

許家文 408530049

1.

```
ulohg@ulohg-VirtualBox:~/system-programming/ch12/pi$ ./pi2 100000000 8
@buffer = 0x55e30ced1040
thread0's seed = 0.388038
@buffer = 0x55e30ced1880
thread1's seed = 0.979820
@buffer = 0x55e30ced1a40
thread2's seed = 0.848673
@buffer = 0x55e30ced1bc0
thread3's seed = 0.276070
@buffer = 0x55e30ced1dc0
thread4's seed = 0.100189
@buffer = 0x55e30ced1f40
thread5's seed = 0.713273
@buffer = 0x55e30ced2100
thread6's seed = 0.274246
@buffer = 0x55e30ced2280
thread7's seed = 0.349705
hit = 9818464
hit = 9816826
hit = 9818782
hit = 9815727
hit = 9817435
hit = 9816950
hit = 9818913
hit = 9818087
pi = 3.14164736
```

2.

```
ulohg@ulohg-VirtualBox:~/system-programming/ch12/pi$ ./pi2 100000000 8
@buffer = 0x55beb082e040
thread0's seed = 0.388038
@buffer = 0x55beb082e880
thread1's seed = 0.979820
@buffer = 0x55beb082ea40
thread2's seed = 0.848673
@buffer = 0x55beb082ebc0
thread3's seed = 0.276070
@buffer = 0x55beb082edc0
thread4's seed = 0.100189
@buffer = 0x55beb082ef40
thread5's seed = 0.713273
@buffer = 0x55beb082f100
thread6's seed = 0.274246
@buffer = 0x55beb082f280
thread7's seed = 0.349705
hit = 9816826

^Cclick detect:pi = 3.14174048
hit = 9818087
hit = 9818913
hit = 9818782
hit = 9817435
hit = 9816950
hit = 9815727
hit = 9818464
pi = 3.14164736
```

3.

```
ulohg@ulohg-VirtualBox:~/system-programming/ch12/pi$ ./pi2 1000000000 8
@buffer = 0x55c4929a8040
thread0's seed = 0.388038
@buffer = 0x55c4929a8880
thread1's seed = 0.979820
@buffer = 0x55c4929a8a40
thread2's seed = 0.848673
@buffer = 0x55c4929a8bc0
thread3's seed = 0.276070
@buffer = 0x55c4929a8dc0
thread4's seed = 0.100189
@buffer = 0x55c4929a8f40
thread5's seed = 0.713273
@buffer = 0x55c4929a9100
thread6's seed = 0.274246
@buffer = 0x55c4929a9280
thread7's seed = 0.349705
hit = 98170557
^C^Cclick detect:pi = 3.14161631
hit = 98161320
^Cclick detect:pi = 3.14159548
^Cclick detect:pi = 3.14159356
hit = 98174879
hit = 98176618
hit = 98184268
hit = 98179908
hit = 98179950
hit = 98173730
pi = 3.14160492
```

4.

老師的

```
ulohg@ulohg-VirtualBox:~/system-programming/ch12/pi$ time ./pi 1000000000 4
@buffer = 0x558dd1b38040
thread0's seed = 0.388038
@buffer = 0x558dd1b38480
thread1's seed = 0.979820
@buffer = 0x558dd1b38600
thread2's seed = 0.848673
@buffer = 0x558dd1b38800
thread3's seed = 0.276070
hit = 196351418
hit = 196350739
hit = 196354786
hit = 196361852
pi = 3.14167518

real    0m11.622s
user    0m34.709s
sys     0m10.111s
```

我的

```
ulohg@ulohg-VirtualBox:~/system-programming/ch12/pi$ time ./pi2 1000000000 4
@buffer = 0x55e830f7e040
thread0's seed = 0.388038
@buffer = 0x55e830f7e880
thread1's seed = 0.979820
@buffer = 0x55e830f7ea40
thread2's seed = 0.848673
@buffer = 0x55e830f7ebc0
thread3's seed = 0.276070
hit = 196361852
hit = 196350739
hit = 196351418
hit = 196354786
pi = 3.14167518

real    0m18.913s
user    1m3.242s
sys     0m11.107s
```

顯然老師的較快

我認為可能原因有兩個

第一個:我在critical section內加入更多程式碼(34,35)是原程式沒有的

```
32     pthread_mutex_lock(&mutex);
33     threadID=idx;
34     long* local_hit = &hit[idx];
35     long* loopcount=&local_loopcount[idx++];
36     pthread_mutex_unlock(&mutex);
```

第二個:為了完成第二三小題,我使用方法為用一個陣列來計算出這個thread

每次loop我都要把目前跑過幾次傳回到local\_loopcount中代表這個thread目前跑過幾次迴圈。

此段是原程式沒有的

```
37
38     for(i=0;i<loopCountAThreadNeed;i++) {
39         drand48_r(rand_buffer, &rand_d);
40         point_x = rand_d;
41         drand48_r(rand_buffer, &rand_d);
42         point_y = rand_d;
43         local_loopcount[threadID]++; //此thread目前跑了幾次迴圈
44         if( (point_x*point_x + point_y*point_y) < 1.0)
45             *local_hit+=1;
46     }
```