Read me about HW4（thread）　　-Haojian Jin

Compile (on flare):

/development/SUNWspro/bin/cc threadperf.c –o perf -lm

```
$ ls
perf            threadbitmap.h  threadperf.c
$ /development/SUNWspro/bin/cc threadperf.c -o perf -lm
"threadperf.c", line 175: warning: statement not reached
$ ./perf
Enter the commands: start K; idle N; restart N; wait S; report; quit
```

I also tested it in Solaris 10 with GCC.

Test:

1. Start the program with two argument MAX & Block, (the default value is 500 & 10).
   Input: ./perf 50000 10

```
$ ./perf 50000 10
MAX is 50000, BLOCK factor is 10
Enter the commands: start K; idle N; restart N; wait S; report; quit
```

2. Start K command
   Input: start 500
   start 1

```
$ ./perf 50000 10
MAX is 50000, BLOCK factor is 10
Enter the commands: start K; idle N; restart N; wait S; report; quit
start 500
Start: 500New thread has been started. Num: 1
Enter the commands: start K; idle N; restart N; wait S; report; quit
cur_index : 50, thread_index : 0
total perf:496 | 1
total perf:8128 | 2

Enter the commands: start K; idle N; restart N; wait S; report; quit
start 1
Start: 1New thread has been started. Num: 2
Enter the commands: start K; idle N; restart N; wait S; report; quit
cur_index : 1, thread_index : 1
total perf:6 | 1
total perf:28 | 2
Quit
Pefect Number list:496     8128     6     28
Total number tested is: 50001 .
Elapsed time is 103.000000 seconds.
CPU time is 64.852000 seconds.
```

   Since the threads already covered all the numbers, the problem quitted automatically.

3. Re-Start the program with a bigger MAX.

Input: ./perf 500000000 10

```
$ ./perf 500000000 10
MAX is 500000000, BLOCK factor is 10
Enter the commands: start K; idle N; restart N; wait S; report; quit
```

4. Start K command

   Input: start 50000
   start 500
   start 1

```
"threadperf.c", line 175: warning: statement not reached
$  ./perf 500000000 10
MAX is 500000000, BLOCK factor is 10
Enter the commands: start K; idle N; restart N; wait S; report; quit
start 50000
New thread has been started. Num: 1
Enter the commands: start K; idle N; restart N; wait S; report; quit
cur_index : 5000, thread_index : 0
start 500
New thread has been started. Num: 2
cur_index : 50, thread_index : 1
Enter the commands: start K; idle N; restart N; wait S; report; quit
total perf:496 | 1
statotal perf:8128 | 2
^R
start 1
New thread has been started. Num: 3
Enter the commands: start K; idle N; restart N; wait S; report; quit
cur_index : 1, thread_index : 2
total perf:6 | 1
total perf:28 | 2
```

5. Report command

   Input: report

```
Enter the commands: start K; idle N; restart N; wait S; report; quit
report
-------------Report Start-----------
Thread 0 has tested 9439 numbers, skipped 0 numbers, and is working on block 592
6. Currently, it's not idle.
0Thread 1 has tested 26715 numbers, skipped 11880 numbers, and is working on blo
ck 3915. Currently, it's not idle.
2Perfect number 496 is found by Thread 1.
Perfect number 8128 is found by Thread 1.
Thread 2 has tested 12252 numbers, skipped 26750 numbers, and is working on bloc
k 3912. Currently, it's not idle.
2Perfect number 6 is found by Thread 2.
Perfect number 28 is found by Thread 2.
-------------Report End-----------
Enter the commands: start K; idle N; restart N; wait S; report; quit
```

6. Idle command

   Input: idle 2
   report

```
-------------Report Start-----------
Thread 0 has tested 16051 numbers, skipped 4700 numbers, and is working on block
 7051. Currently, it's not idle.
0Thread 1 has tested 33994 numbers, skipped 34810 numbers, and is working on blo
ck 6945. Currently, it's idle.
2Perfect number 496 is found by Thread 1.
Perfect number 8128 is found by Thread 1.
Thread 2 has tested 20524 numbers, skipped 49960 numbers, and is working on bloc
k 7057. Currently, it's not idle.
2Perfect number 6 is found by Thread 2.
Perfect number 28 is found by Thread 2.
-------------Report End-----------
Enter the commands: start K; idle N; restart N; wait S; report; quit
```

The second thread was idle then.

7. Restart.

   Input: restart 2

```
-------------Report Start-----------
Thread 0 has tested 26879 numbers, skipped 18360 numbers, and is working on bloc
k 9502. Currently, it's not idle.
0Thread 1 has tested 37126 numbers, skipped 57460 numbers, and is working on blo
ck 9509. Currently, it's not idle.
2Perfect number 496 is found by Thread 1.
Perfect number 8128 is found by Thread 1.
Thread 2 has tested 31083 numbers, skipped 63800 numbers, and is working on bloc
k 9508. Currently, it's not idle.
2Perfect number 6 is found by Thread 2.
Perfect number 28 is found by Thread 2.
-------------Report End-----------
```

The second thread started resume.

8. Quit command

   Input: quit

```
Enter the commands: start K; idle N; restart N; wait S; report; quit
quit
Quit
Pefect Number list:496     8128     6     28
Total number tested is: 120224 .
Elapsed time is 231.000000 seconds.
CPU time is 378.430000 seconds.
$
```