

```

1  #ifndef SEMAPHOR_INCLUDE
2  #define SEMAPHOR_INCLUDE
3
4  //*****
5  // File:      semaphore.h
6  // Author:    M. Thaler    15.01.2003
7  //
8  // Semphor operations
9  //*****
10
11 #include <sys/types.h>
12 #include <sys/stat.h>
13 #include <sys/ipc.h>
14 #include <sys/sem.h>
15 #include <stdlib.h>
16 #include <unistd.h>
17 #include <fcntl.h>
18
19 #include <iostream>
20 using namespace std;
21
22 //*****
23
24 #define DEFAULT_NUM_SEM 8
25
26 //*****
27 /* declare semun by ourselves (see "man semctl")
28
29 #ifdef _SEM_SEMUN_UNDEFINED
30 #undef _SEM_SEMUN_UNDEFINED
31     /* Union used for argument for `semctl'.  */
32     union semun {
33         int val;                /* value for SETVAL          */
34         struct semid_ds *buf;    /* buffer for IPC_STAT & IPC_SET */
35         unsigned short int *array; /* array for GETALL & SETALL */
36         struct seminfo *__buf;    /* buffer for IPC_INFO      */
37     };
38 #endif
39
40 //*****
41
42 class Semaphore {
43 public:
44     Semaphore(int num = DEFAULT_NUM_SEM);
45     Semaphore(int num, const char* keyFile, int projID);
46     ~Semaphore();
47     int up(int semaphor);
48     int down(int semaphor);
49     int getValue(int semaphor);
50     int setValue(int semaphor, int value);
51     void removeSemaphore(void);
52
53 private:
54     int createSemaphorArray(void);
55     static int    numOfSems;
56     static int    semID;
57     static char*  keyFilename;
58     static int    projectID;
59 };
60
61 //*****
62

```

63 #endif