**High Performance Computing**

**Lab**

**Assignment No. 6**

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**Batch : B2**

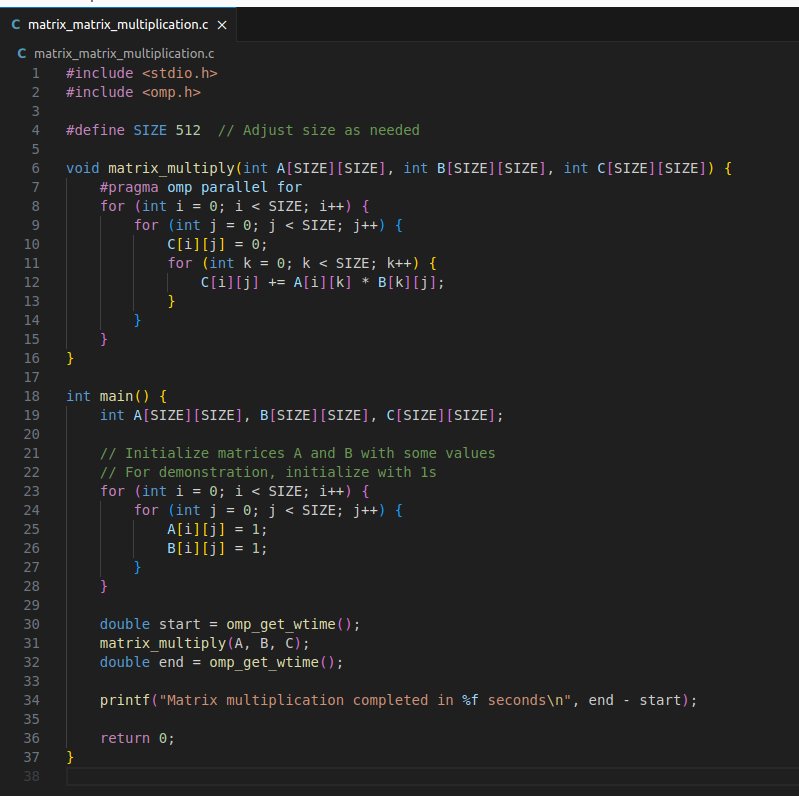
**Title:** Implementation of OpenMP programs

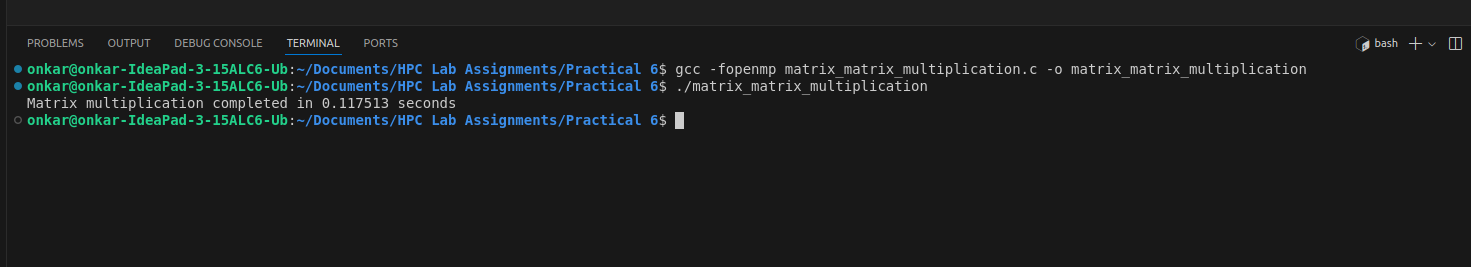
Implement following Programs using OpenMP with C:

1. Implementation of Matrix-Matrix Multiplication.
2. Implementation of Matrix-vector Multiplication.

**Problem Statement 1: Implementation of Matrix-Matrix Multiplication**

**Screenshots:**





Information:

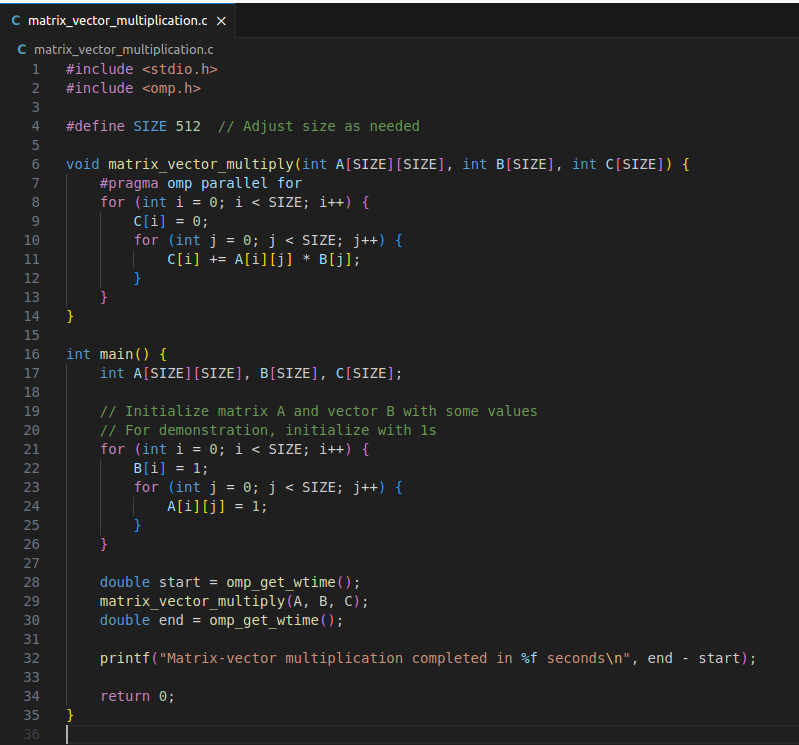
* This program multiplies two matrices A and B, and stores the result in matrix C.
* The #pragma omp parallel for directive is used to parallelize the outer loop to utilize multiple threads.

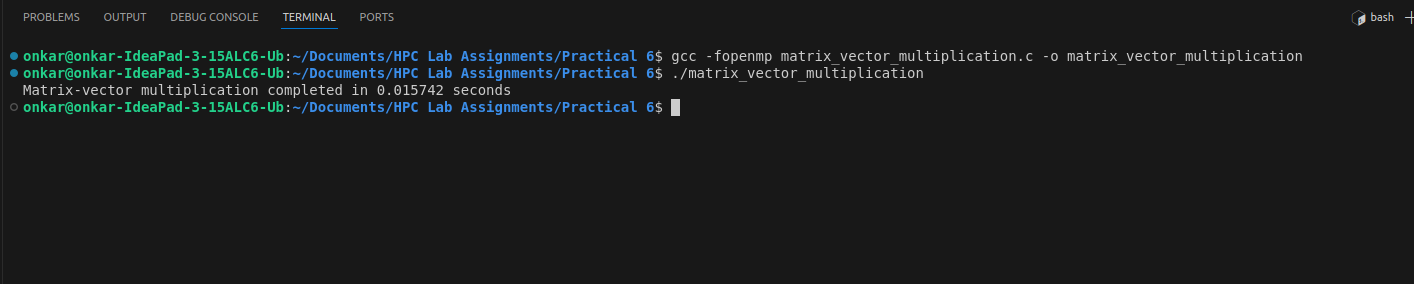
Analysis:

* Analyze the performance by varying the matrix size and number of threads.
* Observe the impact on execution time and discuss the scalability and efficiency.

**Problem Statement 2: Implementation of Matrix-Vector Multiplication**

**Screenshots:**





Information:

* This program multiplies a matrix A with a vector B and stores the result in vector C.
* The #pragma omp parallel for directive is used to parallelize the computation of each element in vector C.

Analysis:

* Analyze the performance by varying the vector size and number of threads.
* Compare the execution times and discuss the efficiency and scalability of the matrix-vector multiplication.

**Github Link:**

<https://github.com/sourabh-patil-7/HPC-Lab-Assignments/tree/main/Practical%206>