

Problem 1 (6.14)

(1)

There are two race conditions: "++number_of_processes" and "--number_of_processes". Multiple threads may do them at the same time and cause data inconsistency.

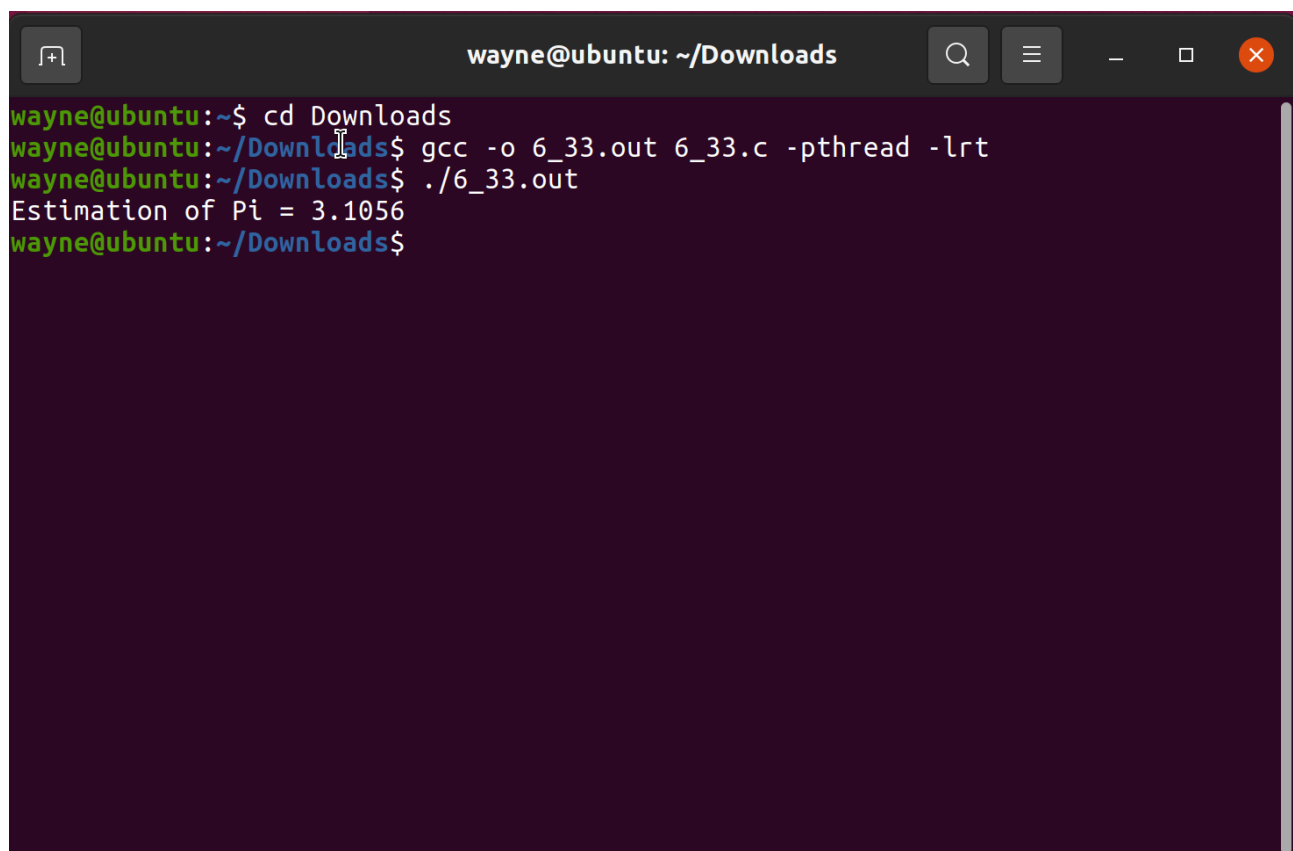
(2)

In the first race condition, an "acquire(mutex)" must be placed at the row above "+number_of_processes", and a "release(mutex)" should be placed at the row after "return new_pid" in case the thread returns before it get mutex.

In the second race condition, an "acquire(mutex)" must be placed at the row above "--number_of_processes", and a "release(mutex)" should be placed at the row after "--number_of_processes".

Problem 2 (6.33 code file: 6_33.c)

Result:



```
wayne@ubuntu: ~/Downloads
wayne@ubuntu:~/Downloads$ gcc -o 6_33.out 6_33.c -pthread -lrt
wayne@ubuntu:~/Downloads$ ./6_33.out
Estimation of Pi = 3.1056
wayne@ubuntu:~/Downloads$
```