Walchand College of Engineering, Sangli
Department of Computer Science and Engineering

Class: Final Year (Computer Science and Engineering)

Year: 2021-22 **Semester:** 1

Course: High Performance Computing Lab

Practical No. 3

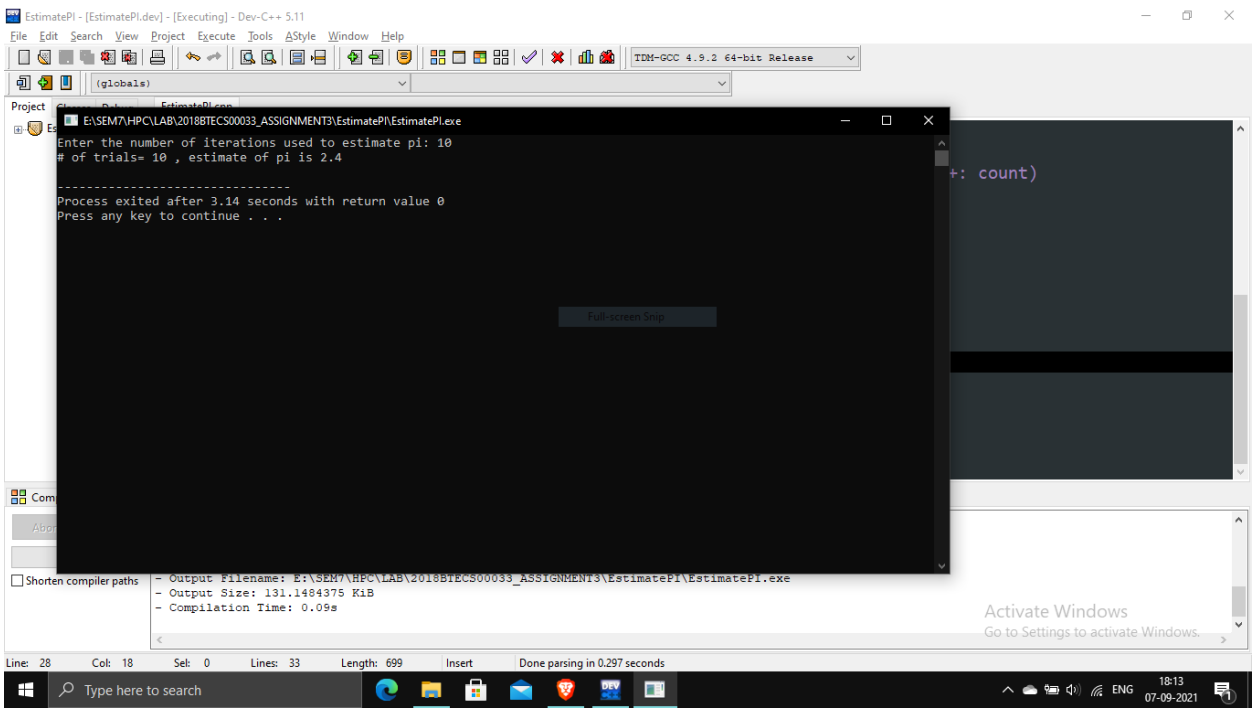
Exam Seat No: 2018BTECS00033

1. 2018BTECS00033- Mahendra Bhimrao Gharge

Problem Statement 1:

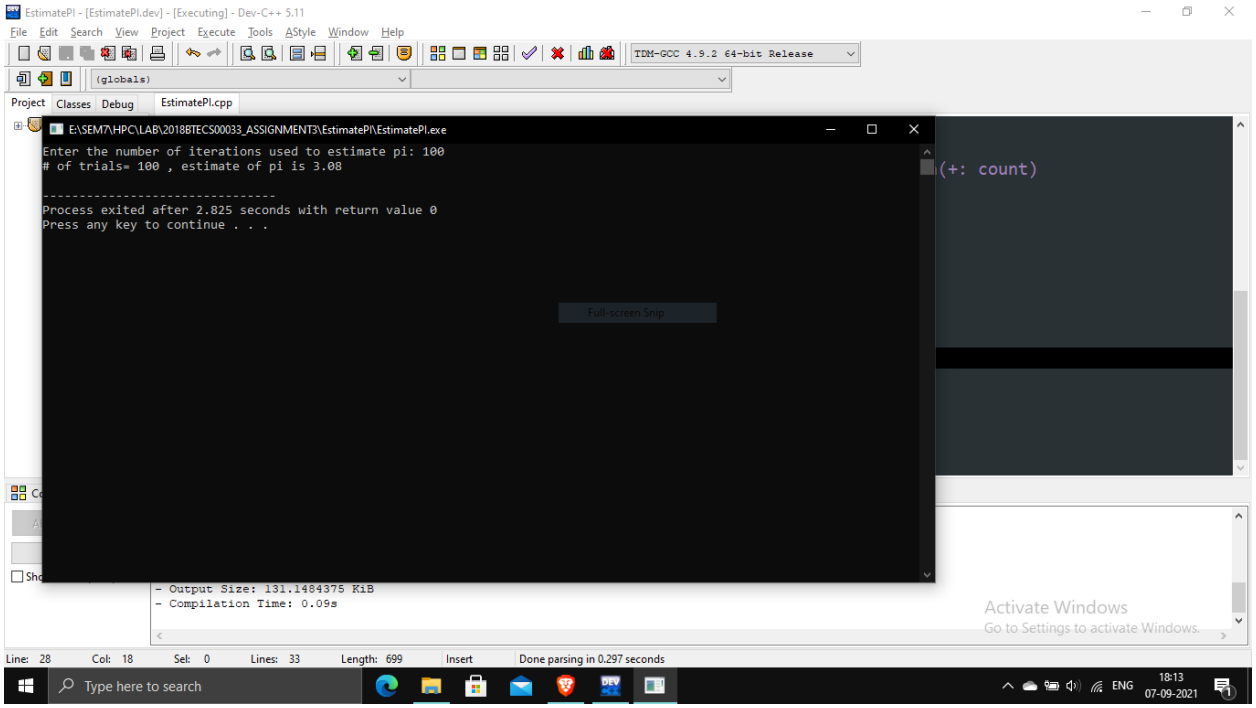
a. **Estimation of value of PI using OpenMP**
b. **Matrix Vector multiplication using OpenMP**
c. **Matrix Matrix addition using OpenMP**

Screenshot 1:



