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**Course: CSE4001 Parallel and Distributed Computing**

**Slot: L15+L16**

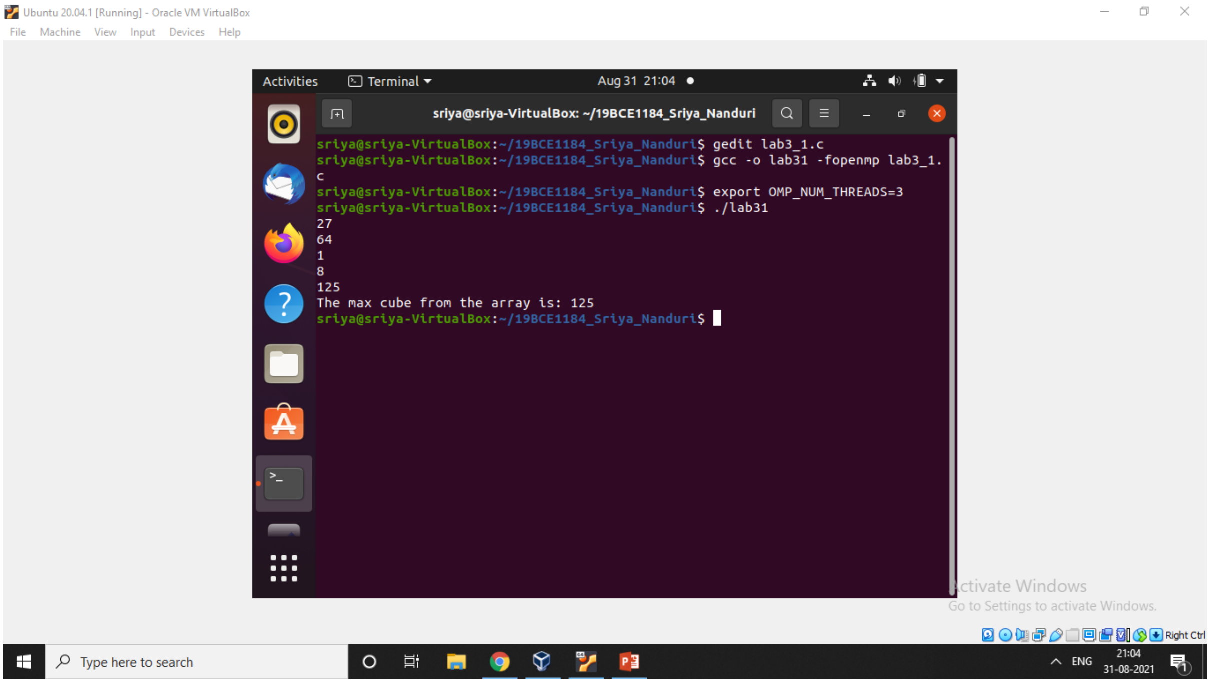
**Lab Report 3**

**Sample program1: Last private**

**Code:**

```
#include <omp.h>

#include <stdio.h>

int main ()

{

int cube=0;

int a[]={1,2,3,4,5};

#pragma omp parallel for lastprivate(cube)

for(int i=0;i<5;i++)

{

cube=a[i]*a[i]*a[i];

printf("%d\n",cube);

}


printf("The max cube from the array is: %d\n",cube);

}
```

**Output:**



```
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ gedit lab3_1.c
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ gcc -o lab31 -fopenmp lab3_1.
c
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ export OMP_NUM_THREADS=3
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ ./lab31
27
64
1
8
125
The max cube from the array is: 125
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$
```

