

Problem Statement: Implement Min, Max, Sum, and Average operations using Parallel Reduction.

### Output

```
#include <iostream>
//#include <vector>
#include <omp.h>
#include <climits>
using namespace std;
void min_reduction(int arr[], int n) {
    int min_value = INT_MAX;
    #pragma omp parallel for reduction(min: min_value)
    for (int i = 0; i < n; i++) {
        if (arr[i] < min_value) {
            min_value = arr[i];
        }
    }
    cout << "Minimum value: " << min_value << endl;
}

void max_reduction(int arr[], int n) {
    int max_value = INT_MIN;
    #pragma omp parallel for reduction(max: max_value)
    for (int i = 0; i < n; i++) {
        if (arr[i] > max_value) {
            max_value = arr[i];
        }
    }
    cout << "Maximum value: " << max_value << endl;
}

void sum_reduction(int arr[], int n) {
    int sum = 0;
    #pragma omp parallel for reduction(+: sum)
    for (int i = 0; i < n; i++) {
        sum += arr[i];
    }
    cout << "Sum: " << sum << endl;
}

void average_reduction(int arr[], int n) {
    int sum = 0;
    #pragma omp parallel for reduction(+: sum)
    for (int i = 0; i < n; i++) {
        sum += arr[i];
    }
}
```

```
cout << "Average: " << (double)sum / (n-1) << endl;
}
```

```
int main() {
    int *arr,n;
    cout<<"\n enter total no of elements=>";
    cin>>n;
    arr=new int[n];
    cout<<"\n enter elements=>";
    for(int i=0;i<n;i++)
    {
        cin>>arr[i];
    }
}
```

```
// int arr[] = {5, 2, 9, 1, 7, 6, 8, 3, 4};
// int n = size(arr);
```

```
min_reduction(arr, n);
max_reduction(arr, n);
sum_reduction(arr, n);
average_reduction(arr, n);
}
```



```
OUTPUT  DEBUG CONSOLE  TERMINAL

PS C:\Users\HP\OneDrive\Desktop\hpc A3> g++ -fopenmp minmax.cpp -o minmax
PS C:\Users\HP\OneDrive\Desktop\hpc A3> .\minmax

enter total no of elements=>7

enter elements=>12 23 43 56 78 65 33
Minimum value: 12
Maximum value: 78
Sum: 310
Average: 51.6667
PS C:\Users\HP\OneDrive\Desktop\hpc A3> 
```