Q1 Echo

Server code

```python
#!/usr/bin/python
import SocketServer
import string

class MyServer(SocketServer.BaseRequestHandler):
    def handle(self):
        returnStr = self.request.recv(1024).strip()
        print("{} wrote:".format(self.client_address[0]))
        print(returnStr)
        if "SECRET" in returnStr :
            table = string.maketrans('','')
            nodigits = returnStr.translate(table,string.digits)
            returnStr = returnStr.translate(table,nodigits)
            digitlen = str(len(returnStr))
            returnStr = "Digits: "+returnStr+" Count: "+digitlen
            self.data = returnStr
            self.request.sendall(self.data)
        else:
            self.request.sendall("no secret code contained")

if __name__ == "__main__":
    HOST, PORT = "localhost", 9999
    server = SocketServer.TCPServer((HOST, PORT), MyServer)
    server.serve_forever()
    server.server_close()
```

Client code

```python
#!/usr/bin/python
import socket
import sys
HOST, PORT = "localhost", 9999
data = "".join(sys.argv[1:])
sock = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
sock.connect((HOST, PORT))
sock.sendall(bytes(data + "\n"))
received = str(sock.recv(1024))
print("Sent:     {}".format(data))
print("Received: {}".format(received))
```

Output on R2 and R4

```
server = SocketServer.TCPServer((HOST,PORT),MyServer)
server.serve_forever()
server.serve_close()
```

```
"./echo_server.py" 25 lines, 897 characters written
student@CN-R2:~$ ls -l
total 336
-rw-rw-r-- 1 student student 288181 Jun  6 00:56 1.txt
drwxr-xr-x 2 student student   4096 Oct  6 01:16 Desktop
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Documents
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Downloads
-rwxrwxrwx 1 root    root       897 Nov 30 01:08 echo_server.py
-rw-r--r-- 1 student student   8980 Jun  5 21:52 examples.desktop
-rwxrwxrwx 1 root    root       453 Nov 30 01:01 filetransfer_server.py
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Music
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Pictures
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Public
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Templates
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Videos
student@CN-R2:~$ ./echo_server.py
10.10.10.18 wrote:
123abc5
10.10.10.18 wrote:
123abc5SECRET
10.10.10.18 wrote:
123abc5SECRET12345kkk
```

```
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Music
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Pictures
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Public
-rw-r--r-- 1 root    root        62 Nov 30 00:57 send.txt
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Templates
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Videos
student@CN-R4:~$ ls -l
total 340
-rw-rw-r-- 1 student student 288181 Jun  6 00:56 1.txt
drwxr-xr-x 2 student student   4096 Jun 15 15:20 Desktop
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Documents
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Downloads
-rwxrwxrwx 1 root    root       318 Nov 30 00:51 echo_client.py
-rw-r--r-- 1 student student   8980 Jun  5 21:52 examples.desktop
-rwxrwxrwx 1 root    root       309 Nov 30 00:55 filetransfer_client.py
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Music
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Pictures
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Public
-rw-r--r-- 1 root    root        62 Nov 30 00:57 send.txt
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Templates
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Videos
student@CN-R4:~$ ls -l
total 340
-rw-rw-r-- 1 student student 288181 Jun  6 00:56 1.txt
drwxr-xr-x 2 student student   4096 Jun 15 15:20 Desktop
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Documents
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Downloads
-rwxrwxrwx 1 root    root       318 Nov 30 00:51 echo_client.py
-rw-r--r-- 1 student student   8980 Jun  5 21:52 examples.desktop
-rwxrwxrwx 1 root    root       309 Nov 30 00:55 filetransfer_client.py
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Music
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Pictures
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Public
-rw-r--r-- 1 root    root        62 Nov 30 00:57 send.txt
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Templates
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Videos
student@CN-R4:~$ ./echo_client.py 123abc5
Sent:  123abc5
Reveived:  no secret code contained
student@CN-R4:~$ ./echo_client.py 123abc5SECRET
Sent:  123abc5SECRET
Reveived:  Digits: 1235 Count: 4
student@CN-R4:~$ 1231kjdasn5678SECRET
1231kjdasn5678SECRET: command not found
student@CN-R4:~$ ./echo_client.py 123abc5SECRET12345kkk
Sent:  123abc5SECRET12345kkk
Reveived:  Digits: 123512345 Count: 9
student@CN-R4:~$
```