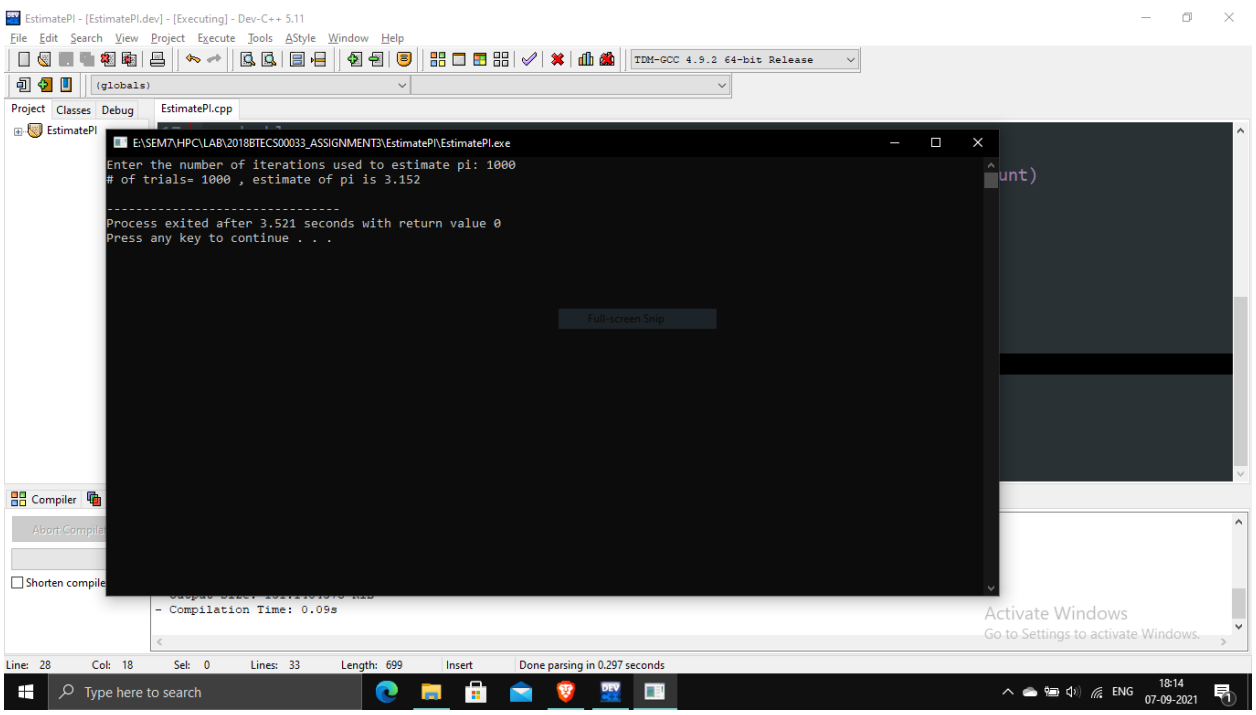
Information 1: Calculated the PI using 10 iterations as was found to be 2.4

Screenshot 2:



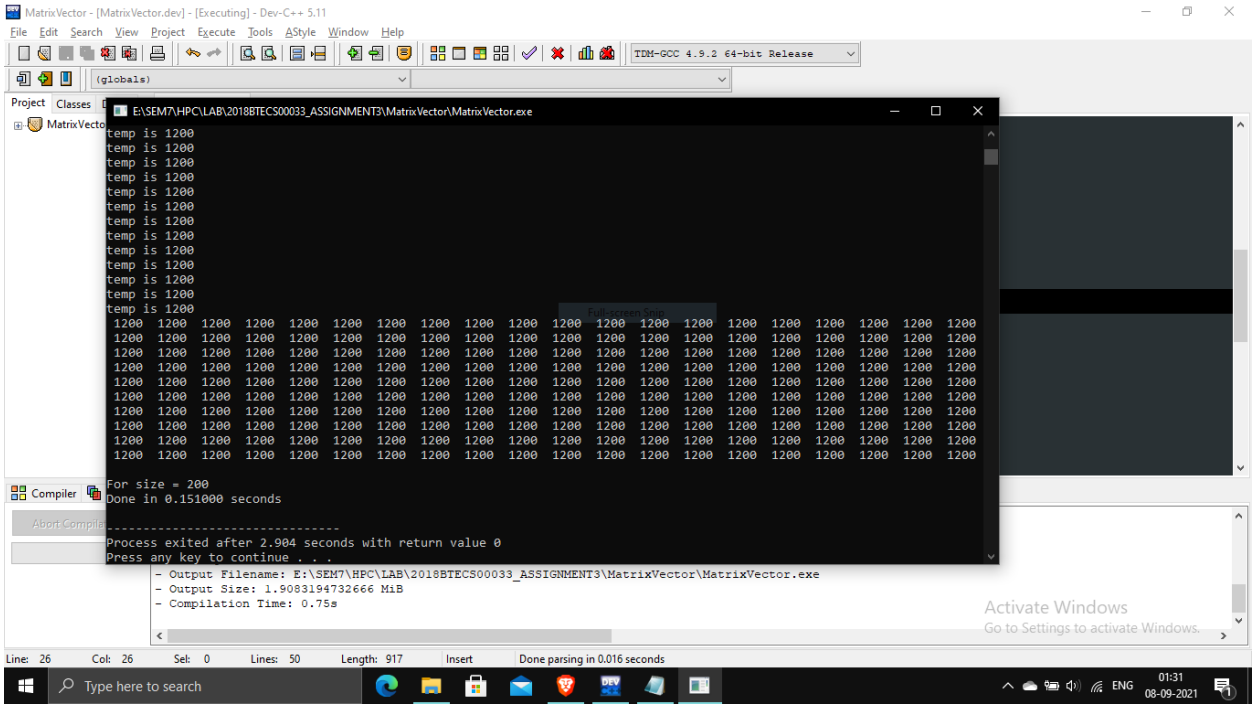
Information 2: Calculated the PI using 100 iterations as was found to be 3.08

Screenshot 3:



