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1  /*****
2  *   FILE: pmms.h
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4  *   UNIT: OS200 Assignment S1 - 2016
5  *   PURPOSE: Header file for pmms.c
6  *   LAST MOD: 07/05/16
7  *   REQUIRES: stdlib.h, pthread.h, fileIO.h
8  *****/
9
10 #pragma once
11
12 #include <stdlib.h>
13 #include <pthread.h>
14 #include "fileIO.h"
15
16 //-----
17 // CONSTANTS
18
19 #define SUBTOTAL_EMPTY 0
20
21 //-----
22 // STRUCT: Stores the value of subtotal and the ID of the thread that
23 //          created it. Also stores row number that the thread calculated.
24
25 typedef struct
26 {
27     int value;
28     long threadID;
29     int rowNumber;
30 } Subtotal;
31
32 //-----
33 // STRUCT: Stores 3 locks for use in producer-consumer problem.
34 //          Mutex provides mutual exclusion to data.
35 //          Full and empty are conditions that the producer and consumer
36 //          wait until they are met.
37
38 typedef struct
39 {
40     pthread_mutex_t mutex;
41     pthread_cond_t full;
42     pthread_cond_t empty;
43 } Synchron;
44
45 //-----
46 // GLOBAL VARIABLES FOR USE IN MULTITHREADS
47
48 Subtotal subtotal;
49 int grandTotal;
50 int status;
51 Synchron locks;
52
53 // MATRIX POINTERS AND DIMENSIONS
54 int* first;
55 int* second;
56 int* product;
57 int M;
58 int N;
59 int K;
60
61 //-----
62 // FUNCTION DECLARATIONS
63
64 void* producer();
65 void* consumer();
66 int destroyLocks();
67 int createLocks();

```

```
68 void freeMatrices(int*, int*, int*);
69 void printMatrix(int*, int, int);
70 void printMatrices(int*, int*, int*, int, int, int);
71
72 //-----
73
```