Lab-1 Screenshots

Compiling and running the given sum-pthd.c program to check the output.

```
OpenSSH SSH client
total 184
-rw------- 1 parth2 them    549 Mar 30 13:57 example.c
-rw------- 1 parth2 them 50661 Mar 29 12:45 lab1.pdf
-rw------- 1 parth2 them    560 Mar 29 12:45 linuxhosts
-rw------- 1 parth2 them    567 Mar 29 12:45 Makefile
-rwx------ 1 parth2 them 17184 Mar 29 16:56 mine
-rw------- 1 parth2 them   1416 Mar 29 16:56 mine.c
drwx------ 2 parth2 them     20 Apr  1 05:42 Modifications
-rw------- 1 parth2 them    262 Mar 29 12:45 runall
-rwx------ 1 parth2 them     55 Mar 29 12:45 runjavasum
-rw------- 1 parth2 them     54 Mar 30 13:55 run.sh
-rwx------ 1 parth2 them 16728 Mar 29 13:20 sum
-rw------- 1 parth2 them    523 Mar 29 12:45 sum1.chpl
-rw------- 1 parth2 them    588 Mar 29 12:45 sum2.chpl
-rw------- 1 parth2 them    549 Mar 29 12:45 sum.c
-rw------- 1 parth2 them   1755 Mar 30 13:52 Sum.class
-rw------- 1 parth2 them   1311 Mar 29 12:45 Sum.java
-rw------- 1 parth2 them    933 Mar 29 12:45 sum-mpi.c
-rwx------ 1 parth2 them 16736 Mar 29 13:48 sum-omp
-rw------- 1 parth2 them    587 Mar 29 12:45 sum-omp.c
-rw------- 1 parth2 them   1057 Mar 29 12:45 sum-oo.cpp
-rwx------ 1 parth2 them 17144 Mar 31 21:34 sum-pthd
-rw------- 1 parth2 them   1139 Mar 29 12:45 sum-pthd.c
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$ ./sum-pthd
The sum is 332833500 (should be 332833500)
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
```

Question-1)

```
OpenSSH SSH client
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$ ./sum-pthd
Thread 0 worked on [0   , 100)
Thread 3 worked on [300 , 400)
Thread 2 worked on [200 , 300)
Thread 1 worked on [100 , 200)
Thread 4 worked on [400 , 500)
Thread 5 worked on [500 , 600)
Thread 6 worked on [600 , 700)
Thread 7 worked on [700 , 800)
Thread 8 worked on [800 , 900)
Thread 9 worked on [900 , 1000)
The sum is 332833500 (should be 332833500)
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
```

Compiling and running the sum-oo.cpp program to check the output: -

```
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$ cd ..
parth2@proton:~/Desktop/parallelProgramming/lab1$ g++ -pthread -o sum-oo sum-oo.cpp
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$ ./sum-oo
The sum is 332833500 (should be 332833500)
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
```

Question-2)

```
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$ ./sum-oo
Thread 0 worked on [0,100)
Thread 4 worked on [400,500)
Thread 2 worked on [200,300)
Thread 6 worked on [600,700)
Thread 1 worked on [100,200)
Thread 8 worked on [800,900)
Thread 5 worked on [500,600)
Thread 9 worked on [900,1000)
Thread 7 worked on [700,800)
Thread 3 worked on [300,400)
The sum is 332833500 (should be 332833500)
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
```

Compiling and running the Sum.java program to check the output.

```
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$ javac Sum.java
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$ java Sum
The sum is 332833500 (should be 332833500)
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
```

Question-3)

```
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$ vi Sum.java
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$ javac Sum.java
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$ ./automate.sh 2000
*** Found an incorrect answer, 320535150! ***
*** Found an incorrect answer, 320535150! ***
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
```

When the program is run with the script with 2000 as an argument, we get the following result: - (NOTE: - In the result, only the lines which produce wrong output are printed for better readability of the output).

This is because as the number of processes (java Sum) increases, the number of threads increases. Although each thread might have their own local variables, the global variables are shared. This leads to threads producing wrong results due to "race condition".

Question-4)

Now when synchronized keyword is applied to provide a locking mechanism for the global variable sum, then the following results are produced with the same automate script and same input of 2000.

Here also, only the incorrect sum will be printed (if incorrect sum is calculated).

```
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$ ./automate.sh 2000
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
```

As we can see that the program runs perfectly.

When we remove the static keyword from the declaration of the lock (lck) object, then, there is an incorrect sum found.

```
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$ ./automate.sh 2000
*** Found an incorrect answer, 260585150! ***
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
```

This is because when static keyword is removed, then all the threads can change the value of lock (lck) even when in execution. This will defeat the purpose of declaring a lock and hence race condition is not removed for the global variable sum.