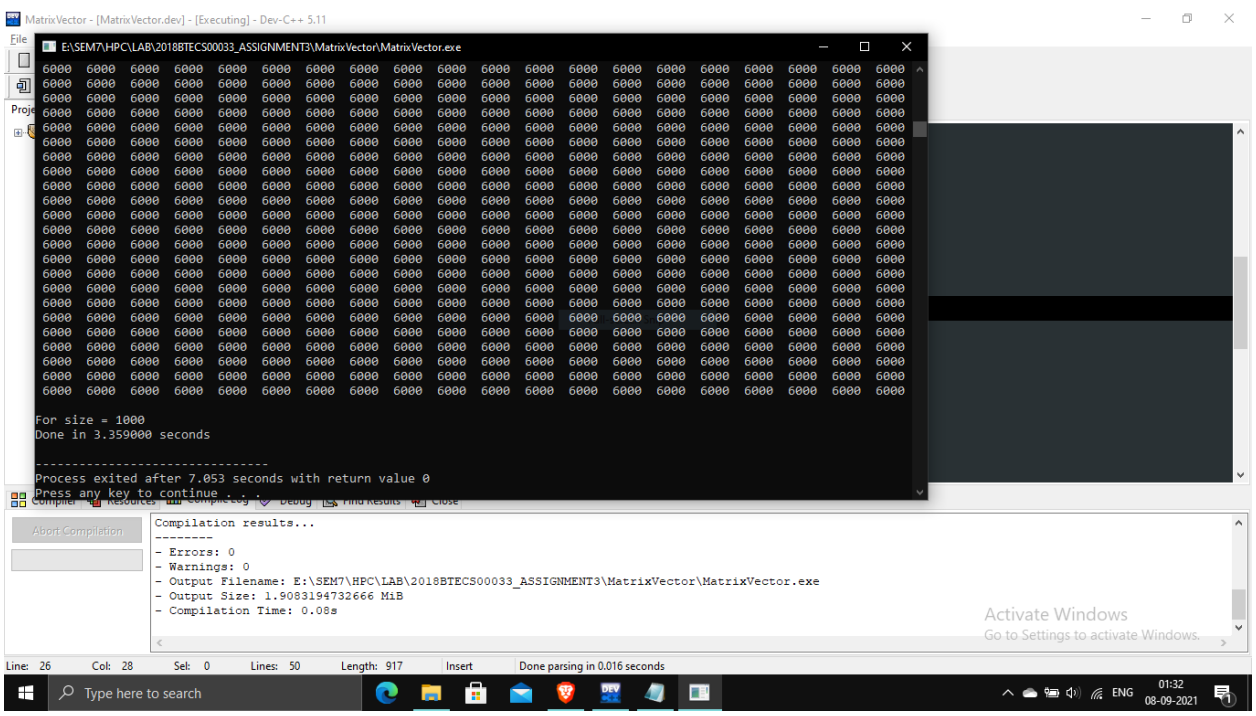
Information 3: Calculated the PI using 1000 iterations as was found to be 3.15

Screenshot 4:



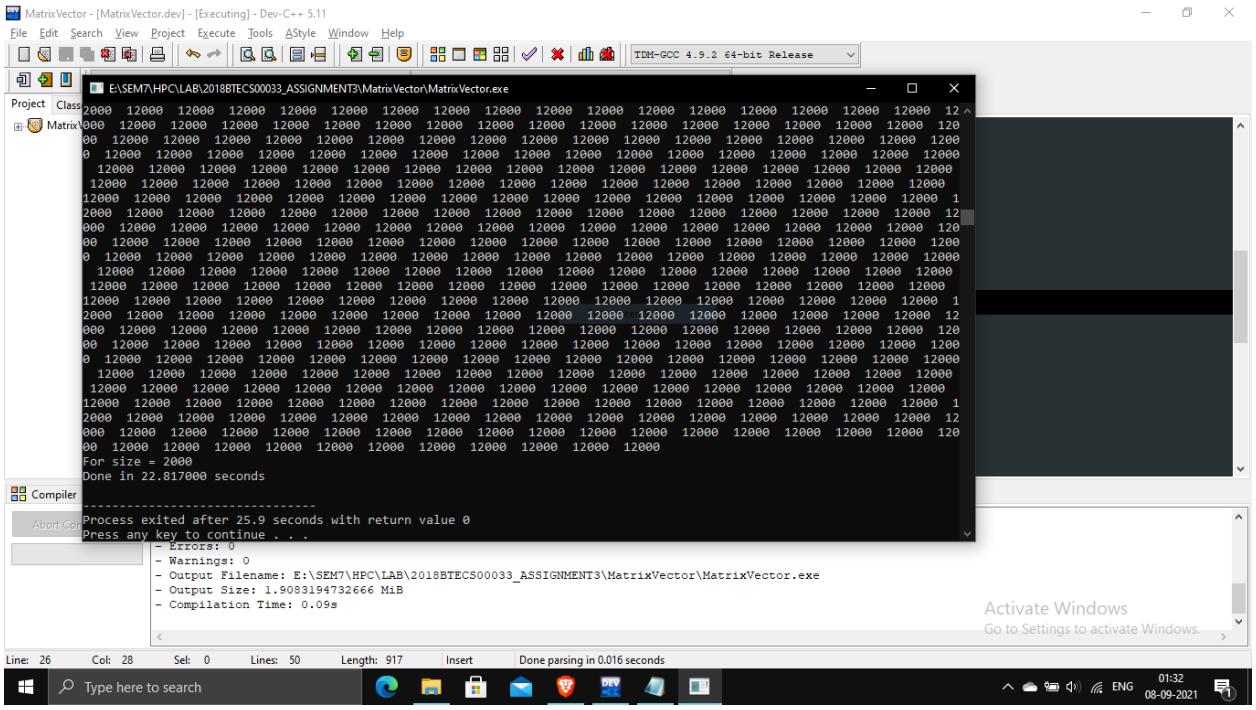
Information 4 Calculated matrix vector multiplication using 200 as size and 1 thread

Screenshot 5:



