

Group Members:

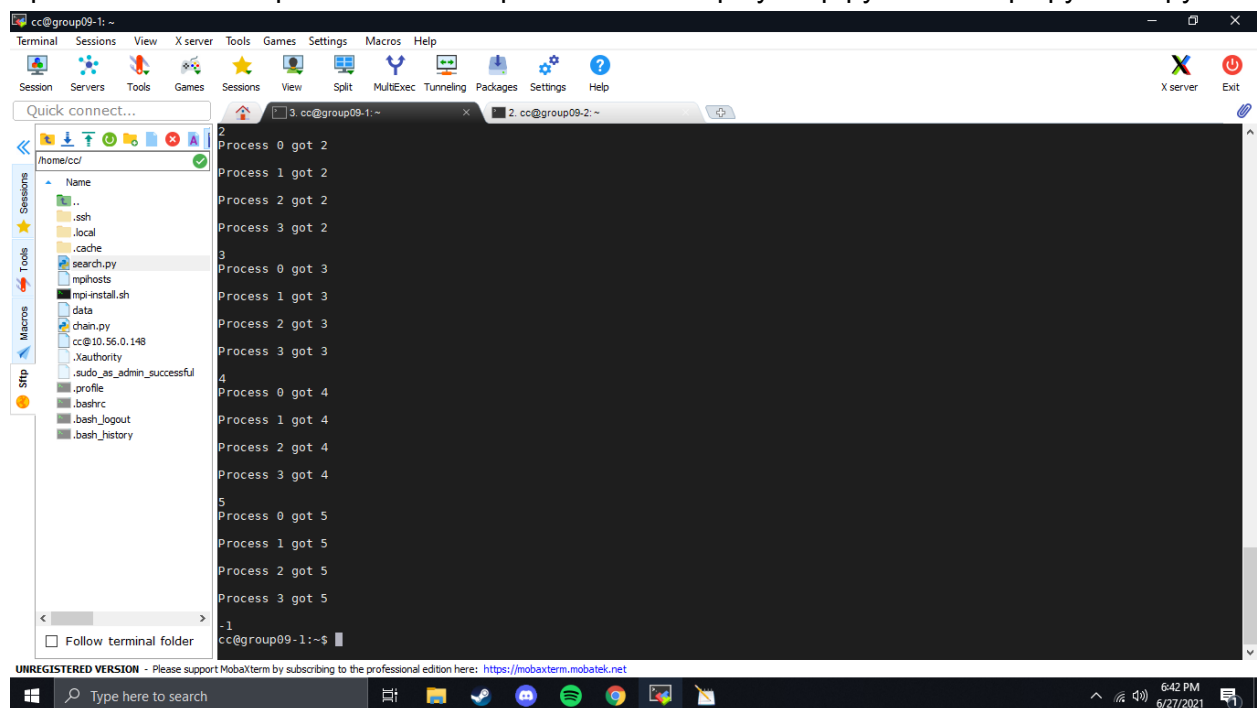
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I did everything for this assignment

Since it was only me doing this assignment I became much better at coding in python which was something I didn't know that well. Also I learned that in python sometimes you divide things and get a float instead of an integer even if you only integers to perform the operation. Spent a good amount of time trying to figure out why it kept returning a float. Another challenge was my processes would search faster than they could get notified to stop so they would end the program and not output anything yet.

Running chain.py

`mpixec -mca bt1 ^openib --hostfile mpihosts -n 4 --display-map python -m mpi4py chain.py`



The screenshot shows a MobaXterm terminal window with a file explorer on the left. The terminal displays the output of the command `mpixec -mca bt1 ^openib --hostfile mpihosts -n 4 --display-map python -m mpi4py chain.py`. The output shows four processes (0, 1, 2, 3) each receiving a number from 2 to 5. The terminal window has a menu bar with options like Terminal, Sessions, View, X server, Tools, Games, Settings, Macros, and Help. The file explorer on the left shows the contents of the `/home/cc/` directory, including files like `search.py`, `mpihosts`, `chain.py`, and `cc@10.56.0.148`. The terminal window is titled `cc@group09-1: ~` and `cc@group09-2: ~`. The status bar at the bottom indicates the terminal is an `UNREGISTERED VERSION` and provides a link to the professional edition.