Question-5)

To print the thread name, we will use the Thread.currentThread().getName() is used. The output for the same is given below: -

```
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$ ./automate.sh 5
Thread Thread-0 worked on [0,100)
Thread Thread-9 worked on [900,1000)
Thread Thread-8 worked on [800,900)
Thread Thread-7 worked on [700,800)
Thread Thread-6 worked on [600,700)
Thread Thread-5 worked on [500,600)
Thread Thread-4 worked on [400,500)
Thread Thread-3 worked on [300,400)
Thread Thread-2 worked on [200,300)
Thread Thread-1 worked on [100,200)
Thread Thread-0 worked on [0,100)
Thread Thread-9 worked on [900,1000)
Thread Thread-8 worked on [800,900)
Thread Thread-7 worked on [700,800)
Thread Thread-6 worked on [600,700)
Thread Thread-5 worked on [500,600)
Thread Thread-4 worked on [400,500)
Thread Thread-3 worked on [300,400)
Thread Thread-2 worked on [200,300)
Thread Thread-1 worked on [100,200)
Thread Thread-0 worked on [0,100)
Thread Thread-9 worked on [900,1000)
Thread Thread-8 worked on [800,900)
Thread Thread-7 worked on [700,800)
Thread Thread-6 worked on [600,700)
Thread Thread-5 worked on [500,600)
Thread Thread-4 worked on [400,500)
Thread Thread-3 worked on [300,400)
Thread Thread-2 worked on [200,300)
Thread Thread-1 worked on [100,200)
Thread Thread-0 worked on [0,100)
Thread Thread-9 worked on [900,1000)
Thread Thread-8 worked on [800,900)
Thread Thread-7 worked on [700,800)
Thread Thread-6 worked on [600,700)
Thread Thread-5 worked on [500,600)
Thread Thread-4 worked on [400,500)
Thread Thread-3 worked on [300,400)
Thread Thread-2 worked on [200,300)
Thread Thread-1 worked on [100,200)
Thread Thread-0 worked on [0,100)
Thread Thread-9 worked on [900,1000)
Thread Thread-8 worked on [800,900)
Thread Thread-7 worked on [700,800)
Thread Thread-6 worked on [600,700)
Thread Thread-5 worked on [500,600)
Thread Thread-4 worked on [400,500)
Thread Thread-3 worked on [300,400)
Thread Thread-2 worked on [200,300)
Thread Thread-1 worked on [100,200)
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
```

Question-6)

Compiling and running the sum-omp program, we get the following output: -

Now, removing the -fopenmp flag and then comparing the wc, we get,
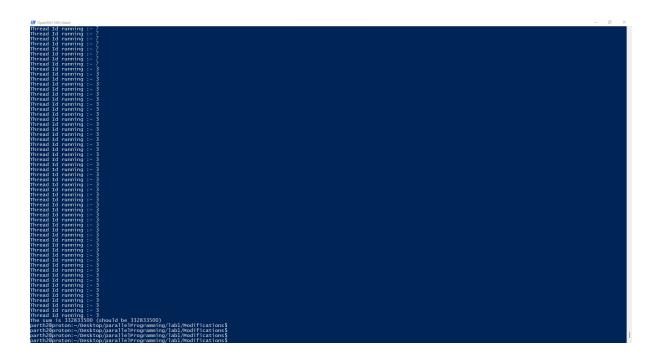

The next step is to compare the assembly code: -

Question-7)

Inserting the required print statement in the for loop, we get the following output which contains the thread ids for the threads accessing the shared variable on each iteration. This gives us the full picture of how OpenMp functions

Question-8)

After adding the required exports in the .bash_profile and .bashrc files, we will compile and run the sum-mpi.c and get the following output: -

```
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$ mpicc -g -o sum-mpi sum-mpi.c
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$ mpirun -n 4 ./sum-mpi
The sum is 332833500 (should be 332833500)
parth2@proton:~/Desktop/parallelProgramming/lab1$
```

On adding the required statements for printing the rank and size, we have: -

```
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$ mpicc -g -o sum-mpi-modified sum-mpi-modified.c
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$ mpirun -n 4 ./sum-mpi-modified
the value of rank is: - 1
the value of size is: - 4
the value of rank is: - 2
the value of size is: - 4
the value of rank is: - 3
the value of size is: - 4
the value of rank is: - 0
the value of size is: - 4
The sum is 332833500 (should be 332833500)
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
parth2@proton:~/Desktop/parallelProgramming/lab1$
```

