting in the slot(cutted)
2893ms--Fish#13:enters the CUTTER
2896ms--CUTTER: cutting... cutting...Fish#13--190
2908ms--Fish#13: leaves CUTTER (complete 1st stage)
```




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```
2650ms --Fish#6:waiting in the slot(cutted)
2675ms--Fish#15:enters the CUTTER
2677ms--CUTTER: cutting... cutting...Fish#15--130
2704ms--Fish#15: leaves CUTTER (complete 1st stage)
2763ms --Fish#15:waiting in the slot(cutted)
2792ms--Fish#14:enters the CUTTER
2794ms--CUTTER: cutting... cutting...Fish#14--290
2809ms--Fish#14: leaves CUTTER (complete 1st stage)
2854ms --Fish#14:waiting in the slot(cutted)
2893ms--Fish#13:enters the CUTTER
2896ms--CUTTER: cutting... cutting...Fish#13--190
2908ms--Fish#13: leaves CUTTER (complete 1st stage)
2949ms --Fish#13:waiting in the slot(cutted)
2972ms--Fish#12:enters the CUTTER
2974ms--CUTTER: cutting... cutting...Fish#12--180
2993ms--Fish#12: leaves CUTTER (complete 1st stage)
3043ms --Fish#12:waiting in the slot(cutted)
3037ms--Fish#7:fish is rotten(Abandon)
3038ms--Fish#8:fish is rotten(Abandon)
3073ms--Fish#6:enters to the factory (CANNER)
3089ms--Fish#6: leaves CANNER(Complete)
3134ms--Fish#9:fish is rotten(Abandon)
3136ms--Fish#10:fish is rotten(Abandon)
3168ms--Fish#15:enters to the factory (CANNER)
```




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```
3038ms--Fish#8:fish is rotten(Abandon)
3073ms--Fish#6:enters to the factory (CANNER)
3089ms--Fish#6: leaves CANNER(Complete)
3134ms--Fish#9:fish is rotten(Abandon)
3136ms--Fish#10:fish is rotten(Abandon)
3168ms--Fish#15:enters to the factory (CANNER)
3183ms--Fish#15: leaves CANNER(Complete)
3223ms--Fish#11:fish is rotten(Abandon)
3252ms--Fish#14:enters to the factory (CANNER)
3268ms--Fish#14: leaves CANNER(Complete)
3337ms--Fish#13:enters to the factory (CANNER)
3355ms--Fish#13: leaves CANNER(Complete)
3447ms--Fish#12:enters to the factory (CANNER)
3465ms--Fish#12: leaves CANNER(Complete)
3536ms--Fish#0:enters the CUTTER
3539ms--CUTTER: cutting... cutting...Fish#0--140
3562ms--Fish#0: leaves CUTTER (complete 1st stage)
3629ms --Fish#0:waiting in the slot(cutted)
3649ms--Fish#0:enters the CUTTER
3651ms--CUTTER: cutting... cutting...Fish#0--260
3665ms--Fish#0: leaves CUTTER (complete 1st stage)
3704ms --Fish#0:waiting in the slot(cutted)
3723ms--Fish#0:enters the CUTTER
3724ms--CUTTER: cutting... cutting...Fish#0--170
```




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```
3973ms--Fish#0: leaves CUTTER (complete 1st stage)
4014ms --Fish#0:waiting in the slot(cutted)
4034ms--Fish#0:enters the CUTTER
4035ms--CUTTER: cutting... cutting...Fish#0--100
4053ms--Fish#0: leaves CUTTER (complete 1st stage)
4096ms --Fish#0:waiting in the slot(cutted)
4122ms--Fish#0:enters the CUTTER
4124ms--CUTTER: cutting... cutting...Fish#0--150
4141ms--Fish#0: leaves CUTTER (complete 1st stage)
4182ms --Fish#0:waiting in the slot(cutted)
4203ms--Fish#0:enters the CUTTER
4205ms--CUTTER: cutting... cutting...Fish#0--260
4232ms--Fish#0: leaves CUTTER (complete 1st stage)
4291ms --Fish#0:waiting in the slot(cutted)
4330ms--Fish#0:enters the CUTTER
4332ms--CUTTER: cutting... cutting...Fish#0--210
4349ms--Fish#0: leaves CUTTER (complete 1st stage)
4392ms --Fish#0:waiting in the slot(cutted)
4414ms--Fish#0:enters the CUTTER
4415ms--CUTTER: cutting... cutting...Fish#0--200
4433ms--Fish#0: leaves CUTTER (complete 1st stage)
4478ms --Fish#0:waiting in the slot(cutted)
4502ms--Fish#0:enters the CUTTER
4504ms--CUTTER: cutting... cutting...Fish#0--190
```




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```
4741ms --Fish#2:waiting in the slot(cutted)
4775ms--Fish#3:enters the CUTTER
4779ms--CUTTER: cutting... cutting...Fish#3--300
4794ms--Fish#3: leaves CUTTER (complete 1st stage)
4836ms --Fish#3:waiting in the slot(cutted)
4867ms--Fish#4:enters the CUTTER
4871ms--CUTTER: cutting... cutting...Fish#4--110
4891ms--Fish#4: leaves CUTTER (complete 1st stage)
4934ms --Fish#4:waiting in the slot(cutted)
4957ms--Fish#5:enters the CUTTER
4959ms--CUTTER: cutting... cutting...Fish#5--260
4977ms--Fish#5: leaves CUTTER (complete 1st stage)
5026ms --Fish#5:waiting in the slot(cutted)
5051ms--Fish#1:enters to the factory (CANNER)
5068ms--Fish#1: leaves CANNER(Complete)
5140ms--Fish#2:enters to the factory (CANNER)
5156ms--Fish#2: leaves CANNER(Complete)
5220ms--Fish#3:enters to the factory (CANNER)
5252ms--Fish#3: leaves CANNER(Complete)
5325ms--Fish#4:enters to the factory (CANNER)
5344ms--Fish#4: leaves CANNER(Complete)
5414ms--Fish#5:enters to the factory (CANNER)
5433ms--Fish#5: leaves CANNER(Complete)
```

bjergsen@bjergsen-VirtualBox:~/s1083343_hw3\$