Homework Assignment 5 – due on Saturday, November 2 (Midnight)

Description of Assignment:
Complete an MPI program(vecadd.c) that
(i) decomposes A and B on p_0 to all other processors
(ii) add two local vectors on all processors in parallel
(iii) composes C on all other processors to p_0.

```
#include <stdio.h>
#include <stdlib.h>
#include "mpi.h"

#define N 120

main(int argc, char* argv[])
{
    int np, pid, local_N, dest, src, i, tag = 0;
    float A[N], B[N], C[N], *local_A, *local_B, *local_C;
    MPI_Status status;

    MPI_Init(&argc, &argv);
    MPI_Comm_size(MPI_COMM_WORLD, &np);
    MPI_Comm_rank(MPI_COMM_WORLD, &pid);

    // initialization of A and B
    if (pid == 0) {
        for (i = 0; i < N; i++) {
            A[i] = i;
            B[i] = N-i;
        }
    }
    Local_N = N/np;

    local_A = malloc(....);
    local_B = malloc(....);
    local_C = malloc(....);

    // (i) decomposition
    ….   A, B를 각각 local_A, local_B로
         Scatter, send 다 가능.
    // (ii) addition
    for (i = 0; i < local_N; i++)
        …; local_C를 local_A, local_B의 총합으로..

    // (iii) composition
    …..      local_C를 C로 ..

    // print results
    if (pid == 0) {
        for (i = 0; i < N; i++)
            printf("%2.1f ", C[i]);
        printf("\n ");
    }

    MPI_Finalize();
}
```

How to proceed:
Run only 1, 2, 3, 4, 6, 12, 24 processors for tests.

Turnin the assignment:
After done your assignment, type **turnin** in your current working directory. You can retype the command at any time before the due date.