Q2 File Transfer

Server code

```python
1   #!/usr/bin/python
2   import SocketServer
3   import string
4
5   class MyServer(SocketServer.BaseRequestHandler):
6       def handle(self):
7           f = open("received.txt","a")
8           content = self.request.recv(1024)
9           print("received: "+content)
10          f.write(content)
11          f.close()
12
13  if __name__ == "__main__":
14      HOST, PORT = "localhost", 9999
15      server = SocketServer.TCPServer((HOST, PORT), MyServer)
16      server.serve_forever()
17      server.server_close()
```

Client code

```python
1   #!/usr/bin/python
2   import socket
3   import sys
4   HOST, PORT = "localhost", 9999
5   sock = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
6   sock.connect((HOST, PORT))
7   f = open('send.txt','r')
8   while 1:
9       line = f.readline()
10      if not line:
11          break
12      print("sent:"+line)
13      sock.send(bytes(line))
14  sock.close()
```

Output on R2 and R4

```
Ubuntu 16.04.2 LTS CN-R4 tty1

CN-R4 login: student
Password:
Last login: Thu Nov 30 00:48:06 EST 2017 on tty1
Welcome to Ubuntu 16.04.2 LTS (GNU/Linux 4.8.0-56-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

342 packages can be updated.
131 updates are security updates.

student@CN-R4:~$ ls -l
total 340
-rw-rw-r-- 1 student student 288181 Jun  6 00:56 1.txt
drwxr-xr-x 2 student student   4096 Jun 15 15:20 Desktop
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Documents
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Downloads
-rwxrwxrwx 1 root    root       318 Nov 30 00:51 echo_client.py
-rw-r--r-- 1 student student   8980 Jun  5 21:52 examples.desktop
-rwxrwxrwx 1 root    root       310 Nov 30 01:28 filetransfer_client.py
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Music
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Pictures
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Public
-rw-r--r-- 1 root    root        62 Nov 30 00:57 send.txt
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Templates
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Videos
student@CN-R4:~$ ./filetransfer_client.py
sent:This is a line.

sent:This is another line.

sent:This is the third line.

student@CN-R4:~$ ^C
student@CN-R4:~$ _
```

```
"./filetransfer_server.py" 17 lines, 455 characters written
student@CN-R2:~$ ls -l
total 336
-rw-rw-r-- 1 student student 288181 Jun  6 00:56 1.txt
drwxr-xr-x 2 student student   4096 Oct  6 01:16 Desktop
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Documents
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Downloads
-rwxrwxrwx 1 root    root       897 Nov 30 01:08 echo_server.py
-rw-r--r-- 1 student student   8980 Jun  5 21:52 examples.desktop
-rwxrwxrwx 1 root    root       455 Nov 30 01:31 filetransfer_server.py
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Music
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Pictures
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Public
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Templates
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Videos
student@CN-R2:~$ ./filetransfer_server.py
received: This is a line.
This is another line.
This is the third line.

^CTraceback (most recent call last):
  File "./filetransfer_server.py", line 16, in <module>
    server.serve_forever()
  File "/usr/lib/python2.7/SocketServer.py", line 231, in serve_forever
    poll_interval)
  File "/usr/lib/python2.7/SocketServer.py", line 150, in _eintr_retry
    return func(*args)
KeyboardInterrupt
student@CN-R2:~$ ls
1.txt      Documents  echo_server.py     filetransfer_server.py  Pictures   received.txt  Vide
Desktop    Downloads  examples.desktop   Music                   Public     Templates
student@CN-R2:~$ _
```

```
This is a line.
This is another line.
This is the third line.
```

```
Ubuntu 16.04.2 LTS CN-R4 tty1

CN-R4 login: student
Password:
Last login: Thu Nov 30 00:48:06 EST 2017 on tty1
Welcome to Ubuntu 16.04.2 LTS (GNU/Linux 4.8.0-56-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

342 packages can be updated.
131 updates are security updates.

student@CN-R4:~$ ls -l
total 340
-rw-rw-r-- 1 student student 288181 Jun  6 00:56 1.txt
drwxr-xr-x 2 student student   4096 Jun 15 15:20 Desktop
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Documents
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Downloads
-rwxrwxrwx 1 root    root       318 Nov 30 00:51 echo_client.py
-rw-r--r-- 1 student student   8980 Jun  5 21:52 examples.desktop
-rwxrwxrwx 1 root    root       310 Nov 30 01:28 filetransfer_client.py
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Music
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Pictures
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Public
-rw-r--r-- 1 root    root        62 Nov 30 00:57 send.txt
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Templates
drwxr-xr-x 2 student student   4096 Jun  6 00:39 Videos
student@CN-R4:~$ ./filetransfer_client.py
sent:This is a line.

sent:This is another line.

sent:This is the third line.

student@CN-R4:~$ ^C
student@CN-R4:~$
```

```
"received.txt" 3 lines, 62 characters
```