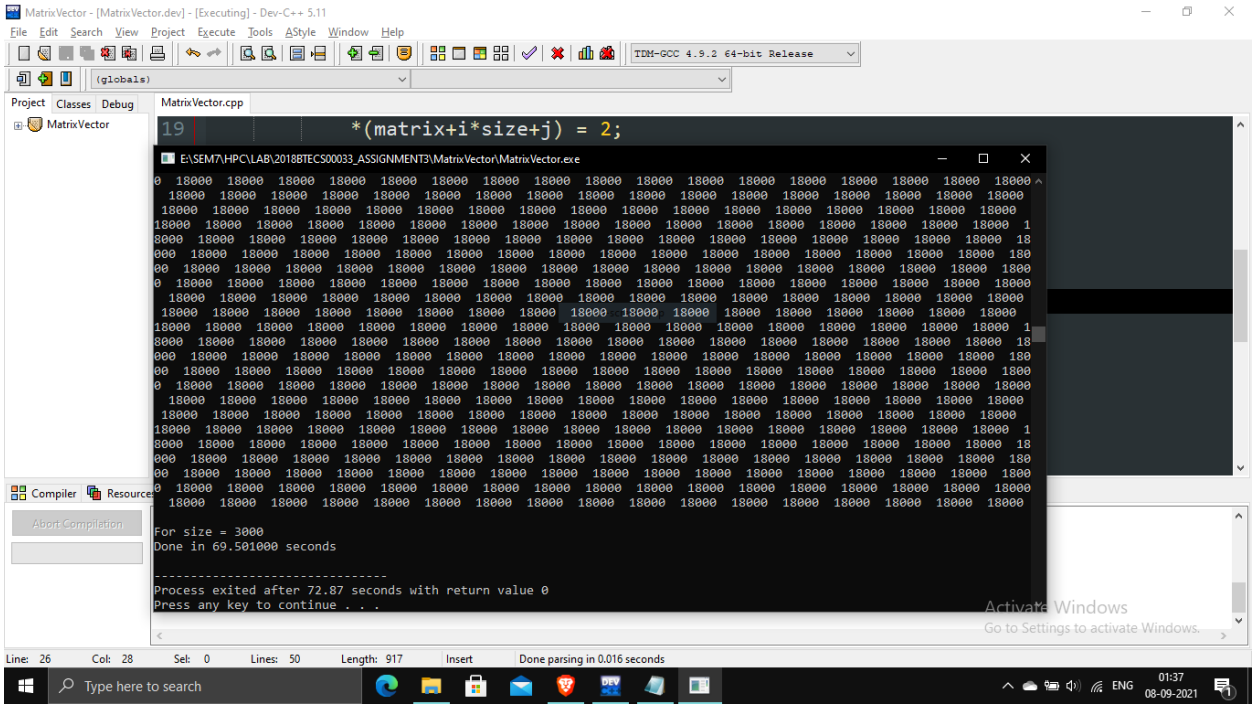
Information 5 Calculated matrix vector multiplication using 1000 as size and 1 thread

Screenshot 6:



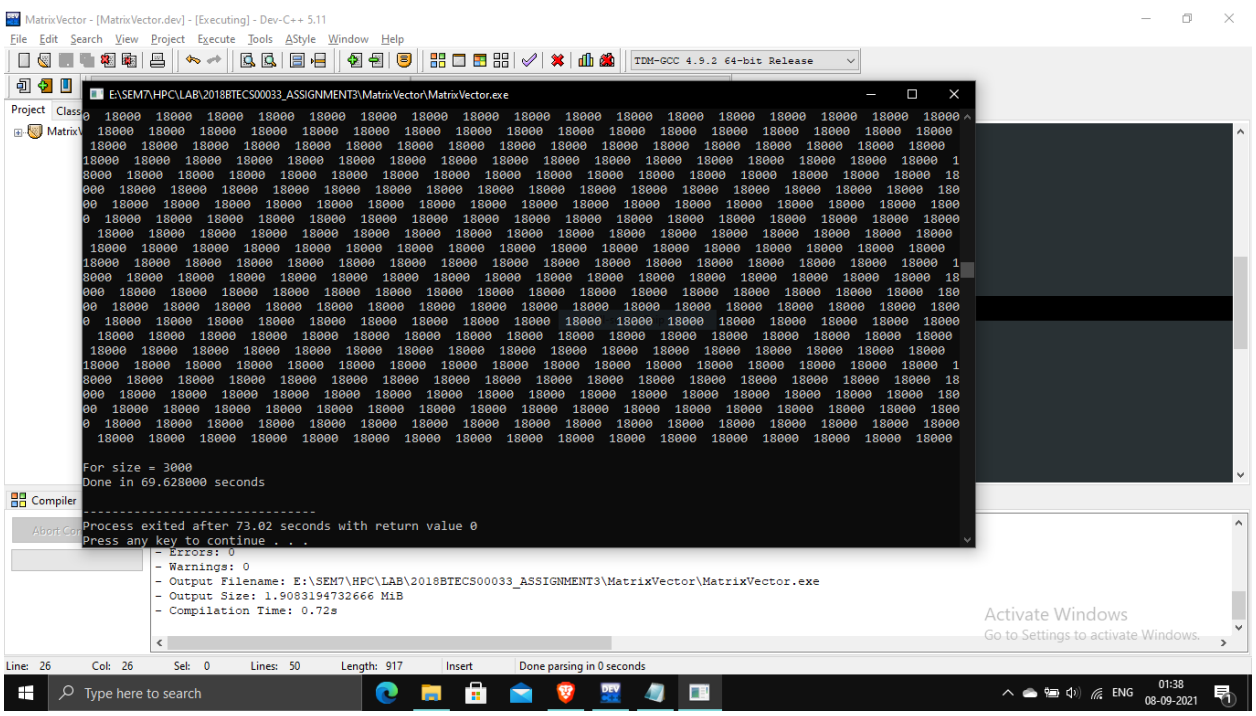
Information 6 Calculated matrix vector multiplication using 2000 as size and 1 thread

Screenshot 7:



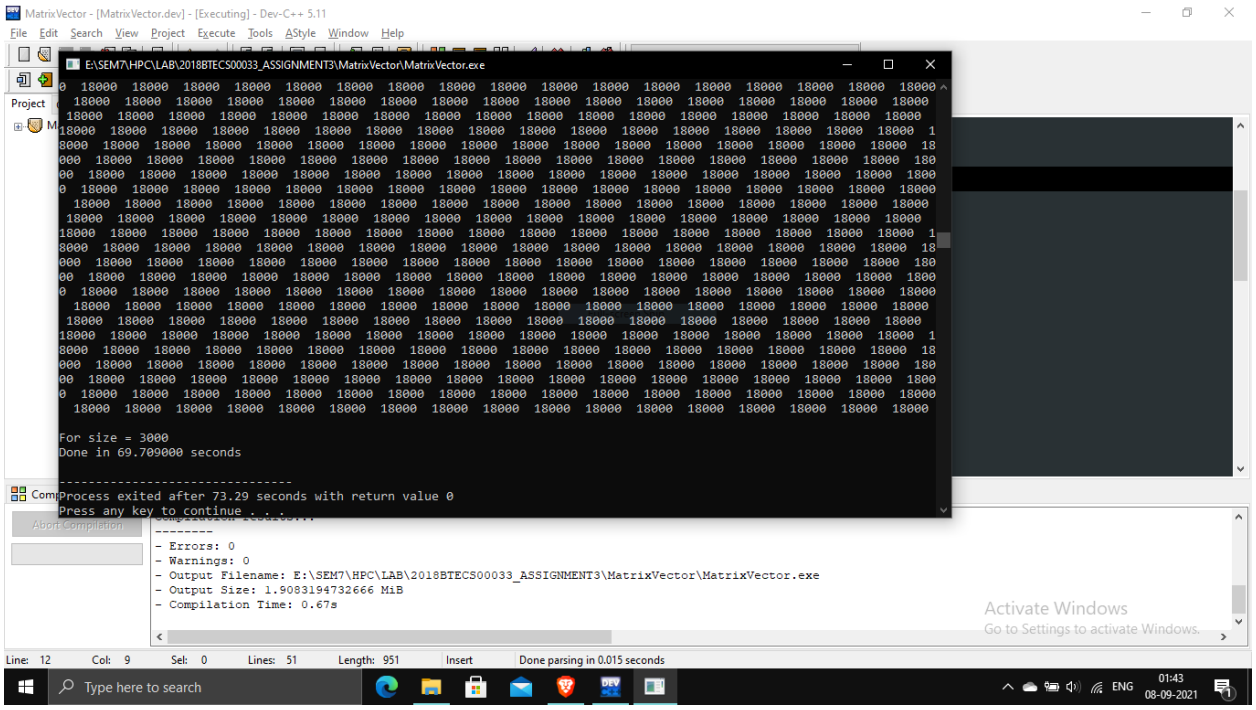
Information 7 Calculated matrix vector multiplication using 3000 as size and 1 thread It was found that as we increase the size, the time also increases. for a single thread.

