

School of Information Technology and Engineering
ITE3001- Data Communication and Computer Networks Lab

Assessment – II

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1. Write a TCP/IP based client-server program to display the age of the student from the DOB using TCP client and server.

Server

```
import socket
import datetime
s = socket.socket()
host = socket.gethostname()
port = 12345
s.bind((host,port))
s.listen(5)
while True:
    c,addr = s.accept()
    print ('Got connection from',addr)
    x = input('Enter date in format yyyy-mm-dd :')
    c.send(x.encode())
    c.close()
```

Client

```
import socket
import datetime
s=socket.socket()
host=socket.gethostname()
```

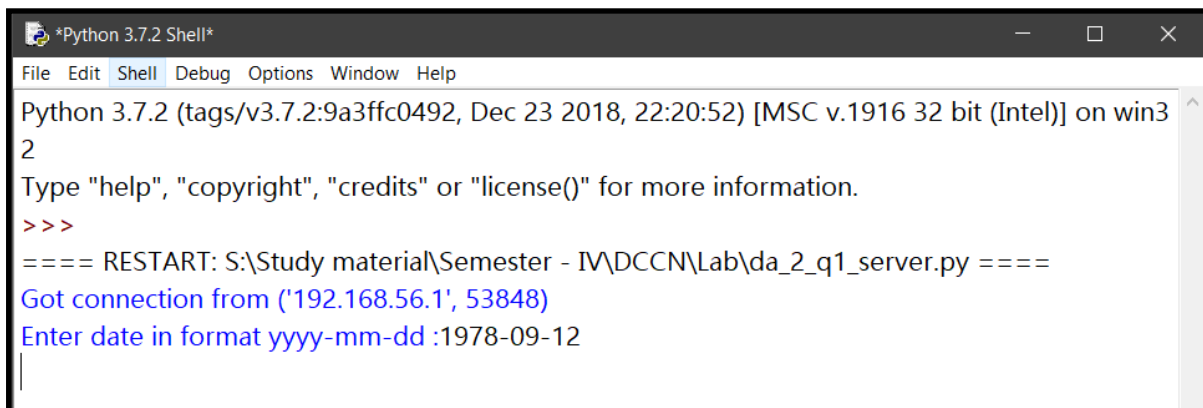
```

port=12345
s.connect((host,port))
d = ((s.recv(1024)).decode())
t = str(datetime.datetime.now())
t = t[:10]
y1 = int(d[:4])
y2 = int(t[:4])
m1 = int(d[5:7])
m2 = int(t[5:7])
d1 = int(d[8:])
d2 = int(t[8:])
age = y2-y1
if m2<m1:
    age -=1
elif m1==m2:
    if d2<d1:
        age-=1
print(age)
s.close

```

OUTPUT QUESTION 1

Server Output

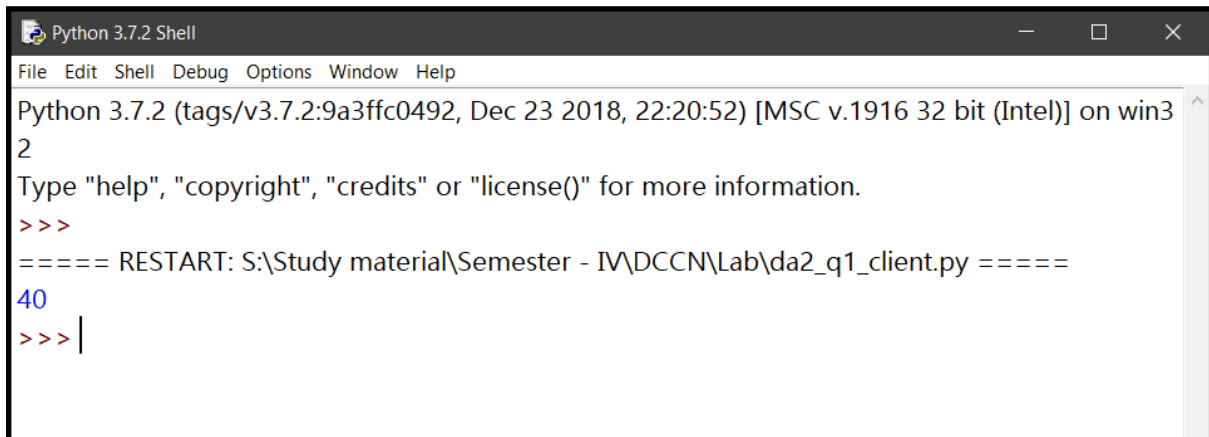


```

Python 3.7.2 Shell
File Edit Shell Debug Options Window Help
Python 3.7.2 (tags/v3.7.2:9a3ffc0492, Dec 23 2018, 22:20:52) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
==== RESTART: S:\Study material\Semester - IV\DCCN\Lab\da_2_q1_server.py ====
Got connection from ('192.168.56.1', 53848)
Enter date in format yyyy-mm-dd :1978-09-12

