Experiment 2

**Aim: To implement programs based on work sharing constructs.**

**Assignment 1: Write a Program in OpenMP to calculate addition, subtraction and multiplication of two numbers in parallel sections.**

**Solution:**

**#include <stdio.h>**

**#include <omp.h>**

**int main() {**

**int a = 10, b = 5;**

**int result\_add, result\_sub, result\_mul;**

**#pragma omp parallel sections**

**{**

**#pragma omp section**

**{**

**// Addition in parallel**

**result\_add = a + b;**

**printf("Thread %d: Addition result: %d\n", omp\_get\_thread\_num(), result\_add);**

**}**

**#pragma omp section**

**{**

**// Insert the code for Subtraction in parallel**

**}**

**#pragma omp section**

**{**

**// Insert the code for Multiplication in parallel**

**}**

**}**

**return 0;**

**}**

***Compilation and execution:***

**gcc -fopenmp section\_example.c -o section\_example**

**./ section\_example**

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**Assignment 2: Write a Program in OpenMP to perform data initialization through single directive and perform data increment through other threads.**

**Solution:**

**#include <stdio.h>**

**#include <omp.h>**

**int main() {**

**int data = 0;**

**// Parallel region starts**

**#pragma omp parallel**

**{**

**// Only one thread executes this block for initialization**

**#pragma omp single**

**{**

**data = 42;**

**printf("Thread %d initializes data to %d\n", omp\_get\_thread\_num(), data);**

**}**

**// All threads (including the single thread) perform additional work**

**#pragma omp for**

**for (int i = 0; i < 4; i++) {**

**data += i;**

**//Insert code for printing as per output shown below**

**}**

**} // Parallel region ends**

**//Insert code for printing final value of data as per output shown below**

**return 0;**

**}**

***Compilation and execution:***

**gcc -fopenmp single\_example.c -o single\_example**

**./single\_example**

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