Course Name
Networking and Data Security (COMP-8677)

Document Type
Lab Assignment 6: Client - Server Communication (TLS Establishment and Messages)

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References: -

1. Lab Manual for Lab 6 from Brightspace
2. Lecture Notes for Lab 6 from Brightspace
3. Programs(Client / Server) for Lab 6 from Brightspace
4. Python Libraries

One Drive Link for Python Program, Lab 6 Solution(Word File and PDF Document) for Lab 6 Work:-

Networking and Data Security - Lab 6 - Submitted to Doc

Docker Commands Screenshots:-

```
[11/04/23]seed@VM:~/.../TLS_CS$ docker-compose build
Client1 uses an image, skipping
Client2 uses an image, skipping
Client3 uses an image, skipping
Server uses an image, skipping
[11/04/23]seed@VM:~/.../TLS_CS$ docker-compose up
Starting client3-10.9.0.7 ... done

Starting client2-10.9.0.6 ... done

Starting server-10.9.0.2  ... done

Starting client1-10.9.0.5 ... done

Attaching to server-10.9.0.2, client3-10.9.0.7, clie
nt1-10.9.0.5, client2-10.9.0.6
```

```
[11/05/23]seed@VM:~/.../certS$ dockps
8d8bc9ccf471  client2-10.9.0.6
68ed89aa35bd  client3-10.9.0.7
6ea6e6dac201  client1-10.9.0.5
55c853ce0279  server-10.9.0.2
```

Client – Server Communication

Client

```
[11/04/23]seed@VM:~/.../certS$ docksh 55
root@55c853ce0279:/# cd volumes/certS
root@55c853ce0279:/volumes/certS# python3 client.py client1-10.9.0.
5
Please enter message (or enter 'exit' to quit):- Manjinder Singh
Host Name- client1-10.9.0.5
Received Response:- hgniS rednijnaM
Please enter message (or enter 'exit' to quit):- How are you?
Host Name- client1-10.9.0.5
Received Response:- ?uoy era woH
Please enter message (or enter 'exit' to quit):- lnu8@uwindsor.ca
Host Name- client1-10.9.0.5
Received Response:- ac.rosdniwu@8unl
Please enter message (or enter 'exit' to quit):- 110097177
Host Name- client1-10.9.0.5
Received Response:- 771790011
```

Server

```
root@6ea6e6dac201:/volumes/certS# python
server.py
Enter PEM pass phrase:
TLS connection established successfully.
Received Response:- Manjinder Singh
Reversed Response:- hgniS rednijnaM
TLS connection established successfully.
Received Response:- How are you?
Reversed Response:- ?uoy era woH
TLS connection established successfully.
Received Response:- lnu8@uwindsor.ca
Reversed Response:- ac.rosdniwu@8unl
TLS connection established successfully.
Received Response:- 110097177
Reversed Response:- 771790011
```

Multiple Clients(2) and a Server Communication

Client 1

```
[11/04/23]seed@VM:~/.../certS$ docksh 55
root@55c853ce0279:/# cd volumes/certS/
root@55c853ce0279:/volumes/certS# ls
Test.crt  client.py    demo_ca.key  server.py.save
Test.key  demo_ca.crt  server.py
root@55c853ce0279:/volumes/certS# python3 client.py
 client1-10.9.0.5
Please enter message (or enter 'exit' to quit):- He
llo
Host Name- client1-10.9.0.5
Received Response:- olleH
Please enter message (or enter 'exit' to quit):-
```

Client 2

```
[11/04/23]seed@VM:~/.../certS$ docksh 8d
root@8d8bc9ccf471:/# cd volumes/certS/
root@8d8bc9ccf471:/volumes/certS# python3 client
.py
root@8d8bc9ccf471:/volumes/certS# python3 client
.py client1-10.9.0.5
Please enter message (or enter 'exit' to quit):-
 How are you?
Host Name- client1-10.9.0.5
Received Response:- ?uoy era woH
Please enter message (or enter 'exit' to quit):-
```

Server

```
[11/04/23]seed@VM:~/.../certS$ docksh 6e
root@6ea6e6dac201:/# cd volumes/certs/
bash: cd: volumes/certs/: No such file or
directory
root@6ea6e6dac201:/# cd volumes/certS/
root@6ea6e6dac201:/volumes/certS# ls
Test.crt   demo_ca.crt  server.py.save
Test.key   demo_ca.key
client.py  server.py
root@6ea6e6dac201:/volumes/certS# python s
erver.py
bash: python: command not found
root@6ea6e6dac201:/volumes/certS# python3
server.py
Enter PEM pass phrase:
TLS connection established successfully.
Received Response:- Hello
Reversed Response:- olleH
TLS connection established successfully.
Received Response:- How are you?
Reversed Response:- ?uoy era woH
```