BIT 477/577 Metagenomics QIIME Analysis

Before doing the tutorial, run the analysis. It may take up to 2 hours to run, so get it started. During the tutorial, you will go through the steps one by one with a smaller data set to see what the script you submitted is doing.

Modify the highlighted elements with your Unity ID.

Log in to the cluster and submit the job:

- Open a terminal in Mac or open MobaXterm in Windows
- log in with
  `ssh unityID@login.hpc.ncsu.edu`
- change the working directory to the scratch space for bit577f19:
  `cd /share/bit577f19`
- If you don't have one already, create a directory with your unityID, and cd into it:
  `mkdir $USER`
  `cd $USER`
- Create a run directory and a tutorial directory, then cd to the run directory:
  `mkdir run`
  `mkdir tutorial`
  `cd run`
- Copy the LSF run script to the directory:
  `cp ../../submit.csh .`
- Look at the contents of the script with `less`, type `[space]` to page through, type q to quit:
  `less submit.csh`
- Modify the script by changing the values of **`trim_left`** and **`trunc_len`** with the text editor nano, hit `control-x`, save the file `[y]`, keep the file name and exit `[enter]`:
  `nano submit.csh`
- Submit the job to LSF:
  `bsub < submit.csh`
- Check if the job is running with bjobs. Hit the up arrow key to repeat the command if the job is still in the PEND (pending) state:
  `bjobs`
- Once the job is in the RUN (running) state, look at it with the longer listing of bjobs:
  `bjobs -l`
- Also when in the run state, check the contents of the directory every so often to see what QIIME2 has printed out. The listing will be in long form, in reverse time order, with human readable file sizes. Also check that the job is still running with bjobs.
  `ls -lrth`
  `bjobs`
- That's it! Now start the Tutorial to learn the steps in the LSF script that you are running.

After completing the tutorial, you will move all of the visualization files to your local machine. All of the data is 3.2G, so we will not want to transfer all of that data at the same time.

First, change directory back to your run directory:

```
cd /share/bit577f19/$USER/run
```

Look and see your files:

```
ls -lrth
```

Do:

- create a directory with your visualization files. Put your Unity ID in the name:
  ```
  mkdir $USER-viz
  ```
- Copy all of the visualization files to that directory:
  ```
  cp *.qzv $USER-viz
  cp $USER-core-metrics-results/*.qzv $USER-viz
  ```
- Tar the files into a single file:
  ```
  tar -cvf $USER-viz.tar $USER-viz
  ```
- Look at the size of the file
  ```
  ls -lh $USER-viz.tar
  ```
- Now open another terminal on your local machine and scp the files locally and untar the file:
  ```
  scp unityid@login.hpc.ncsu.edu:/share/bit577f19/unityid/run/unityid-viz.tar .
  tar -xvf unityid-viz.tar
  ```
- Use QIIME2view to look at the files.