**CODE:**

import mpi.\*;

public class DistributedSum {

public static void main(String[] args) throws MPIException {

MPI.Init(args);

int rank = MPI.COMM\_WORLD.Rank();

int size = MPI.COMM\_WORLD.Size();

int[] array = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}; // Input array

int n = array.length;

int localN = n / size; // Number of elements per processor

int[] localArray = new int[localN]; // Local array for each processor

int localSum = 0; // Local sum for each processor

int totalSum = 0;

// Scatter the input array to all processors

MPI.COMM\_WORLD.Scatter(array, 0, localN, MPI.INT, localArray, 0, localN, MPI.INT, 0);

// Calculate the local sum for each processor

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

localSum += localArray[i];

}

// Send the local sum to the master processor

int[] globalSum = new int[1];

MPI.COMM\_WORLD.Reduce(new int[] {localSum}, 0, globalSum, 0, 1, MPI.INT, MPI.SUM, 0);

// Display the intermediate sums calculated by each processor

System.out.println("Processor " + rank + " calculated sum = " + localSum);

if (rank == 0) {

totalSum = globalSum[0];

System.out.println("Total Sum = " + totalSum);

}

MPI.Finalize();

}

}

**OUTPUT:**

Microsoft Windows [Version 10.0.19045.2846]

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C:\Users\hp\Desktop\BE\sem2\DS\LAB\DS\_3>avac -cp .;%MPJ\_HOME%/lib/mpj.jar DistributedSum.java

'avac' is not recognized as an internal or external command,

operable program or batch file.

C:\Users\hp\Desktop\BE\sem2\DS\LAB\DS\_3>javac -cp .;%MPJ\_HOME%/lib/mpj.jar DistributedSum.java

C:\Users\hp\Desktop\BE\sem2\DS\LAB\DS\_3>mpjrun.bat -np 2 DistributedSum

MPJ Express (0.44) is started in the multicore configuration

Processor 0 calculated sum = 15

Processor 1 calculated sum = 40

Total Sum = 55