**Class:** Final Year (Computer Science and Engineering)

**Year:** 2022-23 **Semester:** 1

**Course:** High Performance Computing Lab

**Practical No. 6**

**Exam Seat No:**

2019BTECS00033 – Teknath Krishna Jha

**Title of practical:**

MPI programming

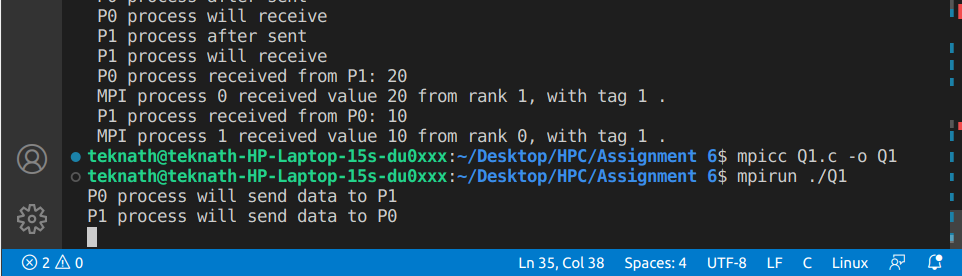
GITHUB LNK : <https://github.com/Teknath-jha/HPC-LAB-2019BTECS00033/tree/main/Assignment-6>

**Problem Statement 1:**

Q1: Implement a MPI program to give an example of Deadlock.

Code :

**Output 1:**

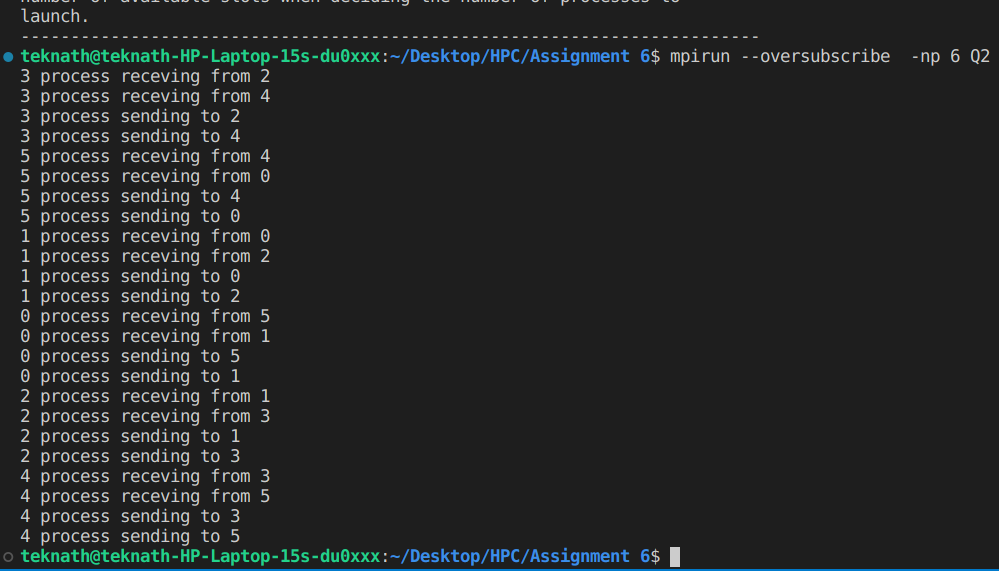
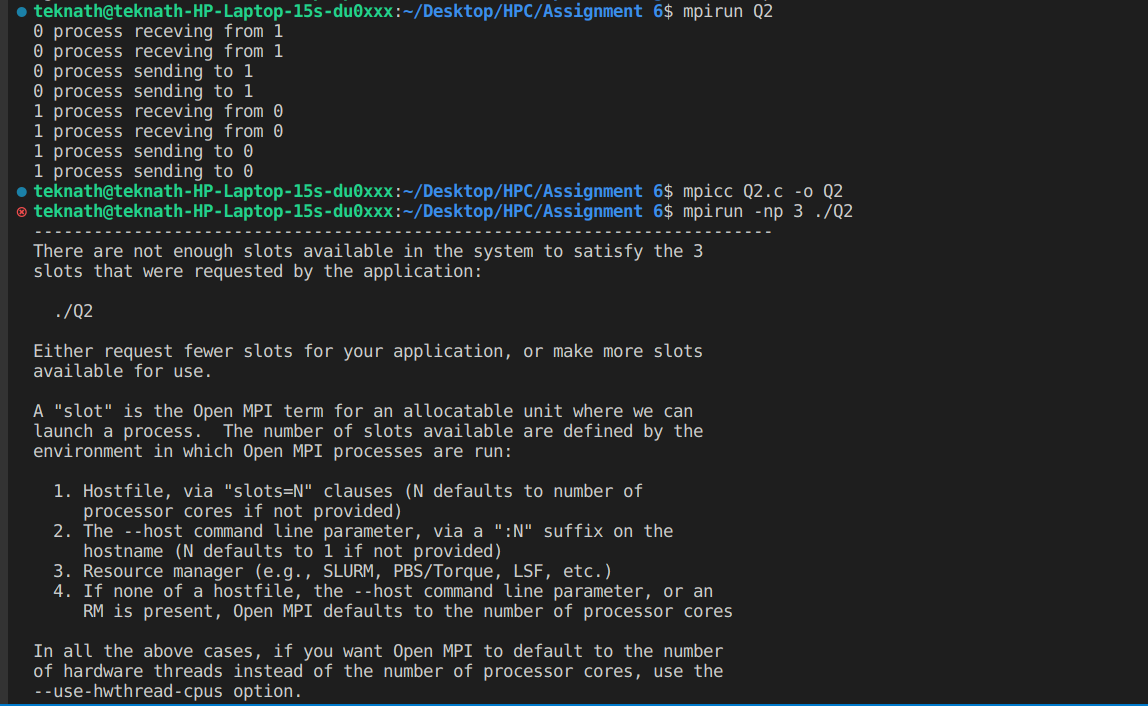
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**COMMENT : Here Both process p0 and p1 sending data to p1 and p0 respectively at same time and due to this deadlock is created .**

