Experiment 7

CPU BOUND

```
  GNU nano 4.8
#include<stdio.h>
#include<time.h>
void main(){
clock_t start, end;
double runtime;
start = clock();
int i, num=1, prime =0;
while(num<=10000000){
i=2;
while(i<=num){
if(num%i==0)
break;
i++;
}
if(i==num)
prime++;
printf("%d prime numbers calculated\n",prime);
num++;
}
end = clock();
}
```

```
top - 11:05:08 up 24 min,  1 user,  load average: 0.54, 0.36, 0.28
Tasks: 285 total,   2 running, 268 sleeping,  15 stopped,   0 zombie
%Cpu(s): 36.7 us, 46.1 sy,  0.0 ni, 17.2 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :   3907.0 total,   2415.8 free,    810.2 used,    681.0 buff/cache
MiB Swap:    976.0 total,    976.0 free,      0.0 used.   2856.9 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
 2305 ubuntu    20   0    2496    584    516 R  76.6   0.0   0:03.23 7a
 1935 ubuntu    20   0  824216  52676  39172 S  33.6   1.3   1:05.62 gnome-t+
 1436 ubuntu    20   0  269552  57784  37916 S  21.4   1.4   0:37.13 Xorg
 1605 ubuntu    20   0 4080956 233140  98332 S  19.4   5.8   0:50.74 gnome-s+
 2104 root      20   0       0      0      0 I   8.9   0.0   0:08.47 kworker+
 2076 root      20   0       0      0      0 I   3.6   0.0   0:10.41 kworker+
 2206 ubuntu    20   0   20624   4072   3304 R   0.7   0.1   0:02.08 top
```

```
ubuntu@ubuntu2004:~/Desktop/ex_7$ ./7a
0 prime numbers calculated
1 prime numbers calculated
2 prime numbers calculated
2 prime numbers calculated
3 prime numbers calculated
3 prime numbers calculated
4 prime numbers calculated
4 prime numbers calculated
4 prime numbers calculated
4 prime numbers calculated
5 prime numbers calculated
```

I/O BOUND

```
  GNU nano 4.8                                            ex_7b.c
#include<stdio.h>
#include<time.h>
int main(){
int j,k,n;
while(1){
printf("Enter any number:");
scanf("%d",&j);
printf("Enter any number:");
scanf("%d",&k);
n=j%k;
printf("remainder: %d",n);
time_t rawtime;
struct tm* timeinfo;
time(&rawtime);
timeinfo= localtime(&rawtime);
printf("\nCurrent local time and date = %s",asctime(timeinfo));
}
return 0;
}
```

```
Enter any number: 85

Enter any number: 69
16
Current local time and date: Wed Nov 23 22:26:21 2022
Enter any number:
```

```
top - 22:26:50 up 45 min,  1 user,  load average: 0.48, 0.46, 0.32
Tasks: 222 total,   1 running, 221 sleeping,   0 stopped,   0 zombie
%Cpu(s):  6.0 us,  0.0 sy,  0.0 ni, 94.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :   3923.3 total,   1237.8 free,    977.9 used,   1707.7 buff/cache
MiB Swap:   2090.0 total,   2090.0 free,      0.0 used.   2659.0 avail Mem

  PID USER       PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
 3781 root       20   0       0      0      0 I   0.0   0.0   0:03.24 kworker/u10:2-events_unbound
 3782 rakshit    20   0   21864   4208   3348 R   0.0   0.1   0:00.98 top
 3793 rakshit    20   0    2772   1048    960 S   0.0   0.0   0:00.00 a.out
```