作業系統作業3

1081355

吳百淵

完整功能列表

- 豬肉按照編號排入備料區以及冷凍庫
- 冷凍庫的肉品在100~300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(BONES)
- 豬肉按照先進先出的順序進入切肉區
- 最後將切好的豬肉送入包粽區

基本上老師要求的功能皆有做出來

```
10  #pragma comment(lib, "pthreadVC2.lib")
11  using namespace std;
12  //clock_t start = time(0);
13
14  vector<bool> dbc;
15  struct meet
16  {
17      int num;//number
18      int time;//冷凍time
19      clock_t limit;//保存期限
20      int shape;//0:大豬肉 1:切塊肉 2:粽子肉
21      clock_t start;
22  };
23
24  pthread_mutex_t lock;
25  int m = 15;//大豬肉數量
26  int n = 5;//備料區大小
27  meet* buf = new meet[m + 1];
28  queue<meet> box;//備料區
29  queue<meet> air;//冷凍庫
30
31  void wait(int time)
32  {
33      Sleep(time);
34  }
35  int gt(clock_t start)
36  {
37      clock_t end = (clock() * 10);
38      int timeused;
39      timeused = ((int)(end - start));
40      return timeused;
41  }
42  //void*open(void* data)
43  //{
```

利用Struct來儲存所有的肉品資訊，讓肉品可以擁有身份，包含編號、進入冷凍庫時間、肉品狀態(原肉、切割肉、粽子)、保存期限

取得時間差的Fuction

BONES

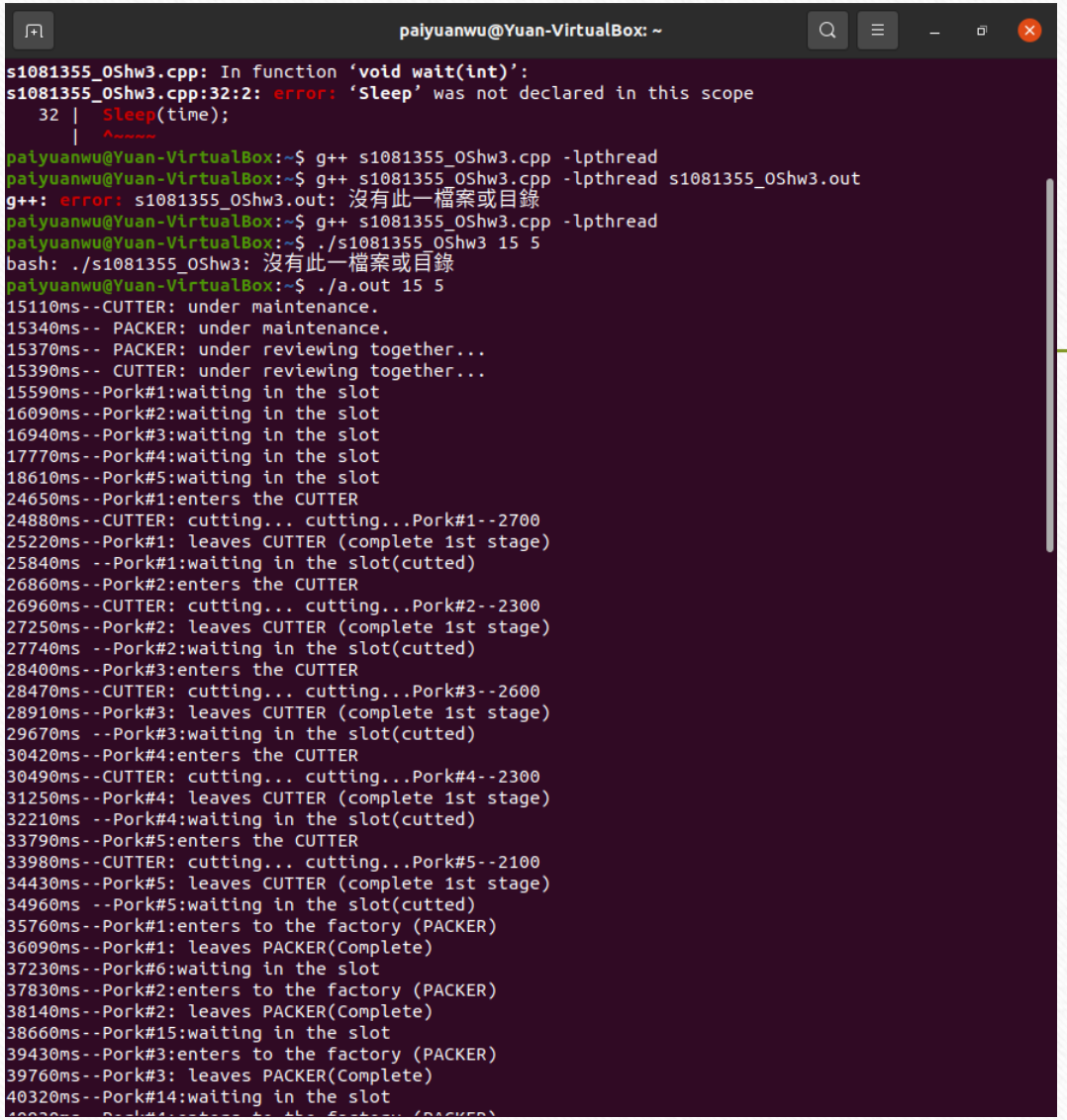
- 利用STRUCT來儲存肉品的資訊然後寫一個Fuction來計算經過的時間如果超過保存期限則丟掉