Question-9)

After making the necessary changes in the .bash_profile for running the chapel programs, we will compile the sum1.chpl and sum2.chpl programs.

```
parth2@proton:~$ cd Desktop/parallelProgramming/lab1/Modifications/
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$ chpl -g -o sum1 sum1.chpl
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$ chpl -g -o sum2 sum2.chpl
parth2@proton:~/Desktop/parallelProgramming/lab1/Modifications$
```

Then, we will run the Sum1.chpl with one locale as given below:-

```
parth2@bevatron:~$ cd Desktop/parallelProgramming/lab1/Modifications/
parth2@bevatron:~/Desktop/parallelProgramming/lab1/Modifications$ chpl -g -o sum1 sum1.chpl
parth2@bevatron:~/Desktop/parallelProgramming/lab1/Modifications$ chpl -g -o sum2 sum2.chpl
parth2@bevatron:~/Desktop/parallelProgramming/lab1/Modifications$ ./sum1 --numLocales=1
The sum is 332833500 (should be 332833500)
```

Then, we will run the sum2 program with the number of locales as 4: -

```
parth2@bevatron:~$ cd Desktop/parallelProgramming/lab1/Modifications/
parth2@bevatron:~/Desktop/parallelProgramming/lab1/Modifications$ chpl -g -o sum1 sum1.chpl
parth2@bevatron:~/Desktop/parallelProgramming/lab1/Modifications$ chpl -g -o sum2 sum2.chpl
parth2@bevatron:~/Desktop/parallelProgramming/lab1/Modifications$ ./sum1 --numLocales=1
The sum is 332833500 (should be 332833500)
parth2@bevatron:~/Desktop/parallelProgramming/lab1/Modifications$ ./sum2 --numLocales=4
The sum is 332833500 (should be 332833500)
```

