How to use Docker to work on Lab 7:

1. Install Docker tool box on your computer.(Or, if you want to use your project server, e.g. proj-319-001.cs.iastate.edu, docker has been installed for you. And skip step 2)
2. Run Docker Quickstart Terminal

3. Create a docker image(image will be pulled from Docker Hub)(You have to use sudo on our cs server machine. E.g: sudo docker create cs319/7-antlr .)

```
$ docker create cs319/7-antlr .
```

4. Show images on your computer

```
$ docker images
time="2017-03-27T22:41:05-05:00" level=info msg="Unable to use system certificat
e pool: crypto/x509: system root pool is not available on Windows"
REPOSITORY          TAG                 IMAGE ID            CREATED
SIZE
cs319/7-antlr       latest              bd93830f60fb        11 hours ago
646 MB
```

5. Build and run your container with bash

```
$ docker run -i -t bd93 bash
time="2017-03-27T22:45:38-05:00" level=info msg="Unable to use system certificat
e pool: crypto/x509: system root pool is not available on Windows"
root@a5d7da32d152:/usr/src/java#
```

6. Run antlr in the container

```
root@a5d7da32d152:/usr/src/java# antlr4 E1_Hello.g4
root@a5d7da32d152:/usr/src/java# javac *.java
root@a5d7da32d152:/usr/src/java# grun E1_Hello tokens < E1_Hello.in
line 1:0 token recognition error at: 'H'
line 1:1 token recognition error at: 'e'
line 1:2 token recognition error at: 'l'
line 1:3 token recognition error at: 'l'
line 1:4 token recognition error at: 'o'
matching WS rule
line 2:0 token recognition error at: 'H'
line 2:1 token recognition error at: 'E'
line 2:2 token recognition error at: 'L'
line 2:3 token recognition error at: 'L'
line 2:4 token recognition error at: 'O'
matching WS rule
matching HELLO rule:hello
matching WS rule
line 4:0 token recognition error at: 'H'
line 4:1 token recognition error at: 'e'
line 4:2 token recognition error at: 'L'
line 4:3 token recognition error at: 'L'
line 4:4 token recognition error at: 'o'
matching WS rule
root@a5d7da32d152:/usr/src/java#
```

Exit and stop the container

```
root@a5d7da32d152:/usr/src/java# exit
exit

Zelong@Zelong-PC MINGW64 ~
$ _
```

7. Start the container
   First: docker ps -a
   To show all the containers on your computer

```
$ docker ps -a
time="2017-03-27T22:50:43-05:00" level=info msg="Unable to use system certificat
e pool: crypto/x509: system root pool is not available on Windows"
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS                      PORTS               NAMES
a5d7da32d152        bd93                "bash"              5 minutes ago
Exited (0) 32 seconds ago                       focused_blackwell
46324d5938f5        cs319/7-antlr       "."                 17 minutes ago
Created                                         lonely_northcutt
```

   Then, start your lab7 container

```
$ docker start a5d
time="2017-03-27T22:51:40-05:00" level=info msg="Unable to use system certificat
e pool: crypto/x509: system root pool is not available on Windows"
a5d
```

8. Attach your container: (attach the container that has the command “bash”)
   I am getting an error that “You cannot attach to a stopped container, start it first”

```
$ docker attach a5d
time="2017-03-27T22:54:04-05:00" level=info msg="Unable to use system certificat
e pool: crypto/x509: system root pool is not available on Windows"
root@a5d7da32d152:/usr/src/java#
```

   Now you can continue your work on lab7.

Text editor Nano has been installed into this docker images. You can use Nano to create and edit your .g4 files.

How to submit: Copy your .g4 files from the container to the host machine by using command
Exit the container first, then,
docker cp <containerId>:/file/path/within/container /host/path/target
e.g.

```
Zelong@Zelong-PC MINGW64 ~
$ docker cp a5d:usr/src/java/E1_Hello.g4 /docker
```

This will copy E1_Hello.g4 into folder c:/docker in windows(You have to have a folder named “docker” before you copy)