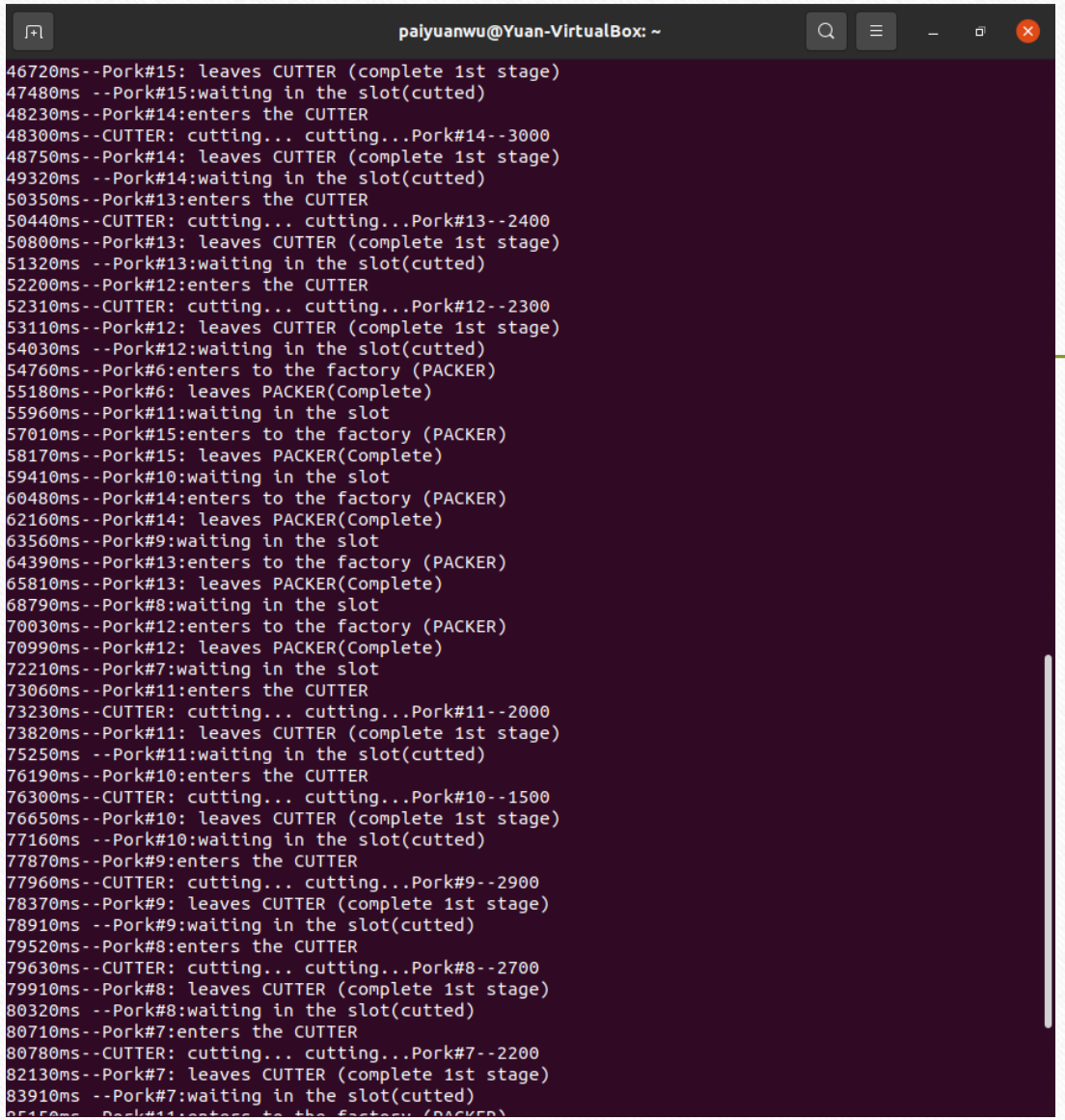
遭遇的問題

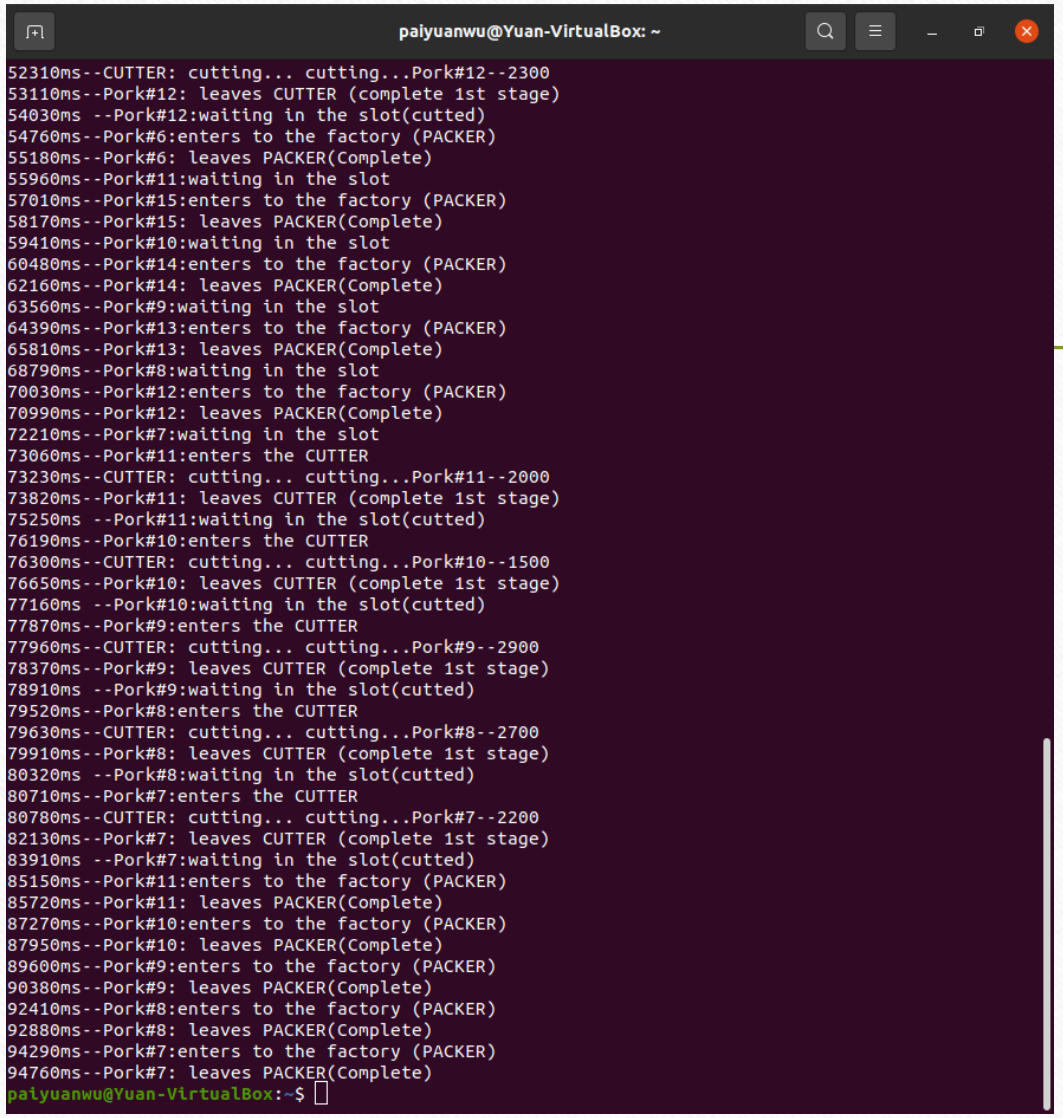
- 安裝Pthread的問題(上網搜尋資料後解決)
- 未用lock跟Unlock造成卡在一起的問題(上網搜尋資料後學會使用lock)
- Time的問題(改用CPU Time來處理已解決)
- 豬肉先進入切割完成裝態然後才進入切割區塞車的問題(將CODE進行調整以及用pthread來完成)
- 豬肉編號的問題(發現pthread沒有回傳值的問題，利用pthread_join解決)
- 豬肉全部遺失的問題(因為保存期限過短因此全部丟棄)
- 豬肉不會進粽子工廠的問題(將CODE進行調整以及用pthread來完成)
- 全部工廠同時運作的問題(無法解決)

