

CSE4001 - Parallel and Distributed Computing, Fall 2019
Vellore Institute of Technology
Instructor: Prof Deebak B D - SCOPE

Lab report

Title of Lab: Beginning with OpenMP

Assessment #: 2

Date: 02|08|2019

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Lab section: Friday L59 + L60

AIM:

Write a simple OpenMP program to demonstrate the use of for, private and shared clause.

- a. Sum of 'n' array Using Private and Shared Clause
- b. Product of 'n' array using Private and Shared Clause

SOURCE CODE:

part-a

```
#include<stdio.h>
#include<omp.h>

int main(void) {

    int arr[5] = {1, 2, 3, 4, 5};
    int sum = 0, i;
    #pragma omp parallel private(i) shared(sum, arr)
    //for(int i .... it is not possible in pragma
    {
        #pragma omp for
        for(i = 0; i < 5; i++)
            sum += arr[i];

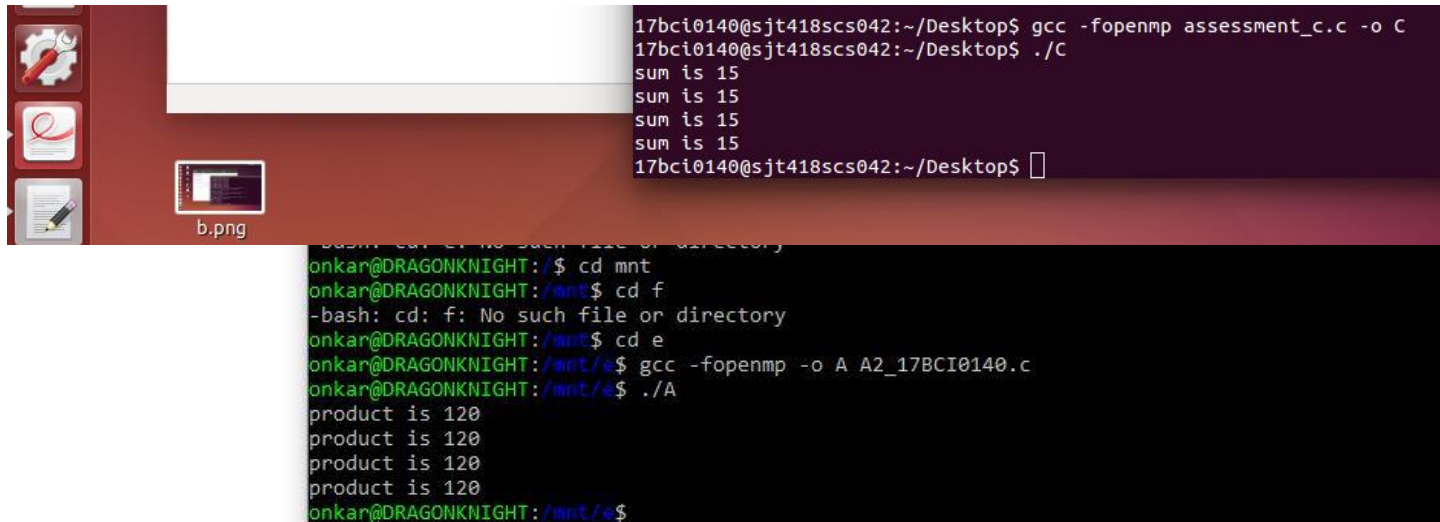
        printf("sum is %d\n", sum);
    }
    return 0;
}
```

part-b

```
#include<stdio.h>
#include<omp.h>
int main(void) {
    int arr[5] = {1, 2, 3, 4, 5};
    int product = 1, i;
    #pragma omp parallel private(i) shared(product, arr)
    {
        #pragma omp for
        for(i = 0; i < 5; i++)
            product *= arr[i];

        printf("product is %d\n", product);
    }
    return 0;
}
```

EXECUTION:



```
17bci0140@sjt418scs042:~/Desktop$ gcc -fopenmp assessment_c.c -o C
17bci0140@sjt418scs042:~/Desktop$ ./C
sum is 15
sum is 15
sum is 15
sum is 15
17bci0140@sjt418scs042:~/Desktop$
```

```
onkar@DRAGONKNIGHT:/$ cd mnt
onkar@DRAGONKNIGHT:/mnt$ cd f
-bash: cd: f: No such file or directory
onkar@DRAGONKNIGHT:/mnt$ cd e
onkar@DRAGONKNIGHT:/mnt/e$ gcc -fopenmp -o A A2_17BCI0140.c
onkar@DRAGONKNIGHT:/mnt/e$ ./A
product is 120
product is 120
product is 120
product is 120
onkar@DRAGONKNIGHT:/mnt/e$
```

RESULTS:

A variable in an OpenMP can be either shared or private. If a variable is shared, then there exists one instance of this variable which is shared among all threads. If a variable is private, then each thread in a team of threads has its own local copy of the private variable.