Introduction to R - Day 6

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Part 1- Learning R in RStudio

**** Before beginning this worksheet, make sure RStudio is downloaded on your local computer**

1. Go to the sr2023 day 6 GitHub page
2. Click on the folder that is called “scripts”
3. Click on the script titled “Learning_R.R”
4. Download and open Learning_R.R in RStudio
5. Complete Learning_R.R

Part 2- Writing an R script to submit on a supercomputer

1. Log in to AWS
2. cd into the sr2023 repository and run a “git pull”

```
[GEFB2000@ip-172-31-29-36 ~ $ cd sr2023/
[GEFB2000@ip-172-31-29-36 ~/sr2023 $ git pull
```

3. cd into /scratch/Users/<your_username>/
4. Use the mkdir command to make a folder called “workshop-day6”
5. Inside your workshop-day6 folder, make the folders “scripts”, “eofiles”, & “results”

```
[GEFB2000@ip-172-31-29-36 ~/sr2023 $ cd /scratch/Users/GEFB2000/
[GEFB2000@ip-172-31-29-36 /scratch/Users/GEFB2000 $ mkdir workshop-day6
[GEFB2000@ip-172-31-29-36 /scratch/Users/GEFB2000/workshop-day6 $ mkdir scripts eofiles results
```

6. Use the rsync or scp command to copy Learning_R_submit_aws.R and Submit_Rscript.sbatch from /Users/<your_username>/sr2023/day06/scripts, into the scripts directory in /scratch/Users/<your_username>/workshop-day6 you just made.

7. Go to /scratch/Users/<your_username>/workshop-day6/scripts. Use vim to open and edit the Learning_R_submit_aws.R file. Add your own working directory path (it should be something along the lines of: /scratch/Users/<your_username>/workshop-day6/results).

```
## Learning R : example for submitting in sbatch
## Author: Taylor Jones (2022), Rutendo Sigauke (2023)

################################################################################
## In this script we plan to submit the R script as an SBATCH job            ##
## This is useful for when you have a computationally intensive job that      ##
## requires more resources than on your personal computer.                    ##
## For example, counting reads in a bam file over gene features for RNA-seq. ##
################################################################################

################################################################################
# Set your working directory first
workdir <- '/path/to/working/directory/'
setwd(workdir)
getwd()
```

8. Look through the rest of the script before saving and exiting vim, to make sure you know what the code is doing and where your output will be saving to.

9. Now use vim to open/edit the Submit_Rscript.sbatch file. This is the sbatch script we will be using to submit our code to the supercomputer. Edit the script by adding your job name, email, eofiles path, and path to Learning_R_submit_aws.R.

** Note: the command Rscript runs R scripts or R commands directly from the bash shell

```
#!/bin/bash
#SBATCH --job-name=<job_name>
#SBATCH --mail-type=ALL                                  # Mail events (NONE, BEGIN, END, FAIL, ALL)
#SBATCH --mail-user=<your_email>                         # Where to send mail
#SBATCH --nodes=1                                        # Numbers of nodes
#SBATCH --ntasks=1                                       # Number of CPU (tasks)
#SBATCH --time=00:05:00                                  # Time limit hrs:min:sec
#SBATCH --partition=compute                              # Partition/queue requested on server
#SBATCH --mem=3mb                                        # Memory limit
#SBATCH --output=/scratch/Users/<your_username>/workshop-day6/eofiles/%x_%j.out
#SBATCH --error=/scratch/Users/<your_username>/workshop-day6/eofiles/%x_%j.err

################################################################################
###################### initialize directories  ##################################


Rscript /path/to/Learning_R_submit_aws.R
```

10. Once you are happy with your Learning_R_submit_aws.R and Submit_Rscript.sbatch scripts, submit Submit_Rscript.sbatch.

11. If the script worked, back up your results to your home directory (/Users/<your_username>/sr2023/day06).

12. Use rsync to copy mtcars.csv & mtcars_mpg_wt_scatterplot.png from AWS to your local computer to view.