Screenshot 8 :



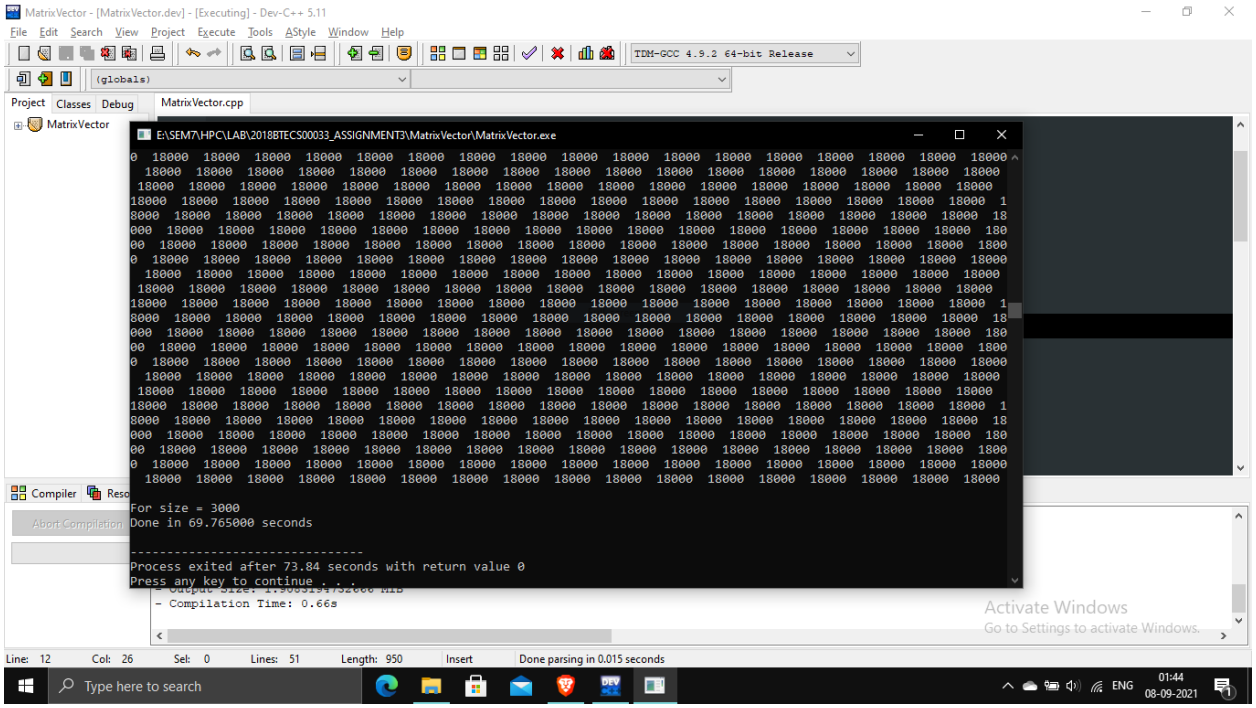
Information 8 Calculated matrix vector multiplication using 3000 as size and 2 thread

Screenshot 9:



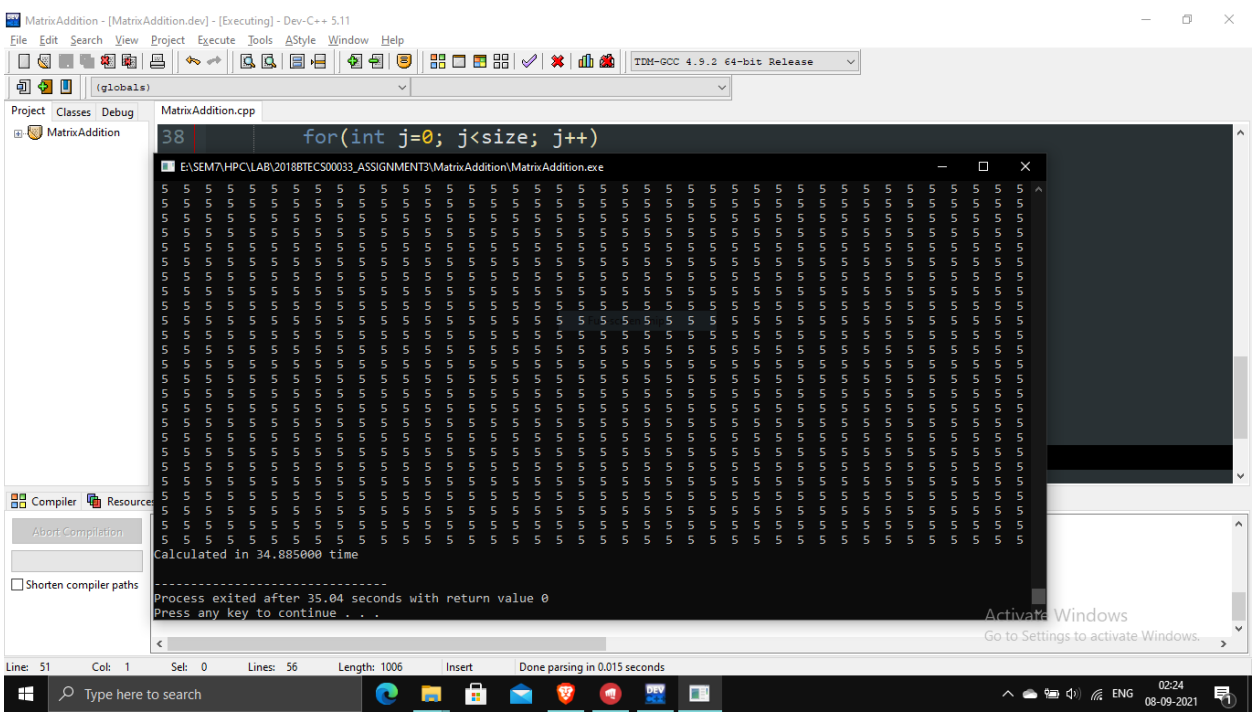
Information 9 Calculated matrix vector multiplication using 3000 as size and 4 thread