詳細敘述

- 我的程式主要利用Struct來儲存所有的肉品資訊，讓肉品可以擁有身份，包含編號、進入冷凍庫時間、肉品狀態(原肉、切割肉、粽子)、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，這幾天幾乎沒有睡覺在網路上搜尋資料，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讓肉品進入切割區以及包粽區。然後利用Mutux來讓肉品可以在外面等待，讓肉品可以不會塞車，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Mutux然後利用If回傳值為(0)然後讓他來改動肉品的相關資訊


paiyuanwu@Yuan-VirtualBox: ~
s1081355_OShw3.cpp: In function ‘void wait(int)’:
s1081355_OShw3.cpp:32:2: error: ‘Sleep’ was not declared in this scope
32 | Sleep(time);
| ^~~~~
paiyuanwu@Yuan-VirtualBox:~$ g++ s1081355_OShw3.cpp -lpthread
paiyuanwu@Yuan-VirtualBox:~$ g++ s1081355_OShw3.cpp -lpthread s1081355_OShw3.out
g++: error: s1081355_OShw3.out: 沒有此一檔案或目錄
paiyuanwu@Yuan-VirtualBox:~$ g++ s1081355_OShw3.cpp -lpthread
paiyuanwu@Yuan-VirtualBox:~$ ./s1081355_OShw3 15 5
bash: ./s1081355_OShw3: 沒有此一檔案或目錄
paiyuanwu@Yuan-VirtualBox:~$ ./a.out 15 5
15110ms--CUTTER: under maintenance.
15340ms-- PACKER: under maintenance.
15370ms-- PACKER: under reviewing together...
15390ms-- CUTTER: under reviewing together...
15590ms--Pork#1:waiting in the slot
16090ms--Pork#2:waiting in the slot
16940ms--Pork#3:waiting in the slot
17770ms--Pork#4:waiting in the slot
18610ms--Pork#5:waiting in the slot
24650ms--Pork#1:enters the CUTTER
24880ms--CUTTER: cutting... cutting...Pork#1--2700
25220ms--Pork#1: leaves CUTTER (complete 1st stage)
25840ms --Pork#1:waiting in the slot(cutted)
26860ms--Pork#2:enters the CUTTER
26960ms--CUTTER: cutting... cutting...Pork#2--2300
27250ms--Pork#2: leaves CUTTER (complete 1st stage)
27740ms --Pork#2:waiting in the slot(cutted)
28400ms--Pork#3:enters the CUTTER
28470ms--CUTTER: cutting... cutting...Pork#3--2600
28910ms--Pork#3: leaves CUTTER (complete 1st stage)
29670ms --Pork#3:waiting in the slot(cutted)
30420ms--Pork#4:enters the CUTTER
30490ms--CUTTER: cutting... cutting...Pork#4--2300
31250ms--Pork#4: leaves CUTTER (complete 1st stage)
32210ms --Pork#4:waiting in the slot(cutted)
33790ms--Pork#5:enters the CUTTER
33980ms--CUTTER: cutting... cutting...Pork#5--2100
34430ms--Pork#5: leaves CUTTER (complete 1st stage)
34960ms --Pork#5:waiting in the slot(cutted)
35760ms--Pork#1:enters to the factory (PACKER)
36090ms--Pork#1: leaves PACKER(Complete)
37230ms--Pork#6:waiting in the slot
37830ms--Pork#2:enters to the factory (PACKER)
38140ms--Pork#2: leaves PACKER(Complete)
38660ms--Pork#15:waiting in the slot
39430ms--Pork#3:enters to the factory (PACKER)
39760ms--Pork#3: leaves PACKER(Complete)
40320ms--Pork#14:waiting in the slot


