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## LAB ASSESSMENT-2

### AIM:

Write a simple OpenMP program to demonstrate the use of 'for' clause.

- Print 'n' array elements
- Sum of 'n' array elements
- Product of 'n' array elements

### SOURCE CODE:

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

void printArray(int arr[], int n);
void sumArray(int arr[], int n);
void productArray(int arr[], int n);
void main()
{
    int i,n;
    printf("Enter the num of elements in the array\n");
    scanf("%d",&n);
    int arr[n];
    printf("Enter the elements in the array\n");
    for(i=0;i<n;i++){
        scanf("%d",&arr[i]);
    }
    printArray(arr, n);
    sumArray(arr, n);
    productArray(arr, n);
}

void printArray(int arr[], int n)
{
    printf("Printing the elements:\n");
    #pragma omp parallel
    {
        #pragma omp for
        for(int i=0; i<n; i++)
            printf("Element at index [%d]:\t%d\n", i, arr[i]);
    }
}

void sumArray(int arr[], int n)
{
    int sum = 0;
    #pragma omp parallel shared(sum)
    {
        #pragma omp for
```

```

        for(int i= 0; i<n; i++)
            sum += arr[i];
    }
    printf("The sum of elements of the array is: %d\n", sum);
}
void productArray(int arr[], int n)
{
    int prod = 1;
    #pragma omp parallel shared(prod)
    {
        #pragma omp for
        for(int i= 0; i<n; i++)
            prod *= arr[i];
    }
    printf("The product of elements of the array is: %d\n", prod);
}

```

### EXECUTION:

```

mounvi@mounvi-VirtualBox: ~
mounvi@mounvi-VirtualBox:~$ gedit pdc2.c
mounvi@mounvi-VirtualBox:~$ gcc pdc2.c -o lab2 -fopenmp
mounvi@mounvi-VirtualBox:~$ ./lab2
Enter the num of elements in the array
5
Enter the elements in the array
1
2
4
5
3
Printing the elements:
Element at index [0]: 1
Element at index [1]: 2
Element at index [3]: 4
Element at index [4]: 5
Element at index [2]: 3
The sum of elements of the array is: 15
The product of elements of the array is: 120
mounvi@mounvi-VirtualBox:~$ gedit pdc2.c

```

```

2 #include<omp.h>
3
4 void printArray(int arr[], int n);
5 void sumArray(int arr[], int n);
6 void productArray(int arr[], int n);
7 void main()
8 {
9     int i,n;
10    printf("Enter the num of elements in the array\n");
11    scanf("%d",&n);
12    int arr[n];
13    printf("Enter the elements in the array\n");
14    for(i=0;i<n;i++){
15        scanf("%d",&arr[i]);
16    }
17    printArray(arr, n);
18    sumArray(arr, n);
19    productArray(arr, n);
20 }
21 void printArray(int arr[], int n)
22 {
23     printf("Printing the elements:\n");
24     #pragma omp parallel
25     {
26         #pragma omp for
27         for(int i=0; i<n; i++)
28             printf("Element at index [%d]:\t%d\n", i, arr[i]);
29     }
30 }
31 void sumArray(int arr[], int n)
32 {
33     int sum = 0;
34     #pragma omp parallel shared(sum)
35     {
36         #pragma omp for
37         for(int i= 0; i<n; i++)
38             sum += arr[i];
39     }
40     printf("The sum of elements of the array is: %d\n", sum);
41 }
42 void productArray(int arr[], int n)
43 {
44     int prod = 1;
45     #pragma omp parallel shared(prod)
46     {
47         #pragma omp for
48         for(int i= 0; i<n; i++)
49             prod *= arr[i];
50     }
51     printf("The product of elements of the array is: %d\n", prod);
52 }

```

### REMARKS:

Basic concepts of “for” clause parallel programming has been explored by printing, summing up and finding the products of elements in an array.

Key terms:-

- #pragma omp parallel: The code under this syntax is forked into subprocesses which is handled by multiple threads of the processor.
- #pragma omp for: This syntax is used to invoke parallelized approach to *for* loop.