```

Client Output



```
Python 3.7.2 Shell
File Edit Shell Debug Options Window Help
Python 3.7.2 (tags/v3.7.2:9a3ffc0492, Dec 23 2018, 22:20:52) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
==== RESTART: S:\Study material\Semester - IV\DCCN\Lab\da2_q1_client.py ====
40
>>> |
```

2. Write an online dictionary application by using TCP client-server program. User will search the dictionary (available at server) and get the meaning of the words.

Server

```
import socket
import datetime

s = socket.socket()
host = socket.gethostname()
port = 12345
s.bind((host,port))
s.listen(5)

words = {
    'account' : 'an arrangement with a bank to keep
your money there and allow you to take it out when
you need to.',
    'air': 'the mixture of gases that surrounds the
Earth and that we breathe.',
}

while True:
```

```

c,addr = s.accept()
print ('Got connection from',addr)
y = (c.recv(1024).decode())
if y in words:
    c.send((words[y]).encode())
else:
    c.send(('Word does not exists in
dictionary').encode())
c.close()

```

Client

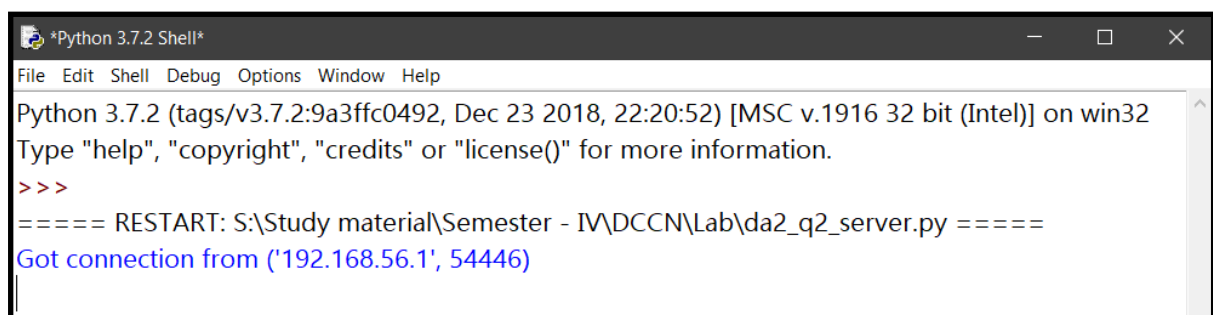
```

import socket
import datetime
s=socket.socket()
host=socket.gethostname()
port=12345
s.connect((host,port))
x = input('Enter the word to search :')
s.send(x.encode())
d = ((s.recv(1024)).decode())
print(d)
s.close

