Problem 1

[suyanpen@discovery1 as04]$ cat pmd_irecv.out

==

SLURM_JOB_ID = 16986703

SLURM_JOB_NODELIST = e13-[38-41]

TMPDIR = /tmp/SLURM_16986703

==

***** Asynchronous *****

al = 5.129928e+00 5.129928e+00 5.129928e+00

lc = 2 2 2

rc = 2.564964e+00 2.564964e+00 2.564964e+00

nglob = 1728

CPU & COMT = 4.881431e-01 1.640770e-01

***** Synchronous *****

al = 5.129928e+00 5.129928e+00 5.129928e+00

lc = 2 2 2

rc = 2.564964e+00 2.564964e+00 2.564964e+00

nglob = 1728

CPU & COMT = 5.315101e-01 2.039618e-01

***** Asynchronous *****

al = 5.129928e+00 5.129928e+00 5.129928e+00

lc = 2 2 2

rc = 2.564964e+00 2.564964e+00 2.564964e+00

nglob = 1728

CPU & COMT = 4.917433e-01 1.653756e-01

***** Synchronous *****

al = 5.129928e+00 5.129928e+00 5.129928e+00

lc = 2 2 2

rc = 2.564964e+00 2.564964e+00 2.564964e+00

nglob = 1728

CPU & COMT = 5.324796e-01 2.039105e-01

***** Asynchronous *****

al = 5.129928e+00 5.129928e+00 5.129928e+00

lc = 2 2 2

rc = 2.564964e+00 2.564964e+00 2.564964e+00

nglob = 1728

CPU & COMT = 4.979735e-01 1.673263e-01

***** Synchronous *****

al = 5.129928e+00 5.129928e+00 5.129928e+00

lc = 2 2 2

rc = 2.564964e+00 2.564964e+00 2.564964e+00

nglob = 1728

CPU & COMT = 5.328566e-01 2.055239e-01

The screenshot of pmd irecv.out is as above. After repeating the comparison 3 times, the asynchronous case has the average CPU time of 0.493 seconds and communication time of 0.165 seconds, as compared to the synchronous case, which has the average CPU time of 0.532 seconds and communication time of 0.205 sec). pmd irecv.c is faster than pmd.c.

Problem 2

	A	B	C	D	E	F
1	0.00E+00	0.00E+00	0.00E+00	5.00E-03	0.00E+00	5.00E-03
2	5.00E-02	0.00E+00	5.00E-02	2.00E-02	5.00E-02	1.50E-02
3	1.00E-01	0.00E+00	1.00E-01	1.50E-02	1.00E-01	1.50E-02
4	1.50E-01	0.00E+00	1.50E-01	7.50E-02	1.50E-01	2.00E-02
5	2.00E-01	0.00E+00	2.00E-01	1.20E-01	2.00E-01	9.50E-02
6	2.50E-01	0.00E+00	2.50E-01	1.45E-01	2.50E-01	9.50E-02
7	3.00E-01	0.00E+00	3.00E-01	1.75E-01	3.00E-01	1.20E-01
8	3.50E-01	0.00E+00	3.50E-01	1.70E-01	3.50E-01	1.55E-01
9	4.00E-01	0.00E+00	4.00E-01	2.45E-01	4.00E-01	1.60E-01
10	4.50E-01	0.00E+00	4.50E-01	2.85E-01	4.50E-01	2.80E-01
11	5.00E-01	0.00E+00	5.00E-01	2.85E-01	5.00E-01	2.40E-01
12	5.50E-01	0.00E+00	5.50E-01	4.40E-01	5.50E-01	4.05E-01
13	6.00E-01	0.00E+00	6.00E-01	4.70E-01	6.00E-01	4.40E-01
14	6.50E-01	0.00E+00	6.50E-01	4.35E-01	6.50E-01	5.10E-01
15	7.00E-01	0.00E+00	7.00E-01	5.55E-01	7.00E-01	5.25E-01
16	7.50E-01	0.00E+00	7.50E-01	5.75E-01	7.50E-01	5.75E-01
17	8.00E-01	0.00E+00	8.00E-01	6.05E-01	8.00E-01	6.45E-01
18	8.50E-01	0.00E+00	8.50E-01	6.80E-01	8.50E-01	9.10E-01
19	9.00E-01	0.00E+00	9.00E-01	7.50E-01	9.00E-01	8.15E-01
20	9.50E-01	0.00E+00	9.50E-01	7.15E-01	9.50E-01	7.95E-01
21	1.00E+00	0.00E+00	1.00E+00	7.30E-01	1.00E+00	7.75E-01
22	1.05E+00	0.00E+00	1.05E+00	8.50E-01	1.05E+00	7.55E-01
23	1.10E+00	0.00E+00	1.10E+00	9.15E-01	1.10E+00	7.95E-01
24	1.15E+00	0.00E+00	1.15E+00	9.95E-01	1.15E+00	1.05E+00
25	1.20E+00	0.00E+00	1.20E+00	9.40E-01	1.20E+00	1.02E+00