Screenshot 10:



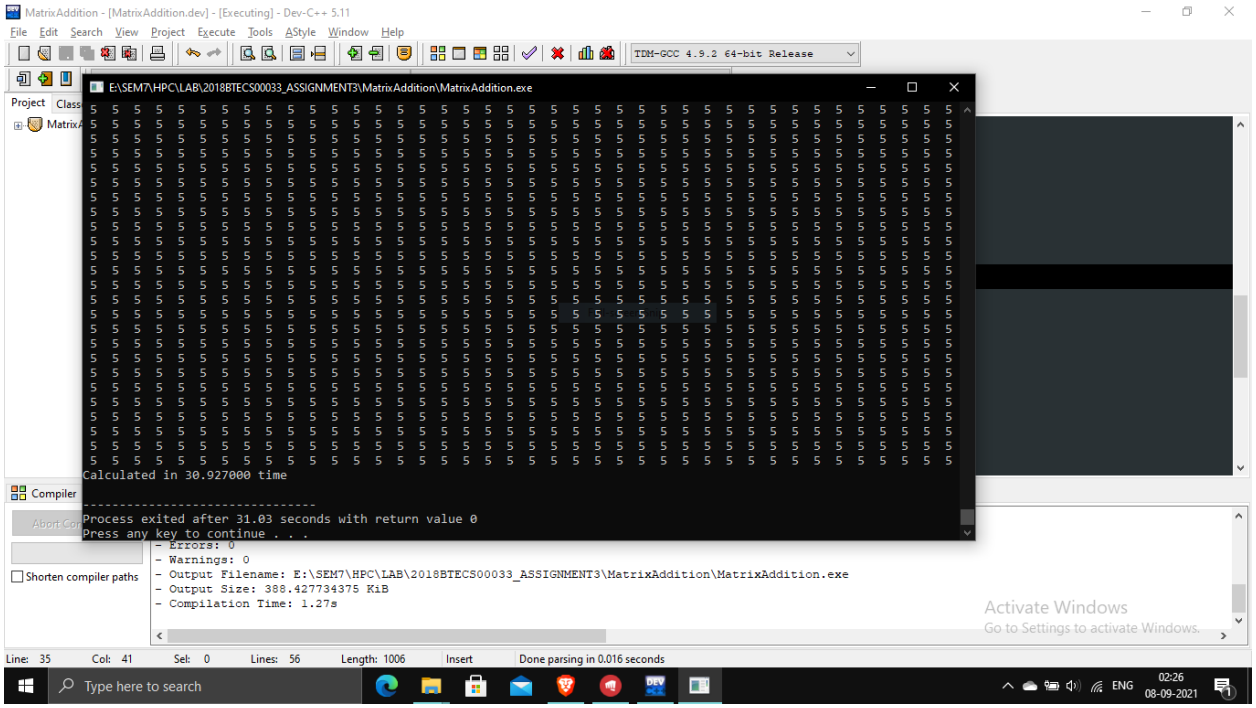
Information 10 Calculated matrix vector multiplication using 3000 as size and 8 thread It was found that speed slightly increases and then decreases.

Screenshot 11:



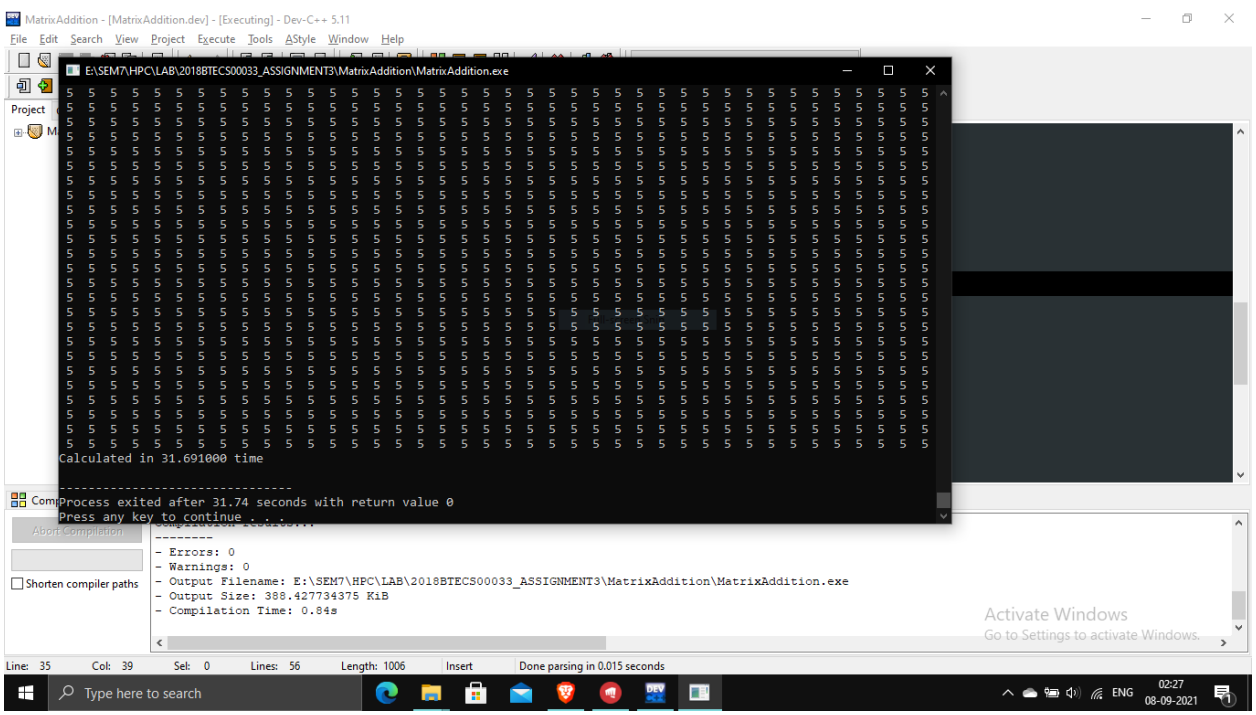
Information 11 Calculated addition of two matrices using static schedule with chunk of 500