```

OUTPUT QUESTION 2

Server Output



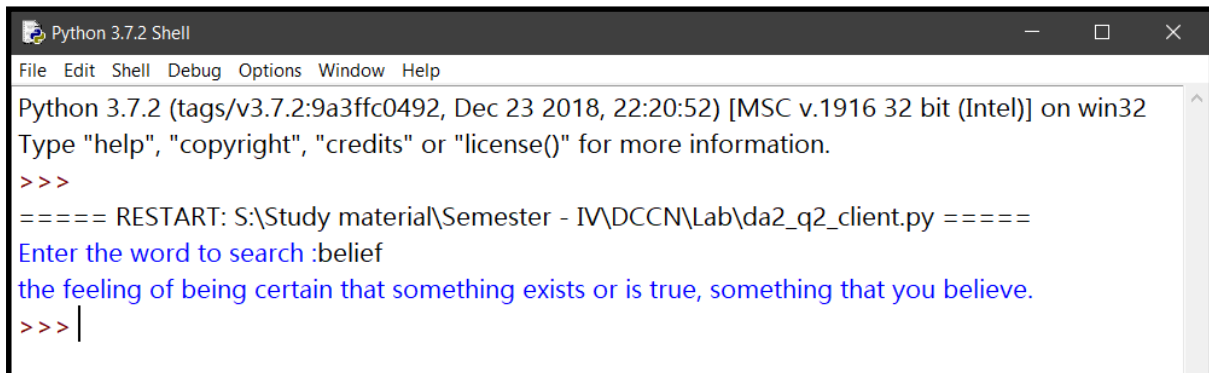
The screenshot shows a Python 3.7.2 Shell window with the following output:

```

Python 3.7.2 (tags/v3.7.2:9a3ffc0492, Dec 23 2018, 22:20:52) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: S:\Study material\Semester - IV\DCCN\Lab\da2_q2_server.py =====
Got connection from ('192.168.56.1', 54446)

```

Client Output



```
Python 3.7.2 Shell
File Edit Shell Debug Options Window Help
Python 3.7.2 (tags/v3.7.2:9a3ffc0492, Dec 23 2018, 22:20:52) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: S:\Study material\Semester - IV\DCCN\Lab\da2_q2_client.py =====
Enter the word to search :belief
the feeling of being certain that something exists or is true, something that you believe.
>>> |
```

3. Implement a TCP/IP based Server program to compute the factorial of a number (can contain arbitrary number of digits). Write a client program to test the working of the same.

Server

```
import socket
import datetime

s = socket.socket()
host = socket.gethostname()
port = 12345
s.bind((host,port))
s.listen(5)

def fact(n):
    p=1
    while n!=1:
        p = p*n
        n=n-1
    return p

while True:
    c,addr = s.accept()
```

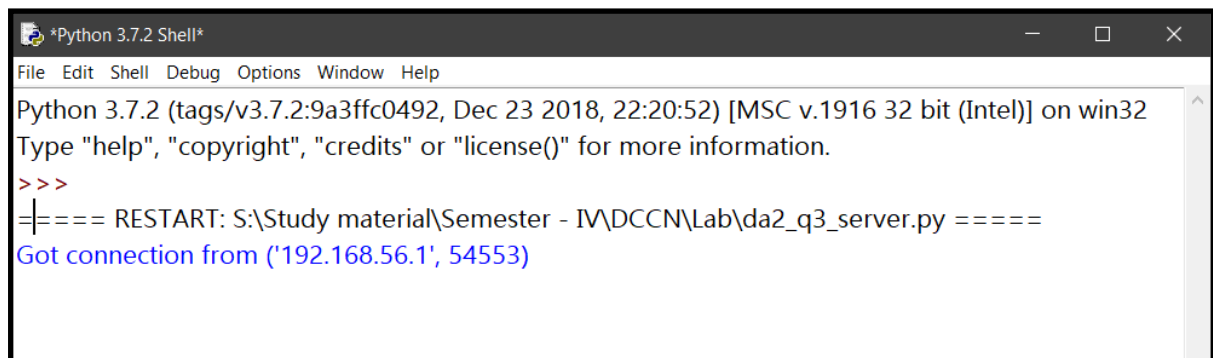
```
print ('Got connection from',addr)
y = (c.recv(1024).decode())
y = str(fact(int(y)))
c.send(y.encode())
c.close()
```

