Github Repo Clone Command:

1. git clone https://github.com/projectchrono/chrono.git

Initial Build Commands (prior to scratch folder):

Prior Issues: finding eigen, thrust, and MPI
Solution (steps 1-3 need to be run before cmake, if already done, skip to step 4):

1. Eigen3_ROOT="/shared/common/eigen-3.4.0/"
2. DTHRUST_DIR=/usr/local/cuda/targets/x86_64-linux/include/thrust/
3. module load mpi
4. cd chrono
5. mkdir build && cd build
6. srun --gres=gpu cmake ..
   -DTHRUST_INCLUDE_DIR=/usr/local/cuda/targets/x86_64-linux/include/
   -DEIGEN3_INCLUDE_DIR="/shared/common/eigen-3.4.0/"
   -DCH_ENABLE_MODULE_GPU=ON -DCH_ENABLE_MODULE_VEHICLE=ON
   -DENABLE_MODULE_MULTICORE=ON
7. srun make -j

Default Demo Commands:

1. From build, cd into bin
2. Run the command “srun --gres=gpu ./demo_[module]_[name_of_test] to run a given demo
3. Demo options will depend on which modules you have loaded (VEHICLE, GPU, Etc.)

Copy and paste this into a .sh file to build clean chrono project

```
#!/bin/bash

echo "Running createchrono.sh script..."
rm -rf ./chrono

git clone https://github.com/projectchrono/chrono.git
cd chrono
Eigen_ROOT="/shared/common/eigen-3.4.0/"
THRUST_DIR=/usr/local/cuda/targets/x86_64-linux/include/

module load mpi
mkdir build
cd build
srun --gres=gpu cmake .. \
   -DTHRUST_INCLUDE_DIR="$THRUST_DIR" \
   -DEIGEN3_INCLUDE_DIR="$Eigen_ROOT" \
   -DCH_ENABLE_MODULE_GPU=ON \
   -DCH_ENABLE_MODULE_VEHICLE=ON \
```

```
export THRUST_DIR="$THRUST_DIR"
srun --gres=gpu make -j
cd ../..
```

Onyx Ball Demo Compile Command:

```
srun --gres=gpu g++ ballDemo.cpp -o ballDemo \
 -I/nfs/home/benne2ml/470FinalProject/chrono/src \
 -I/nfs/home/benne2ml/470FinalProject/chrono/build \
 -I/shared/common/eigen-3.4.0/ \
 -I/nfs/home/benne2ml/470FinalProject/blaze/ \
 -I/nfs/home/benne2ml/470FinalProject/chrono/src/chrono/collision/bullet \
 -L/nfs/home/benne2ml/470FinalProject/chrono/build/lib \
 -lChrono_multicore -lChrono_core -pthread

export
LD_LIBRARY_PATH=/nfs/home/benne2ml/470FinalProject/chrono/build/lib:$LD_LIBRARY_PAT
H
```

Josh Ball Demo Compile Command:

```
srun --gres=gpu g++ ballDemo.cpp -o ballDemo \
 -I/nfs/home/derrowjb/CS470/Chrono/chrono/src \
 -I/nfs/home/derrowjb/CS470/Chrono/chrono/build \
 -I/shared/common/eigen-3.4.0/ \
 -I/nfs/home/derrowjb/CS470/Chrono/blaze-3.8/ \
 -I/nfs/home/derrowjb/CS470/Chrono/chrono/src/chrono/collision/bullet \
 -L/nfs/home/derrowjb/CS470/Chrono/chrono/build/lib \
 -lChronoEngine_multicore -lChronoEngine -pthread
```

Run Ball Demo Command:

./ballDemo [number of threads] [number of balls] [simulation duration (sec)]