

```
1  #include <pthread.h>
2  #include <stdio.h>
3  #include <stdlib.h>
4  #include <unistd.h>
5  #include <errno.h>
6
7  // condition variables - Fuel refill example
8
9  pthread_mutex_t mutexFuel;
10 pthread_cond_t condFuel;
11 int fuel = 0;
12
13 void* fuel_filling(void* arg) {
14     for (int i = 0; i < 5; i++) {
15         pthread_mutex_lock(&mutexFuel);
16         fuel += 30;
17         printf("Filled fuel... %d\n", fuel);
18         pthread_mutex_unlock(&mutexFuel);
19         pthread_cond_broadcast(&condFuel);
20         sleep(1);
21     }
22     return NULL;
23 }
24
25 void* car(void* arg) {
26     pthread_mutex_lock(&mutexFuel);
27     while (fuel < 40) {
28         printf("No fuel. Waiting...\n");
29         pthread_cond_wait(&condFuel, &mutexFuel);
30         // Equivalent to:
31         // pthread_mutex_unlock(&mutexFuel);
32         // wait for signal on condFuel
33         // pthread_mutex_lock(&mutexFuel);
34     }
35     fuel -= 40;
36     printf("Got fuel. Now left: %d\n", fuel);
37     pthread_mutex_unlock(&mutexFuel);
38     return NULL;
39 }
40
41 int main(int argc, char* argv[]) {
42     pthread_t th[6];
43     pthread_mutex_init(&mutexFuel, NULL);
44     pthread_cond_init(&condFuel, NULL);
45     for (int i = 0; i < 6; i++) {
46         if (i == 4 || i == 5) {
47             if (pthread_create(&th[i], NULL, &fuel_filling, NULL) != 0) {
48                 perror("Failed to create thread");
49             }
50         } else {
51             if (pthread_create(&th[i], NULL, &car, NULL) != 0) {
52                 perror("Failed to create thread");
53             }
54         }
55     }
56
57     for (int i = 0; i < 6; i++) {
58         if (pthread_join(th[i], NULL) != 0) {
59             perror("Failed to join thread");
60         }
61     }
62     pthread_mutex_destroy(&mutexFuel);
63     pthread_cond_destroy(&condFuel);
64     return 0;
65 }
```