`mpixec -mca bt1 ^openib --hostfile mpihosts -n 8 --display-map python -m mpi4py chain.py`

```
cc@group09-1: ~  
6  
Process 0 got 6  
Process 1 got 6  
  
Process 2 got 6  
Process 3 got 6  
Process 5 got 6  
Process 4 got 6  
Process 7 got 6  
Process 6 got 6  
  
9  
Process 0 got 9  
Process 1 got 9  
  
Process 2 got 9  
Process 3 got 9  
Process 4 got 9  
Process 5 got 9  
Process 6 got 9  
Process 7 got 9  
  
-1  
cc@group09-1:~$
```

`mpiexec -mca bt1 ^openib --hostfile mpihosts -n 4 --display-map python -m mpi4py search.py`

```
Process 2 reached end of search and couldn't find 11  
Process 3 found 11 on index 9641  
Process 1 stopped searching at index 9498  
Process 0 stopped searching at index 8870  
[group09-1:06189] 3 more processes have sent help message help-mpi-btl-base.txt / btl:no-nics  
[group09-1:06189] Set MCA parameter "orte_base_help_aggregate" to 0 to see all help / error messages  
cc@group09-1:~$ mpiexec -mca bt1 ^openib --hostfile mpihosts -n 4 --display-map python -m mpi4py search.py  
Data for JOB [63490,1] offset 0  
  
===== JOB MAP =====  
  
Data for node: group09-1      Num slots: 2   Max slots: 0   Num procs: 2  
  Process OMPI jobid: [63490,1] App: 0 Process rank: 0  
  Process OMPI jobid: [63490,1] App: 0 Process rank: 1  
  
Data for node: 10.56.0.148   Num slots: 2   Max slots: 0   Num procs: 2  
  Process OMPI jobid: [63490,1] App: 0 Process rank: 2  
  Process OMPI jobid: [63490,1] App: 0 Process rank: 3  
  
=====
```

`mpiexec -mca bt1 ^openib --hostfile mpihosts -n 4 --display-map python -m mpi4py search.py`

The screenshot shows a MobaXterm terminal window with a file explorer sidebar on the left. The terminal displays the output of an MPI search command. The search results show that processes 1, 2, and 3 found the value 11 at index 9641, while process 0 stopped searching at index 9408. A job map is displayed, showing the distribution of processes across two nodes. The terminal also shows a warning message about the Open MPI point-to-point messaging module and a message about the transport used.

```
cc@group09-1: ~  
Terminal Sessions View X server Tools Games Settings Macros Help  
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help  
Quick connect...  
/home/cc/  
Name  
..  
..ssh  
..local  
..cache  
search.py  
mpihosts  
mpi-install.sh  
data  
chain.py  
cc@10.56.0.148  
..xauthority  
..sudo_as_admin_successful  
..profile  
..bashrc  
..bash_logout  
..bash_history  
Follow terminal folder  
UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: https://mobaxterm.mobatek.net  
Type here to search  
6:49 PM 6/27/2021
```

```
Process 1 reached index 9999 of search and couldn't find 11  
Process 2 reached index 9999 of search and couldn't find 11  
Process 3 found 11 on index 9641  
Process 0 stopped searching at index 9408  
[group09-1:06469] 3 more processes have sent help message help-mpi-btl-base.txt / btl:no-nics  
[group09-1:06469] Set MCA parameter "orte_base_help_aggregate" to 0 to see all help / error messages  
cc@group09-1:~$ mpiexec -mca btl ^openib --hostfile mpihosts -n 4 --display-map python -m mpi4py search.py  
Data for JOB [63867,1] offset 0  
===== JOB MAP =====  
Data for node: group09-1      Num slots: 2    Max slots: 0    Num procs: 2  
  Process OMPI jobid: [63867,1] App: 0 Process rank: 0  
  Process OMPI jobid: [63867,1] App: 0 Process rank: 1  
Data for node: 10.56.0.148    Num slots: 2    Max slots: 0    Num procs: 2  
  Process OMPI jobid: [63867,1] App: 0 Process rank: 2  
  Process OMPI jobid: [63867,1] App: 0 Process rank: 3  
=====
```

[[63867,1],3]: A high-performance Open MPI point-to-point messaging module was unable to find any relevant network interfaces:
Module: OpenFabrics (openib)
Host: group09-2
Another transport will be used instead, although this may result in lower performance.

Process 0 stopped searching at index 8657
Process 3 found 11 on index 9641
Process 2 reached index 9999 of search and couldn't find 11
Process 1 stopped searching at index 9236
[group09-1:06478] 3 more processes have sent help message help-mpi-btl-base.txt / btl:no-nics
[group09-1:06478] Set MCA parameter "orte_base_help_aggregate" to 0 to see all help / error messages
cc@group09-1:~\$

`mpiexec -mca btl ^openib --hostfile mpihosts -n 4 --display-map python -m mpi4py search.py`