Ubuntu 20.04.1 [Running] - Oracle VM VirtualBox
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Activities
Terminal
Aug 31 21:04
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Activate Windows
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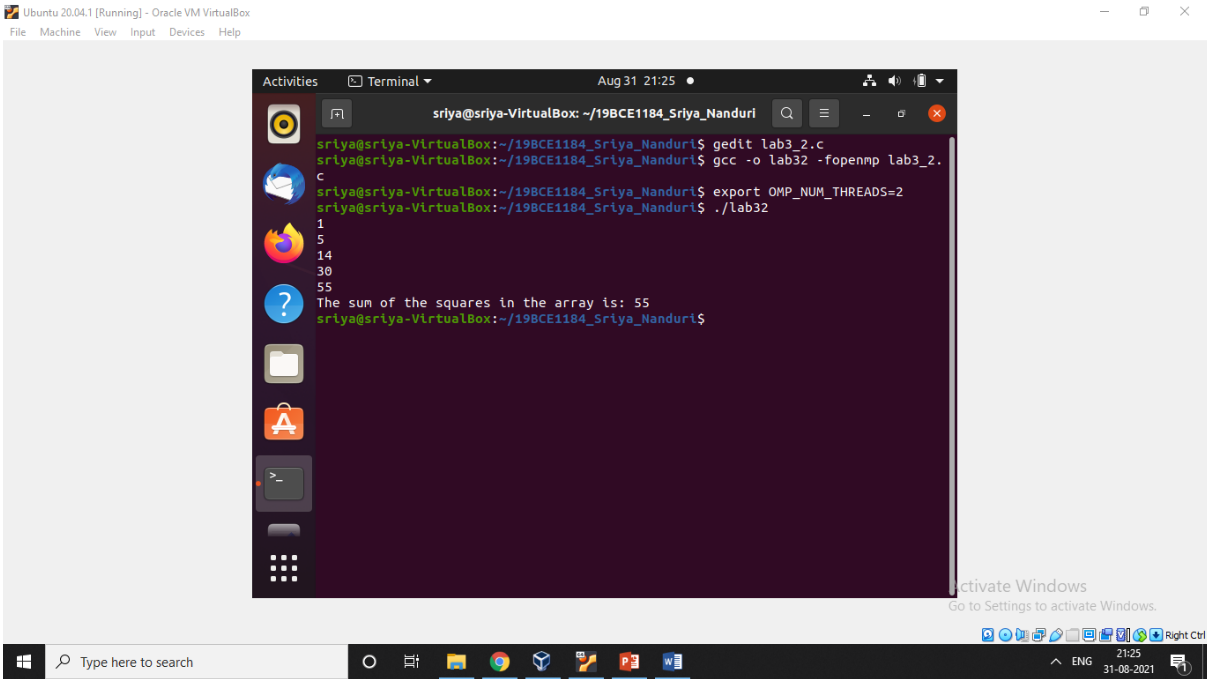
ENG
21:04
31-08-2021

**Sample program2: Reduction**

**Code:**

```
#include <omp.h>

#include <stdio.h>

int main ()

{

int a[]={1,2,3,4,5};

int b=0;

#pragma omp parallel for firstprivate(b)

#pragma omp reduction(+:b)

for(int i=0;i<5;i++)

{

b=(a[i]*a[i])+b;

printf("%d\n",b);

}

printf("The sum of the squares in the array is: %d\n",b);

}
```

