Running gemOS Code

Once you have setup the container, you can follow the following instructions to run **gemOS**. Extract the provided zip to a folder, let's say **Assignment_2**. All source files will be inside `Assignment_2/gemOS/src` folder. Now, start your container using below command:

```
$ docker start your_container_name
```

Copy **Assignment_2** folder to the container using below command and enter **password** as **cs330**:

```
$ scp -P 2020 -r PATH_TO_ASSIGNMENT2_FOLDER osws@localhost:/home/osws
```

Now, get the container shell using below command (enter **password** as **cs330**) :

```
$ ssh -p 2020 osws@localhost
```

With `ls` command inside container shell, you will see **Assignment_2** and **gem5** folders in your home directory of the container.
Now, to generate kernel binary file, go to `Assignment_2/gemOS/src` directory inside the container and run `make` command as following,

```
$ pwd
/home/osws
$ cd Assignment_2/gemOS/src
$ make
```

This will generate **gemOS.kernel** binary file in the `Assignment_2/gemOS/src` directory. To run the **gemOS.kernel**, give its path to `gem5` running script as following,

```
$ pwd
/home/osws
$ cd gem5
$ ./run.sh /home/osws/Assignment_2/gemOS/src/gemOS.kernel
```

Now open new terminal window or tab and get the container shell using ssh command mentioned above (`ssh -p 2020 osws@localhost`) and run the below command inside container shell to connect with the shell of **gemOS**:

```
$ telnet localhost 3456
```

After connecting with **gemOS** shell, type `init` command in **gemOS** shell, which will run your userspace program `Assignment_2/gemOS/src/user/init.c`.
Note:

- You need to write your test cases in **Assignment_2/gemOS/src/user/init.c** to validate your implementation. The sample test-cases (in `Assignment_2/gemOS/src/user/`) can be copied into **Assignment_2/gemOS/src/user/init.c** to make use of them.
- You need to repeat all steps from the **gemOS** compilation step (`$ make`) onwards every time you modify the **gemOS** source code and want to run the **gemOS**.
- You can also copy your files or folder to the host machine from the container using the same `scp` command. For this, enter the container shell (`ssh -p 2020 osws@localhost`) and use following command:

  ```
  $ scp -r PATH_TO_THE_ASSIGNMENT_FOLDER host_machine_user@host_ip:host_machine_dir
  # here host_ip will not be localhost. You can find host_ip using ifconfig command.
  ```