paiyuanwu@Yuan-VirtualBox: ~
46720ms--Pork#15: leaves CUTTER (complete 1st stage)
47480ms --Pork#15:waiting in the slot(cutted)
48230ms--Pork#14:enters the CUTTER
48300ms--CUTTER: cutting... cutting...Pork#14--3000
48750ms--Pork#14: leaves CUTTER (complete 1st stage)
49320ms --Pork#14:waiting in the slot(cutted)
50350ms--Pork#13:enters the CUTTER
50440ms--CUTTER: cutting... cutting...Pork#13--2400
50800ms--Pork#13: leaves CUTTER (complete 1st stage)
51320ms --Pork#13:waiting in the slot(cutted)
52200ms--Pork#12:enters the CUTTER
52310ms--CUTTER: cutting... cutting...Pork#12--2300
53110ms--Pork#12: leaves CUTTER (complete 1st stage)
54030ms --Pork#12:waiting in the slot(cutted)
54760ms--Pork#6:enters to the factory (PACKER)
55180ms--Pork#6: leaves PACKER(Complete)
55960ms--Pork#11:waiting in the slot
57010ms--Pork#15:enters to the factory (PACKER)
58170ms--Pork#15: leaves PACKER(Complete)
59410ms--Pork#10:waiting in the slot
60480ms--Pork#14:enters to the factory (PACKER)
62160ms--Pork#14: leaves PACKER(Complete)
63560ms--Pork#9:waiting in the slot
64390ms--Pork#13:enters to the factory (PACKER)
65810ms--Pork#13: leaves PACKER(Complete)
68790ms--Pork#8:waiting in the slot
70030ms--Pork#12:enters to the factory (PACKER)
70990ms--Pork#12: leaves PACKER(Complete)
72210ms--Pork#7:waiting in the slot
73060ms--Pork#11:enters the CUTTER
73230ms--CUTTER: cutting... cutting...Pork#11--2000
73820ms--Pork#11: leaves CUTTER (complete 1st stage)
75250ms --Pork#11:waiting in the slot(cutted)
76190ms--Pork#10:enters the CUTTER
76300ms--CUTTER: cutting... cutting...Pork#10--1500
76650ms--Pork#10: leaves CUTTER (complete 1st stage)
77160ms --Pork#10:waiting in the slot(cutted)
77870ms--Pork#9:enters the CUTTER
77960ms--CUTTER: cutting... cutting...Pork#9--2900
78370ms--Pork#9: leaves CUTTER (complete 1st stage)
78910ms --Pork#9:waiting in the slot(cutted)
79520ms--Pork#8:enters the CUTTER
79630ms--CUTTER: cutting... cutting...Pork#8--2700
79910ms--Pork#8: leaves CUTTER (complete 1st stage)
80320ms --Pork#8:waiting in the slot(cutted)
80710ms--Pork#7:enters the CUTTER
80780ms--CUTTER: cutting... cutting...Pork#7--2200
82130ms--Pork#7: leaves CUTTER (complete 1st stage)
83910ms --Pork#7:waiting in the slot(cutted)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52310ms--CUTTER: cutting... cutting...Pork#12--2300
53110ms--Pork#12: leaves CUTTER (complete 1st stage)
54030ms --Pork#12:waiting in the slot(cutted)
54760ms--Pork#6:enters to the factory (PACKER)
55180ms--Pork#6: leaves PACKER(Complete)
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83910ms --Pork#7:waiting in the slot(cutted)
85150ms--Pork#11:enters to the factory (PACKER)
85720ms--Pork#11: leaves PACKER(Complete)
87270ms--Pork#10:enters to the factory (PACKER)
87950ms--Pork#10: leaves PACKER(Complete)
89600ms--Pork#9:enters to the factory (PACKER)
90380ms--Pork#9: leaves PACKER(Complete)
92410ms--Pork#8:enters to the factory (PACKER)
92880ms--Pork#8: leaves PACKER(Complete)
94290ms--Pork#7:enters to the factory (PACKER)
94760ms--Pork#7: leaves PACKER(Complete)
paiyuanwu@Yuan-VirtualBox:~$