**Output:**


Ubuntu 20.04.1 [Running] - Oracle VM VirtualBox
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Activities
Terminal
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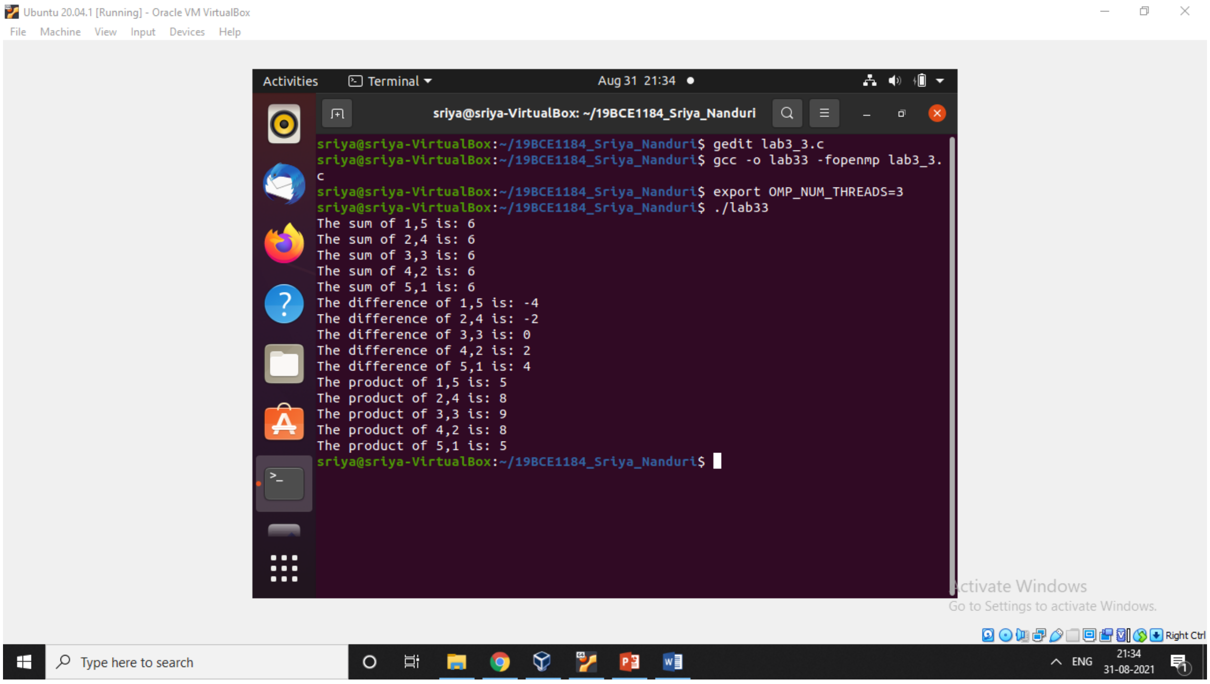
```
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ gedit lab3_2.c
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ gcc -o lab32 -fopenmp lab3_2.
c
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ export OMP_NUM_THREADS=2
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ ./lab32
1
5
14
30
55
The sum of the squares in the array is: 55
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$
```

**Sample program3: sections**

**Code:**

```
#include <omp.h>

#include <stdio.h>

int main ()

{

int a[]={1,2,3,4,5};

int b[]={5,4,3,2,1};

int c[10];

#pragma omp parallel sections

{

#pragma omp section

for(int i=0;i<5;i++)

{

c[i]=a[i]+b[i];

printf("The sum of %d,%d is: %d\n",a[i],b[i],c[i]);

}

#pragma omp section

for(int i=0;i<5;i++)
{
c[i]=a[i]-b[i];
printf("The difference of %d,%d is: %d\n",a[i],b[i],c[i]);
}
#pragma omp section
for(int i=0;i<5;i++)
{
c[i]=a[i]*b[i];
printf("The product of %d,%d is: %d\n",a[i],b[i],c[i]);
}
}


}
```