Now, after adding the writeln statement in sum2.chpl, we get the following output: -

```
parth2@bevatron:~/Desktop/parallelProgramming/lab1/Modifications$ ./sum2 --numLocales=4
i0 computed on locale 0, bevatron.cs.pdx.edu
i188 computed on locale 0, bevatron.cs.pdx.edu
i125 computed on locale 0, bevatron.cs.pdx.edu
i189 computed on locale 0, bevatron.cs.pdx.edu
i126 computed on locale 0, bevatron.cs.pdx.edu
i63 computed on locale 0, bevatron.cs.pdx.edu
i127 computed on locale 0, bevatron.cs.pdx.edu
i190 computed on locale 0, bevatron.cs.pdx.edu
i128 computed on locale 0, bevatron.cs.pdx.edu
i129 computed on locale 0, bevatron.cs.pdx.edu
i191 computed on locale 0, bevatron.cs.pdx.edu
i625 computed on locale 2, boson.cs.pdx.edu
i438 computed on locale 1, cosmotron.cs.pdx.edu
i813 computed on locale 3, catron.cs.pdx.edu
i875 computed on locale 3, catron.cs.pdx.edu
i192 computed on locale 0, bevatron.cs.pdx.edu
i1 computed on locale 0, bevatron.cs.pdx.edu
i375 computed on locale 1, cosmotron.cs.pdx.edu
i563 computed on locale 2, boson.cs.pdx.edu
i938 computed on locale 3, catron.cs.pdx.edu
i193 computed on locale 0, bevatron.cs.pdx.edu
i750 computed on locale 3, catron.cs.pdx.edu
i130 computed on locale 0, bevatron.cs.pdx.edu
i194 computed on locale 0, bevatron.cs.pdx.edu
i131 computed on locale 0, bevatron.cs.pdx.edu
i64 computed on locale 0, bevatron.cs.pdx.edu
i439 computed on locale 1, cosmotron.cs.pdx.edu
i132 computed on locale 0, bevatron.cs.pdx.edu
i500 computed on locale 2, boson.cs.pdx.edu
i440 computed on locale 1, cosmotron.cs.pdx.edu
i133 computed on locale 0, bevatron.cs.pdx.edu
i876 computed on locale 3, catron.cs.pdx.edu
i626 computed on locale 2, boson.cs.pdx.edu
i2 computed on locale 0, bevatron.cs.pdx.edu
i501 computed on locale 2, boson.cs.pdx.edu
i134 computed on locale 0, bevatron.cs.pdx.edu
i250 computed on locale 1, cosmotron.cs.pdx.edu
i564 computed on locale 2, boson.cs.pdx.edu
i195 computed on locale 0, bevatron.cs.pdx.edu
i814 computed on locale 3, catron.cs.pdx.edu
i627 computed on locale 2, boson.cs.pdx.edu
i196 computed on locale 0, bevatron.cs.pdx.edu
i877 computed on locale 3, catron.cs.pdx.edu
i197 computed on locale 0, bevatron.cs.pdx.edu
i688 computed on locale 2, boson.cs.pdx.edu
i565 computed on locale 2, boson.cs.pdx.edu
i198 computed on locale 0, bevatron.cs.pdx.edu
i939 computed on locale 3, catron.cs.pdx.edu
i199 computed on locale 0, bevatron.cs.pdx.edu
```

```
i997 computed on locale 3, catron.cs.pdx.edu
i561 computed on locale 2, boson.cs.pdx.edu
i618 computed on locale 2, boson.cs.pdx.edu
i562 computed on locale 2, boson.cs.pdx.edu
i857 computed on locale 3, catron.cs.pdx.edu
i804 computed on locale 3, catron.cs.pdx.edu
i858 computed on locale 3, catron.cs.pdx.edu
i372 computed on locale 1, cosmotron.cs.pdx.edu
i859 computed on locale 3, catron.cs.pdx.edu
i619 computed on locale 2, boson.cs.pdx.edu
i373 computed on locale 1, cosmotron.cs.pdx.edu
i860 computed on locale 3, catron.cs.pdx.edu
i620 computed on locale 2, boson.cs.pdx.edu
i374 computed on locale 1, cosmotron.cs.pdx.edu
i621 computed on locale 2, boson.cs.pdx.edu
i861 computed on locale 3, catron.cs.pdx.edu
i805 computed on locale 3, catron.cs.pdx.edu
i862 computed on locale 3, catron.cs.pdx.edu
i806 computed on locale 3, catron.cs.pdx.edu
i998 computed on locale 3, catron.cs.pdx.edu
i622 computed on locale 2, boson.cs.pdx.edu
i744 computed on locale 2, boson.cs.pdx.edu
i999 computed on locale 3, catron.cs.pdx.edu
i623 computed on locale 2, boson.cs.pdx.edu
i745 computed on locale 2, boson.cs.pdx.edu
i807 computed on locale 3, catron.cs.pdx.edu
i624 computed on locale 2, boson.cs.pdx.edu
i746 computed on locale 2, boson.cs.pdx.edu
i808 computed on locale 3, catron.cs.pdx.edu
i863 computed on locale 3, catron.cs.pdx.edu
i747 computed on locale 2, boson.cs.pdx.edu
i809 computed on locale 3, catron.cs.pdx.edu
i748 computed on locale 2, boson.cs.pdx.edu
i864 computed on locale 3, catron.cs.pdx.edu
i810 computed on locale 3, catron.cs.pdx.edu
i749 computed on locale 2, boson.cs.pdx.edu
i865 computed on locale 3, catron.cs.pdx.edu
i811 computed on locale 3, catron.cs.pdx.edu
i866 computed on locale 3, catron.cs.pdx.edu
i812 computed on locale 3, catron.cs.pdx.edu
i867 computed on locale 3, catron.cs.pdx.edu
i868 computed on locale 3, catron.cs.pdx.edu
i869 computed on locale 3, catron.cs.pdx.edu
i870 computed on locale 3, catron.cs.pdx.edu
i871 computed on locale 3, catron.cs.pdx.edu
i872 computed on locale 3, catron.cs.pdx.edu
i873 computed on locale 3, catron.cs.pdx.edu
i874 computed on locale 3, catron.cs.pdx.edu
The sum is 332833500 (should be 332833500)
parth2@bevatron:~/Desktop/parallelProgramming/lab1/Modifications$
```

```
OpenSSH SSH client
parth2@ada:~/Desktop/parallelProgramming/lab1/Modifications$ ls -l
total 7609
-rwx------ 1 parth2 them      60 Apr  1 06:49 automate.sh
-rwx------ 1 parth2 them   91384 Apr  1 08:10 sum1
-rw------- 1 parth2 them     523 Apr  1 07:48 sum1.chpl
-rwx------ 1 parth2 them 6952352 Apr  1 08:10 sum1_real
-rwx------ 1 parth2 them   91384 Apr  1 08:24 sum2
-rw------- 1 parth2 them     656 Apr  1 08:24 sum2.chpl
-rw------- 1 parth2 them     588 Apr  1 08:15 sum2_orig.chpl
-rwx------ 1 parth2 them 7889752 Apr  1 08:24 sum2_real
-rw------- 1 parth2 them    1686 Apr  1 06:30 Sum.class
-rw------- 1 parth2 them    1312 Apr  1 06:30 Sum.java
-rw------- 1 parth2 them    2070 Apr  1 01:39 SumModified1.class
-rw------- 1 parth2 them    1522 Apr  1 01:41 SumModified1.java
-rw------- 1 parth2 them    1410 Apr  1 06:42 SumModified2.java
-rw------- 1 parth2 them    1883 Apr  1 06:42 SumModified.class
-rw------- 1 parth2 them    1417 Apr  1 00:09 SumModified.java
-rw------- 1 parth2 them     933 Apr  1 07:37 sum-mpi.c
-rwx------ 1 parth2 them   20192 Apr  1 06:55 sum-omp
-rwx------ 1 parth2 them   19520 Apr  1 06:56 sum-omp0
-rw------- 1 parth2 them    1305 Apr  1 06:58 sum-omp0.s
-rw------- 1 parth2 them     587 Apr  1 05:05 sum-omp.c
-rwx------ 1 parth2 them   20272 Apr  1 05:42 sum-omp-mod
-rw------- 1 parth2 them     702 Apr  1 05:42 sum-omp-mod.c
-rw------- 1 parth2 them    2508 Apr  1 06:57 sum-omp.s
-rwx------ 1 parth2 them   36000 Mar 31 22:03 sum-oo
-rw------- 1 parth2 them    1126 Mar 31 22:03 sum-oo.cpp
-rwx------ 1 parth2 them   17144 Mar 31 22:02 sum-pthd
-rw------- 1 parth2 them    1199 Mar 31 21:56 sum-pthd.c
parth2@ada:~/Desktop/parallelProgramming/lab1/Modifications$ ./sum1 --N=10 -n1 4
<command-line arg>:2: error: Unexpected flag:  "-n1"
parth2@ada:~/Desktop/parallelProgramming/lab1/Modifications$ ./sum1 --N=10 --numLocales=1
The sum is 285 (should be 332833500)
parth2@ada:~/Desktop/parallelProgramming/lab1/Modifications$ ./sum1 --N=100 --numLocales=1
The sum is 328350 (should be 332833500)
parth2@ada:~/Desktop/parallelProgramming/lab1/Modifications$ ./sum1 --N=1000 --numLocales=1
The sum is 332833500 (should be 332833500)
parth2@ada:~/Desktop/parallelProgramming/lab1/Modifications$
```

