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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: stdio.h, stdlib.h, unistd.h, fcntl.h, semaphore.h, mman.h
8  *               stat.h, wait.h, fileIO.h
9  *****/
10
11 #pragma once
12
13 #include <stdio.h>
14 #include <stdlib.h>
15 #include <unistd.h>
16 #include <fcntl.h>
17 #include <semaphore.h>
18 #include <sys/mman.h>
19 #include <sys/stat.h>
20 #include <sys/wait.h>
21 #include "fileIO.h"
22
23 //-----
24 // CONSTANTS
25
26 #define SUBTOTAL_EMPTY 0
27
28 //-----
29 // STRUCT: Stores the value of subtotal and the ID of the child that
30 //          created it. Also stores row number that the child calculated.
31
32 typedef struct
33 {
34     int value;
35     int childPID;
36     int rowNum;
37 } Subtotal;
38
39 //-----
40 // STRUCT: Stores 3 locks for use in producer-consumer problem.
41 //          Mutex provides mutual exclusion to data.
42 //          Full and empty are semaphores to signal actions
43 //          from the producer and consumer.
44
45 typedef struct
46 {
47     sem_t mutex;
48     sem_t full;
49     sem_t empty;
50 } Synchron;
51
52 //-----
53 // FUNCTION PROTOTYPES
54
55 void producer(Synchron*, Subtotal*, int*, int*, int*, int, int);
56 void consumer(Synchron*, Subtotal*, int*, int);
57 int createLocks(Synchron*);
58 int destroyLocks(Synchron*);
59
60 //-----
61

```