**Output:**



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Activities
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```
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ gedit lab3_3.c
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ gcc -o lab33 -fopenmp lab3_3.
c
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ export OMP_NUM_THREADS=3
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ ./lab33
The sum of 1,5 is: 6
The sum of 2,4 is: 6
The sum of 3,3 is: 6
The sum of 4,2 is: 6
The sum of 5,1 is: 6
The difference of 1,5 is: -4
The difference of 2,4 is: -2
The difference of 3,3 is: 0
The difference of 4,2 is: 2
The difference of 5,1 is: 4
The product of 1,5 is: 5
The product of 2,4 is: 8
The product of 3,3 is: 9
The product of 4,2 is: 8
The product of 5,1 is: 5
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$
```

**Exercise:**

**Compute Fibonacci series, Factorial of n numbers, prime number generation and section parallelize using openmp.**

**Code:**

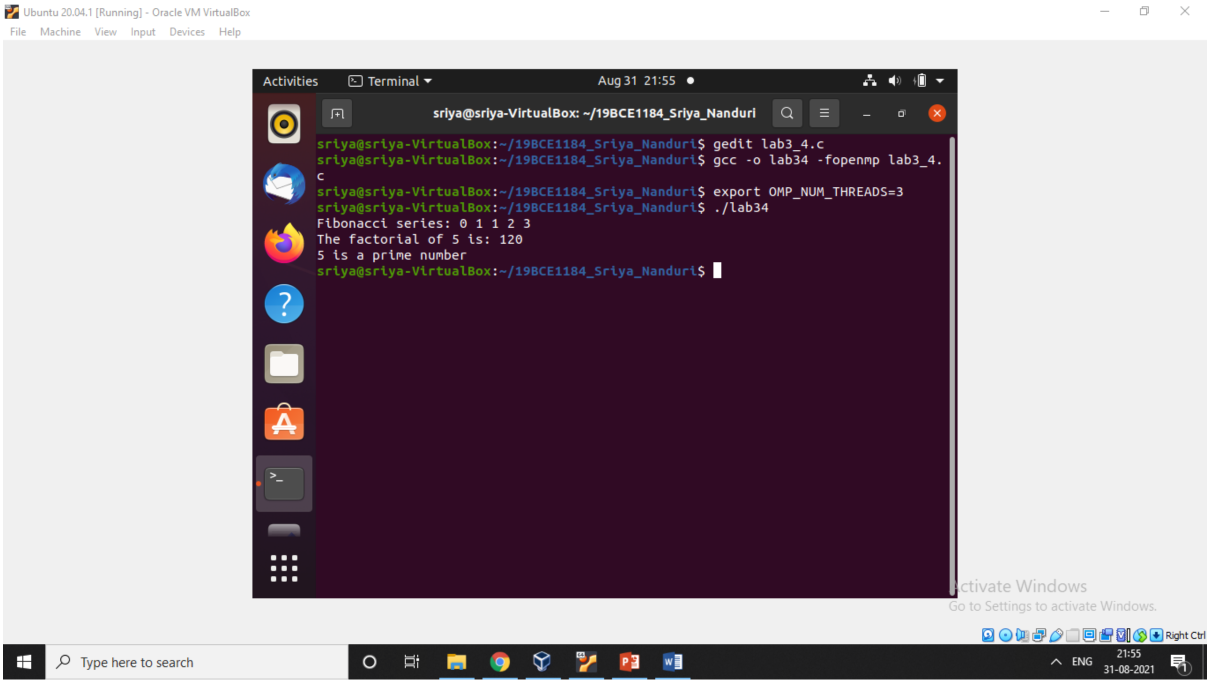
```
#include <omp.h>

#include <stdio.h>
```

```
int main ()
{
int n=5,n1=0,n2=1,n3,fact=1,flag=0;
#pragma omp parallel sections
{
#pragma omp section
{
printf("Fibonacci series: 0 1");
for(int i=2;i<n;i++)
{
n3=n1+n2;
printf(" %d",n3);
n1=n2;
n2=n3;
}
printf("\n");
}
#pragma omp section
{
for(int i=1;i<=n;i++)
{
fact=fact*i;
}
printf("The factorial of %d is: %d\n",n,fact);
}
#pragma omp section
{
for (int i=2; i<=n/2;i++)
{
if (n%i==0)
{
```

```
flag = 1;
break;
}
}
if (n==1)
{
printf("1 is neither prime nor composite\n");
}
else
{
if (flag == 0)
printf("%d is a prime number\n",n);
else
printf("%d is not a prime number\n",n);
}
}
}
}
```

**Output:**



Ubuntu 20.04.1 [Running] - Oracle VM VirtualBox
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Terminal
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```
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ gedit lab3_4.c
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ gcc -o lab34 -fopenmp lab3_4.
c
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ export OMP_NUM_THREADS=3
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$ ./lab34
Fibonacci series: 0 1 1 2 3
The factorial of 5 is: 120
5 is a prime number
sriya@sriya-VirtualBox:~/19BCE1184_Sriya_Nanduri$
```