**Problem Statement 2:**

Q2. Implement blocking MPI send & receive to demonstrate Nearest neighbor exchange of data in a ring topology.

**Screenshot 2:**

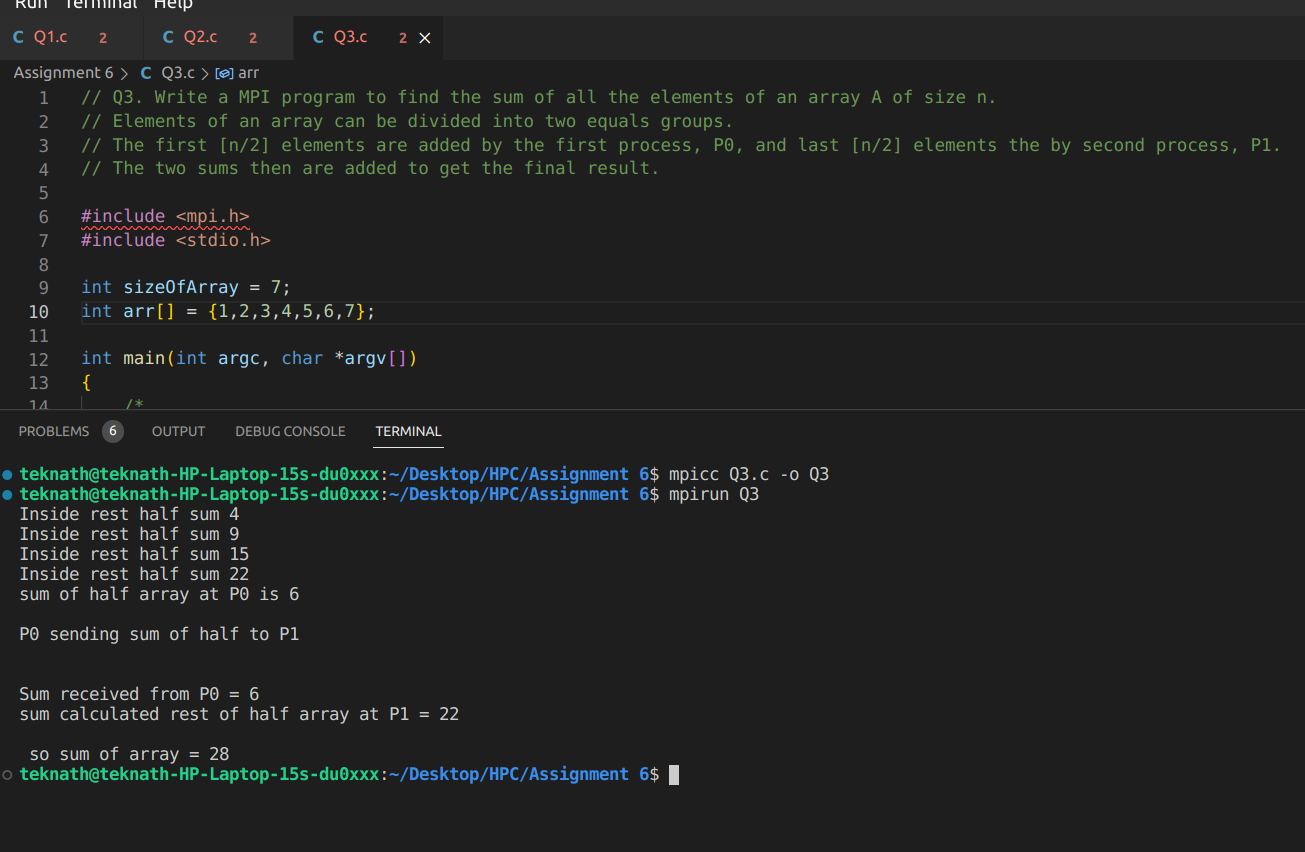
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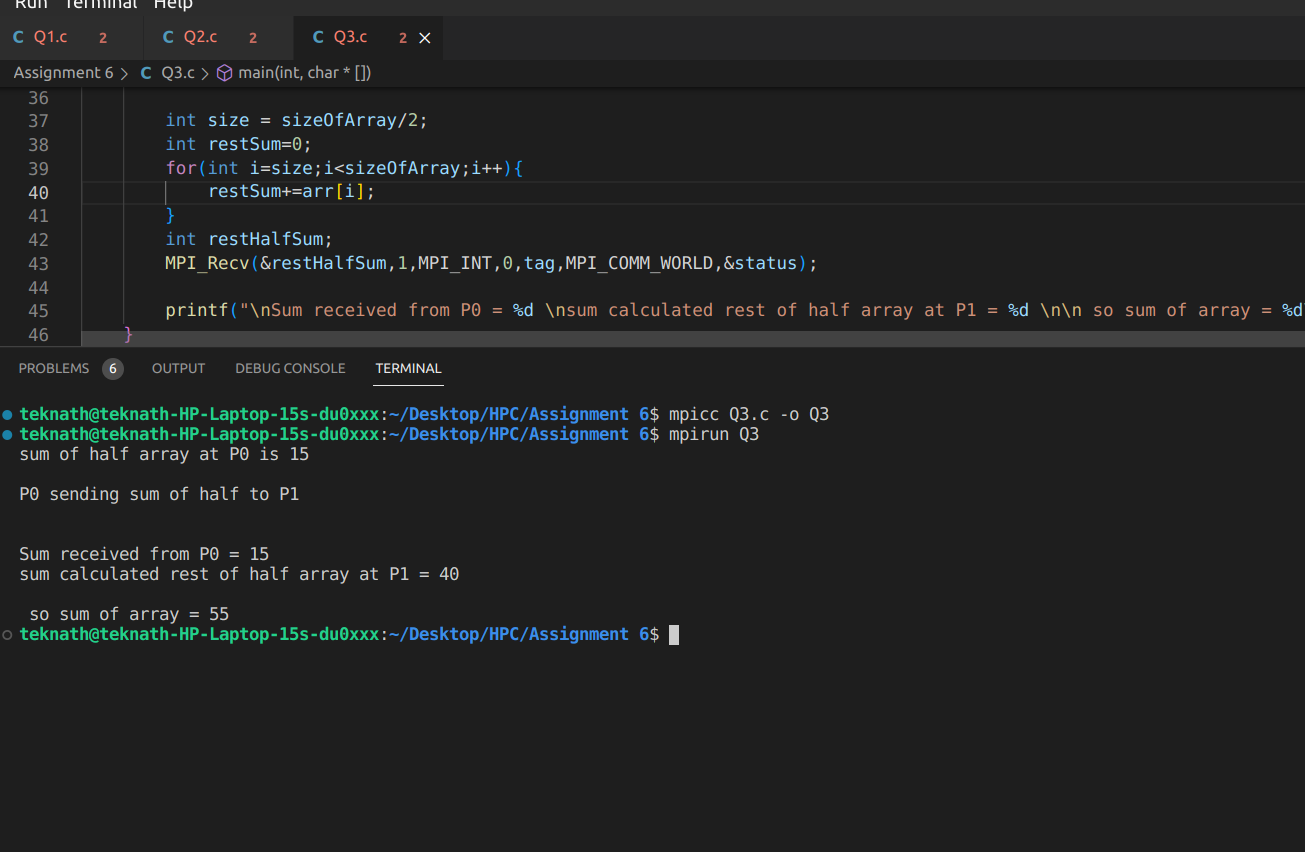
Comment:

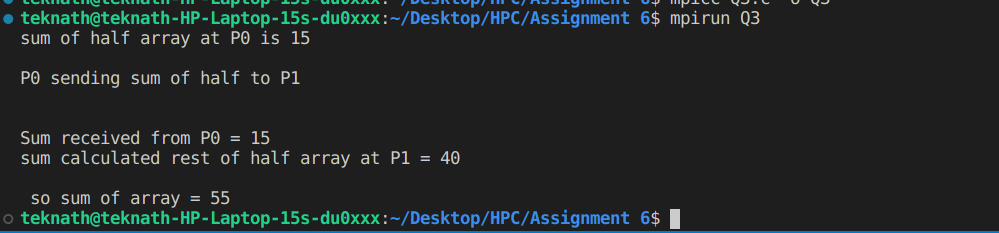
Process as 1 2 3 4 5

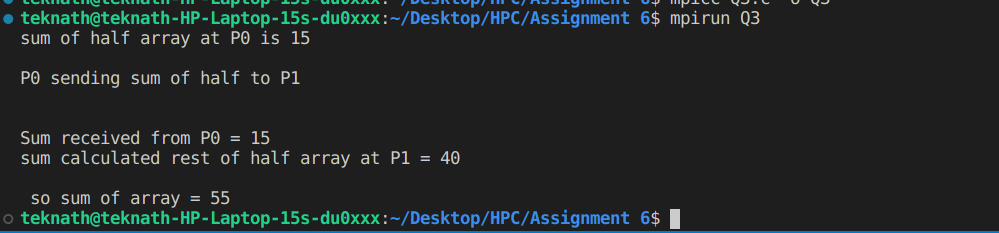
So here neighbour process is the closest one like for 5 -> 1 and 4 , for 3 -> a and 4

Q3. Write a MPI program to find the sum of all the elements of an array A of size n. Elements of an array can be divided into two equals groups. The first [n/2] elements are added by the first process, P0, and last [n/2] elements the by second process, P1. The two sums then are added to get the final result.

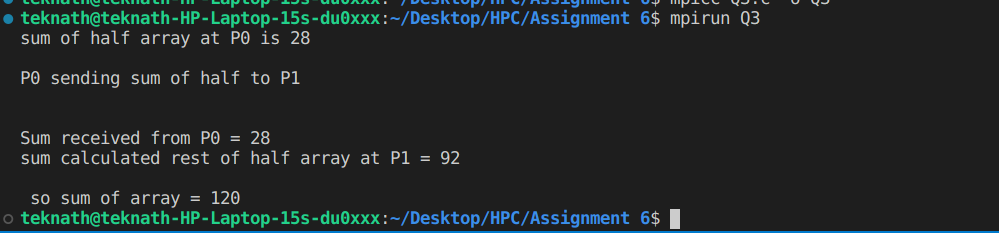
**Screenshot: **

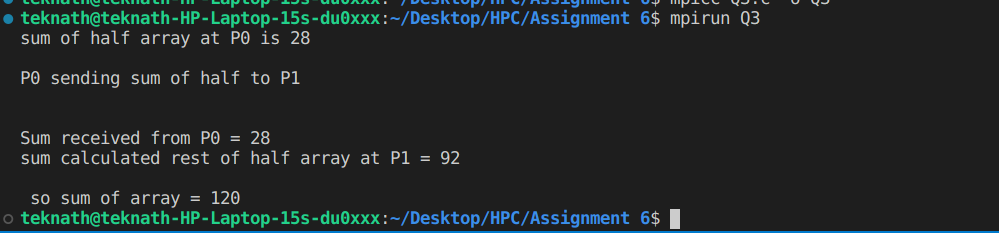
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**Here array is [1,2,3,4,5,6,7,8,9,10]**

**Here array is [1,2,3,4,5,6,7,8,9,10]**

**Here array is [1,2,3,4,5,6,7,8,9,10,11,12,13,14,15]**

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**Comment : Here I have made the array global for both processes p0 and p1 .**

**And calculated sum in p0 for first half and p1 for later half .**