Screenshot 12:



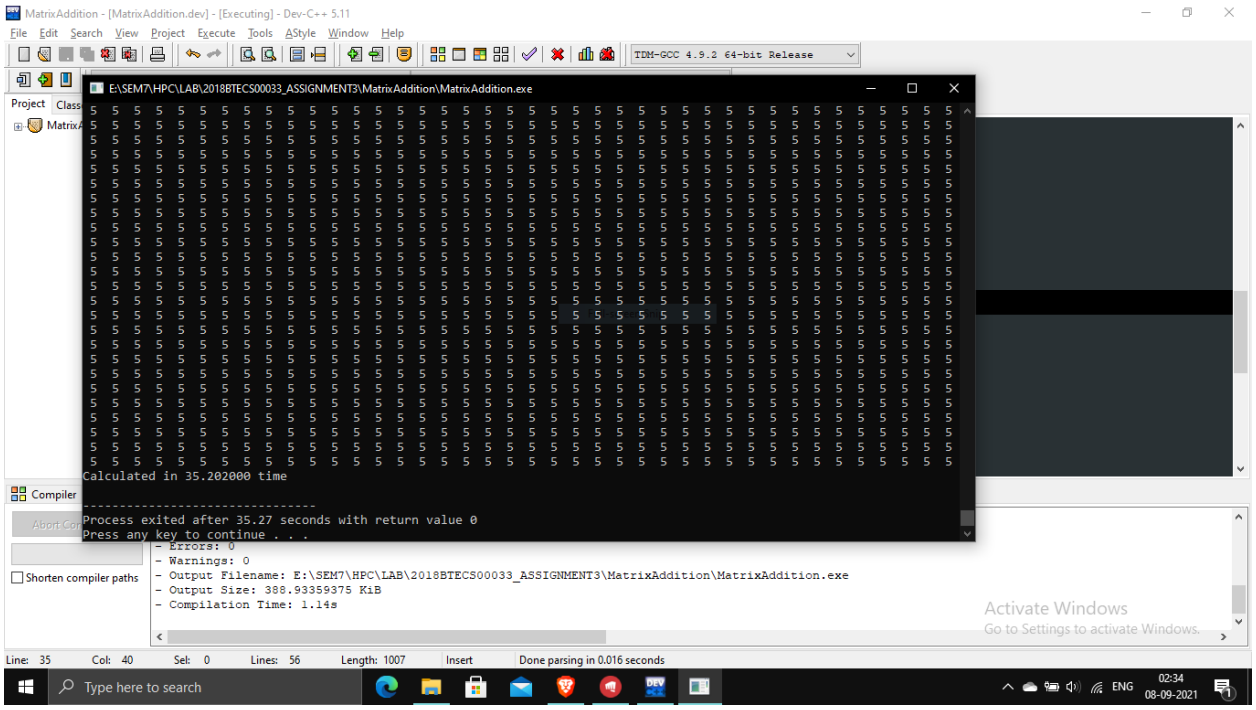
Information 12 Calculated addition of two matrices using static schedule with chunk of 200

Screenshot 13 :



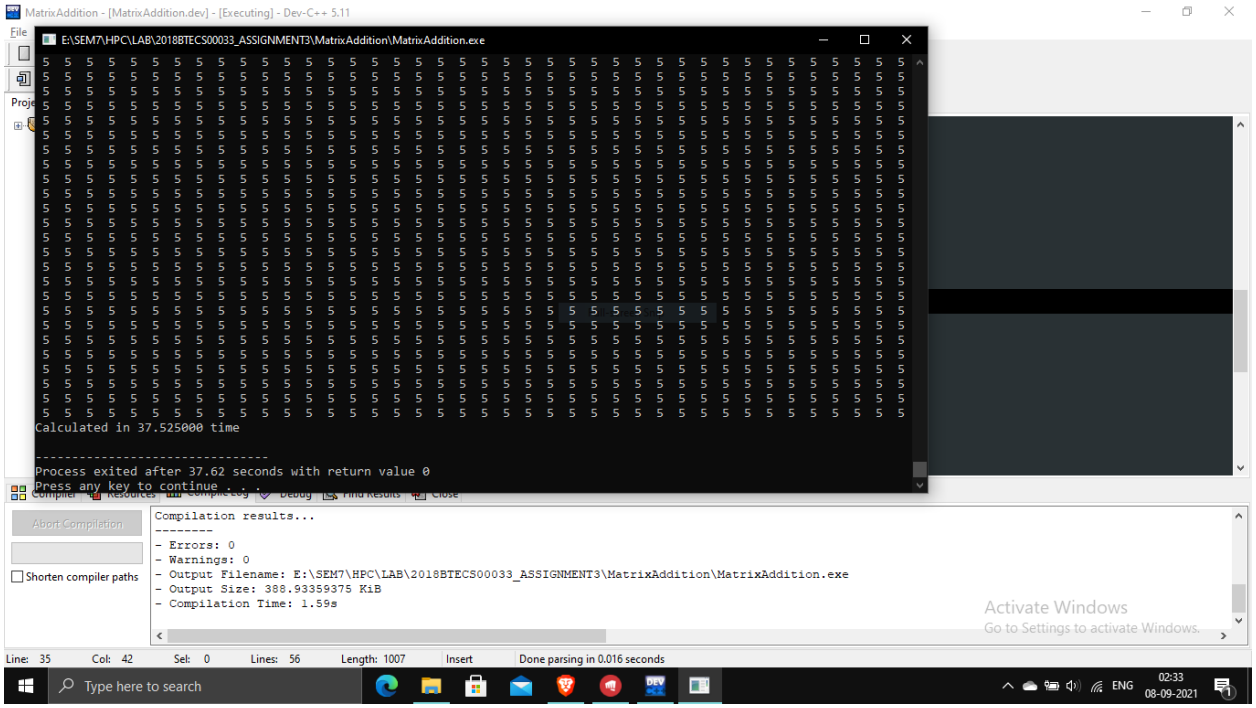
Information 13 Calculated addition of two matrices using a static schedule with a chunk of 100. For a static schedule it was found that as I decrease the chunk size for 4 threads, the time decreases.

