EXPERIMENT 7

NAME: SUDANSHI SEHGAL

ROLL NO.: 2021A1R156

SUBJECT: OPERATING SYSTEM

SEMESTER: 3rd

COURSE CODE: COM-312

CO-ORDINATER:

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Experiment7:

Write a CPU bound C program and a I/O bound C program and observe the effect of their CPU sharing using the top command and its variants.

I/O bound:-

Command: nano filename.c

Program: #include<stdio.h> #include<time.h>

int main()

{

int j,k,n;

while(1){

printf("\nEnter the any number:"); scanf("%d",&k);

printf("Enter the any number:"); scanf("%d",&j);

n=k%j; printf("%d",n); time_t rawtime; struct tm * timeinfo; time(&rawtime);

timeinfo=localtime(&rawtime);

printf("\n Current local time and date:%s", asctime(timeinfo));

}

}

Terminal:

 gcc filename.c

 ./a.out

```
1 #include<stdio.h>
2 #include<time.h>
3 int main()
4
5 int j,k,n;
6 while(1)
7 {
8 printf("\nEnter any number = ");
9 scanf("%d",&k);
10 printf("Enter any number = ");
11 scanf("%d"&j);
12 n = k%j;
13 printf("%d",n);
14 time_t rawtime;
15 struct tm * timeinfo;
16 time( &rawtime);
17 timeinfo = localtime ( &rawtime );
18 printf( "\n Current local time and date = %s" , asctime (timeinfo) );
19 }
```

```
sudanshi@sudanshi:~/Desktop$ nano iobound.c
sudanshi@sudanshi:~/Desktop$ gcc iobound.c
sudanshi@sudanshi:~/Desktop$ ./a.out

Enter any number = 67
Enter any number = 87
67
 Current local time and date = Sat Dec 17 21:03:10 2022

Enter any number = 787
Enter any number = 89
75
 Current local time and date = Sat Dec 17 21:03:20 2022
```

CPU bound:-

Command: nano filename.c

Program: #include<stdio.h> #include<time.h>

void main() { clock_t start, end; double runTime; start=clock();

int i,num=1,primes=0; while(num<=1000000){ i=2;

while(i<=num){ if(num%i==0) break;

i++;

}

if(i==num) primes++;

printf("%d prime numbers calculated\n",primes); num++;

}

end=clock();

runTime=(end-start)/(double) CLOCKS_PER_SEC;

printf("This machine calculated all %d primes numbers under 1000000 in %g seconds\n",primes,runTime);

}

Terminal: gcc filename.c

./a.out

```c
#include<stdio.h>
#include<time.h>
void main()
{
clock_t start,end;
double runtime;
start = clock();
int i , num = 1,primes = 0;
while (num <= 1000000)
{
i=2;
while(i <= num)
{
if(num%i == 0)
break;
i++;
}
if (i == num)
primes++;
printf("%d prime numbers calculated\n",primes);
num ++;
}
end = clock();
runtime=(end-start)/(double) CLOCKS_PER_SEC;
printf("This machine calculated all %d primes numbers under 1000000 in %g seconds\n",primes,r
}
```

```
78498 prime numbers calculated
78498 prime numbers calculated
78498 prime numbers calculated
78498 prime numbers calculated
78498 prime numbers calculated
78498 prime numbers calculated
78498 prime numbers calculated
This machine calculated all 78498 primes numbers under 1000000 in 168.869 seconds
```

```
top - 12:51:01 up 9 min,  1 user,  load average: 0.36, 0.13, 0.07
Tasks: 235 total,   2 running, 233 sleeping,   0 stopped,   0 zombie
%Cpu(s): 22.6 us,  3.5 sy,  0.0 ni, 73.6 id,  0.0 wa,  0.0 hi,  0.3 si,  0.0 st
MiB Mem :  10739.1 total,   9017.5 free,    827.7 used,    893.9 buff/cache
MiB Swap:   2048.0 total,   2048.0 free,      0.0 used.   9623.9 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
   2518 sudanshi  20   0    2772    944    852 R  99.7   0.0   0:12.41 a.out
   1667 sudanshi  20   0 5280216 375620 138568 S  55.0   3.4   1:03.30 gnome-s+
   2247 sudanshi  20   0  566032  56064  42756 S  18.9   0.5   0:07.83 gnome-t+
    426 root      20   0       0      0      0 I   4.3   0.0   0:00.66 kworker+
    433 root      20   0       0      0      0 I   2.6   0.0   0:00.89 kworker+
    114 root      20   0       0      0      0 I   1.3   0.0   0:00.99 kworker+
   2173 sudanshi  20   0 3102008  95212  54804 S   0.7   0.9   0:03.04 gjs
```