Also, when you close the connection to the server, you could see the connections being closed on all servers. It will ask to close 4 times

```
parth2@bevatron:~/Desktop/parallelProgramming/lab1/Modifications$ exit
logout
Connection to bevatron.cs.pdx.edu closed.
/bin/sh: 2: boson: not found
/bin/sh: 3: catron: not found
/bin/sh: 4: cosmotron: not found
/bin/sh: 5: cyclotron: not found
/bin/sh: 6: electron: not found
/bin/sh: 7: glueball: not found
/bin/sh: 8: graviton: not found
/bin/sh: 9: hadron: not found
/bin/sh: 10: higgs: not found
/bin/sh: 11: inflaton: not found
/bin/sh: 12: lepton: not found
/bin/sh: 13: luxon: not found
/bin/sh: 14: megatron: not found
/bin/sh: 15: meson: not found
/bin/sh: 16: muon: not found
/bin/sh: 17: neutron: not found
/bin/sh: 18: pentaquark: not found
/bin/sh: 19: pion: not found
/bin/sh: 20: plekton: not found
/bin/sh: 21: positron: not found
/bin/sh: 22: proton: not found
/bin/sh: 23: quark: not found
/bin/sh: 24: skyrmion: not found
/bin/sh: 25: sneutron: not found
/bin/sh: 26: squark: not found
/bin/sh: 27: synchrotron: not found
/bin/sh: 28: tachyon: not found
/bin/sh: 29: tron: not found
/bin/sh: 30: ultron: not found
/bin/sh: 31: wino: not found
Terminated
parth2@bevatron:~/Desktop/parallelProgramming/lab1/Modifications$ exit
logout
Connection to bevatron.cs.pdx.edu closed.
/bin/sh: 2: boson: not found
/bin/sh: 3: catron: not found
/bin/sh: 4: cosmotron: not found
/bin/sh: 5: cyclotron: not found
/bin/sh: 6: electron: not found
/bin/sh: 7: glueball: not found
/bin/sh: 8: graviton: not found
/bin/sh: 9: hadron: not found
/bin/sh: 10: higgs: not found
/bin/sh: 11: inflaton: not found
/bin/sh: 12: lepton: not found
```