Screenshot 14:



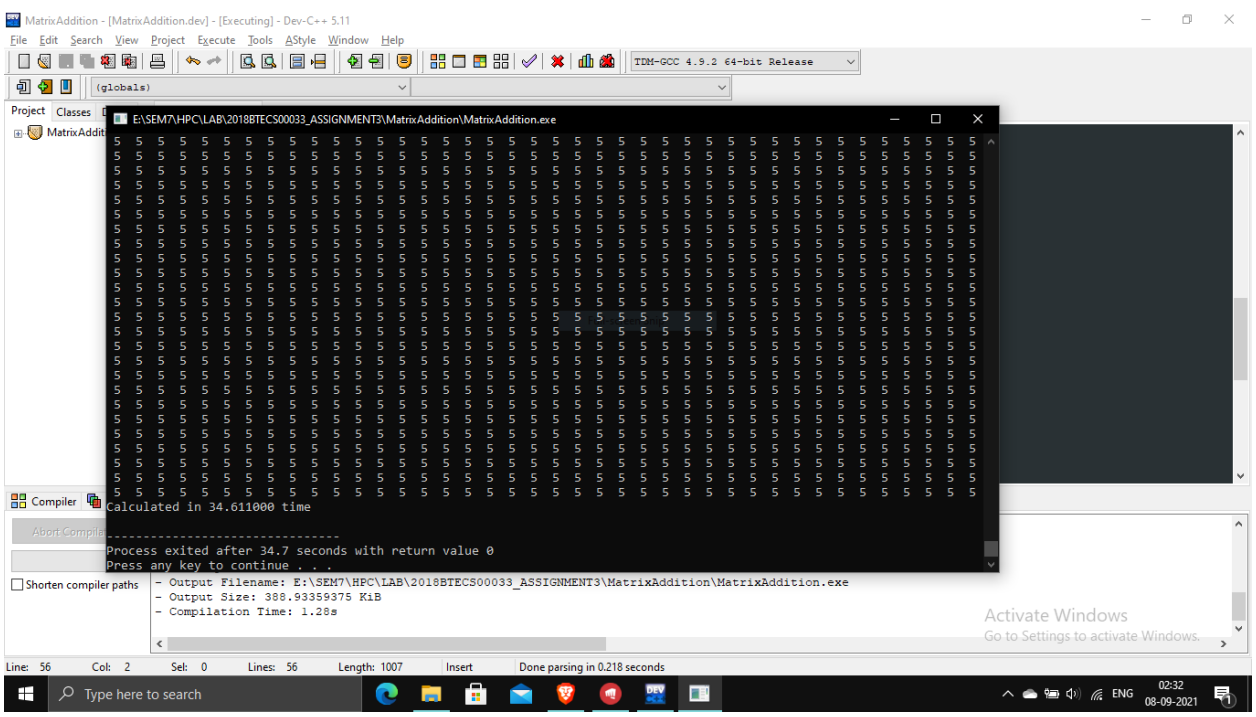
Information 14 Calculated addition of two matrices using a dynamic schedule with a chunk of 500

Screenshot 15:



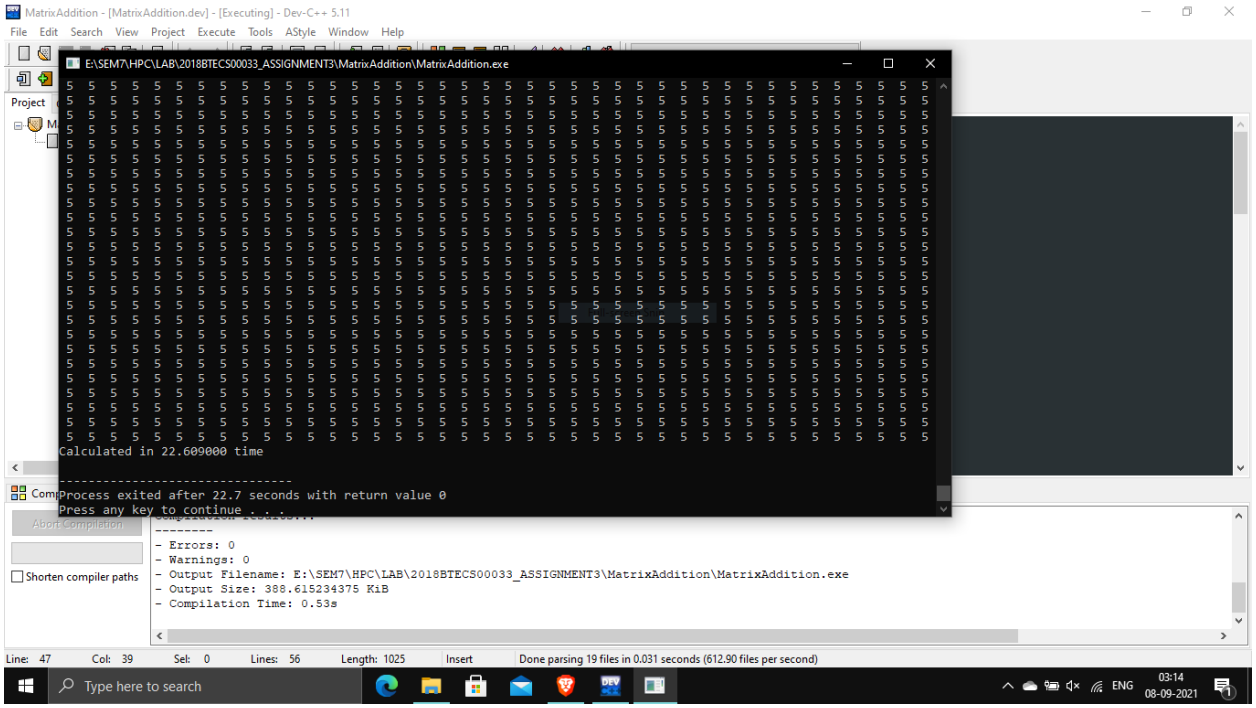
Information 15 Calculated addition of two matrices using a dynamic schedule with a chunk of 200

Screenshot 16:



Information 16 Calculated addition of two matrices using a dynamic schedule with a chunk of 100. There was no significant improvement found.

Screenshot 17:



Information 17 Calculated addition of two matrices using a dynamic schedule with a chunk of 500. After using nowait, a significant improvement was seen.

Github Link: https://github.com/g-mahendra/HPC_LAB_ASSIGNMENTS