 **Download MPJ Express**

* Go to: <http://mpj-express.org/>
* Click **Downloads** > download latest version (e.g., mpj-v0.44.zip)

 **Extract the zip file**

* Put it somewhere, e.g., C:\mpj-v0.44\

 **Set Environment Variables**

* Open Environment Variables (Edit the system environment variables)
* Add to PATH:

makefile

CopyEdit

C:\mpj-v0.44\bin

* Create a new variable:

ini

CopyEdit

MPJ\_HOME = C:\mpj-v0.44

import mpi.\*;

public class DistributedSum {

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

// Initialize MPI

MPI.Init(args);

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

int size = MPI.COMM\_WORLD.Size(); // Total number of processes

// Array that will be divided among processes

int[] numbers = null;

if (rank == 0) {

// Root process initializes the array with values equal to the number of processes

numbers = new int[size];

System.out.println("Generated numbers:");

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

numbers[i] = i + 1; // Assign values 1 to size to the array

System.out.print(numbers[i] + " ");

}

System.out.println();

}

// Each process will hold a local part of the array

int[] localNumbers = new int[1]; // Array of size 1 for each process

// Scatter the numbers to all processes

MPI.COMM\_WORLD.Scatter(numbers, 0, 1, MPI.INT, localNumbers, 0, 1, MPI.INT, 0);

// Each process calculates the sum of its portion (which is just its single element here)

int localSum = localNumbers[0];

System.out.println("Process " + rank + " has local sum: " + localSum);

// Root process will gather all the local sums

int[] gatheredSums = null;

if (rank == 0) {

gatheredSums = new int[size];

}

// Gather the local sums from each process

MPI.COMM\_WORLD.Gather(new int[] {localSum}, 0, 1, MPI.INT, gatheredSums, 0, 1, MPI.INT, 0);

// Root process will calculate the final sum of all local sums

if (rank == 0) {

int totalSum = 0;

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

totalSum += gatheredSums[i];

}

System.out.println("Total sum calculated by root process: " + totalSum);

}

// Finalize MPI

MPI.Finalize();

}

}

Powershell

Compile:

javac -cp ".;$env:MPJ\_HOME\lib\mpj.jar" DistributedSum.java

Run:

mpjrun.bat -np 4 DistributedSum