

Assignment 1

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V1

文件夹内容解释:

- bin/ —— 可执行程序文件夹(Mac环境下编译)
- src/ —— 源代码文件夹
- output/ —— 存放输出结果文件, 文件名第一个数字为n, 第二个数字为指定核数
- src/as1.cpp —— 提交程序
- src/test.h —— 用于计时头文件
- src/isprime.cpp —— 用于测试程序结果是否正确

程序运行时间:

```
huziangdeMacBook-Pro:1 huziang$ ./as1 1000
Init time: 34 us
Running time: 584 us
Print time: 1078 us
huziangdeMacBook-Pro:1 huziang$ ./as1 2000
Init time: 50 us
Running time: 765 us
Print time: 1442 us
huziangdeMacBook-Pro:1 huziang$ ./as1 4000
Init time: 39 us
Running time: 997 us
Print time: 2117 us
huziangdeMacBook-Pro:1 huziang$ ./as1 8000
Init time: 46 us
Running time: 1471 us
Print time: 4394 us
huziangdeMacBook-Pro:1 huziang$ ./as1 16000
Init time: 52 us
Running time: 1966 us
Print time: 6715 us
huziangdeMacBook-Pro:1 huziang$ ./as1 32000
Init time: 65 us
Running time: 3163 us
Print time: 10864 us
huziangdeMacBook-Pro:1 huziang$ ./as1 64000
Init time: 99 us
Running time: 3845 us
```

```
Print time: 19580 us
huziangdeMacBook-Pro:1 huziang$ ./as1 128000
Init time: 144 us
Running time: 5056 us
Print time: 28861 us
huziangdeMacBook-Pro:1 huziang$ ./as1 256000
Init time: 291 us
Running time: 8944 us
Print time: 62052 us
huziangdeMacBook-Pro:1 huziang$ ./as1 512000
Init time: 441 us
Running time: 12894 us
Print time: 97867 us
```

提升率如下：

N的大小 (*10^3)	时间增长率
1	-
2	1.309931507
4	1.303267974
8	1.475426279
16	1.336505778
32	1.608850458
64	1.215618084
128	1.314954486
256	1.768987342
512	1.441636852

由于系统核数的问题，当n增加一倍时，时间增长大概在1.3-1.4之间。

程序正确性测试：

```
huziangdeMacBook-Pro:1 huziang$ ./isprime answer1000_16.txt
All number test over!
huziangdeMacBook-Pro:1 huziang$ ./isprime answer2000_23.txt
All number test over!
huziangdeMacBook-Pro:1 huziang$ ./isprime answer4000_32.txt
All number test over!
huziangdeMacBook-Pro:1 huziang$ ./isprime answer8000_45.txt
```

```
All number test over!
huziangdeMacBook-Pro:1 huziang$ ./isprime answer16000_64.txt
All number test over!
huziangdeMacBook-Pro:1 huziang$ ./isprime answer32000_90.txt
All number test over!
huziangdeMacBook-Pro:1 huziang$ ./isprime answer64000_127.txt
All number test over!
huziangdeMacBook-Pro:1 huziang$ ./isprime answer128000_179.txt
All number test over!
huziangdeMacBook-Pro:1 huziang$ ./isprime answer256000_253.txt
All number test over!
huziangdeMacBook-Pro:1 huziang$ ./isprime answer512000_358.txt
All number test over!
```

所有答案均正确!

V2

更新部分：

- 将输出0/1改成输出的质数值
- 计时修改成每个线程独自计时

程序运行时间：

见output文件夹中的time文件。