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Subject: High Performance Computing

**Experiment No. 2**

**Title**: Parallel Bubble Sort using OpenMP

**Code:**

#include <iostream>

#include <omp.h>

using namespace std;

void parallel\_bubble\_sort(int \*arr, int n) {

int i, j, temp;

bool swapped;

#pragma omp parallel num\_threads(4) shared(arr, n) private(i, j, temp, swapped)

{

for (i = 0; i < n - 1; i++) {

swapped = false;

#pragma omp for

for (j = 0; j < n - i - 1; j++) {

if (arr[j] > arr[j + 1]) {

temp = arr[j];

arr[j] = arr[j + 1];

arr[j + 1] = temp;

swapped = true;

}

}

if (!swapped) break;

}

}

}

int main() {

int arr[] = {5, 2, 9, 1, 5, 6};

int n = sizeof(arr) / sizeof(arr[0]);

cout << "Before sorting: ";

for (int i = 0; i < n; i++) {

cout << arr[i] << " ";

}

cout << endl;

parallel\_bubble\_sort(arr, n);

cout << "After sorting: ";

for (int i = 0; i < n; i++) {

cout << arr[i] << " ";

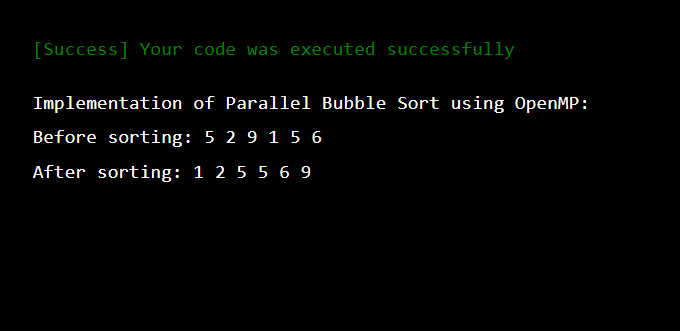
}

cout << endl;

return 0;

}

**Output:**

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