Client

```
import socket
import datetime
s=socket.socket()
host=socket.gethostname()
port=12345
s.connect((host,port))
x = input('Enter the number to calculate
factorial :')
s.send(x.encode())
d = ((s.recv(1024)).decode())
print(d)
s.close
```

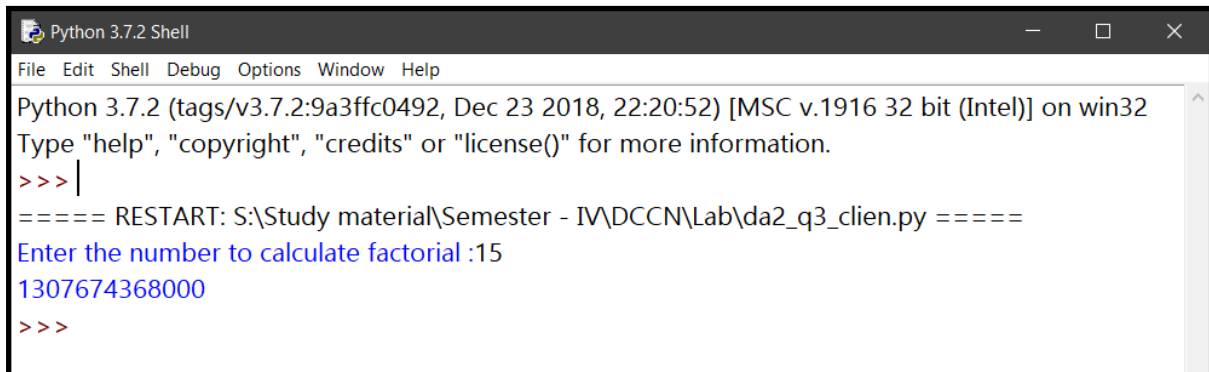
OUTPUT QUESTION 3

Server Output



```
*Python 3.7.2 Shell*
File Edit Shell Debug Options Window Help
Python 3.7.2 (tags/v3.7.2:9a3ffc0492, Dec 23 2018, 22:20:52) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
==== RESTART: S:\Study material\Semester - IV\DCCN\Lab\da2_q3_server.py =====
Got connection from ('192.168.56.1', 54553)
```

Client Output



```
Python 3.7.2 Shell
File Edit Shell Debug Options Window Help
Python 3.7.2 (tags/v3.7.2:9a3ffc0492, Dec 23 2018, 22:20:52) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> |
==== RESTART: S:\Study material\Semester - IV\DCCN\Lab\da2_q3_clien.py =====
Enter the number to calculate factorial :15
1307674368000
>>>
```

4. Implement a TCP/IP based client-server program for checking the message sent by the sender is erroneous or not through CRC mechanism. Only prepare the codeword at the client program from the dataword and send it to the server

Server

```
import socket

s=socket.socket()

host=socket.gethostname()

port = 12345

s.bind((host,port))

s.listen(5)

c,addr = s.accept()

l=list(c.recv(1024).decode())

b=list(c.recv(1024).decode())

print("the codeword is",l)

a=0

count=0

e=len(l)-(len(b)-1)

print("starting checking")
```

```

for i in range(0,e):
    if l[a]=="1":
        for j in range(0,len(b)):
            if b[j]==l[j]:
                l[j]="0"
            else:
                l[j]="1"
        else:
            for q in range(0,len(b)):
                if l[q]=="1":
                    l[q]="1"
                else:
                    l[q]="0"
            del l[0]
            print(l)
if l.count("0")==len(l):
    print("the codeword is correct")
else:
    print("as remainder doesn't have all 0's,codeword
wrong")
c.close

```

Client

```

import socket
s=socket.socket()
host=socket.gethostname()
port=12345
s.connect((host,port))
l=list(input("enter dataword"))
b=list(input("enter the divisor"))

```



```

c=l.copy()

print("the augmented dataword consisting of
",len(b)-1,"0's is")

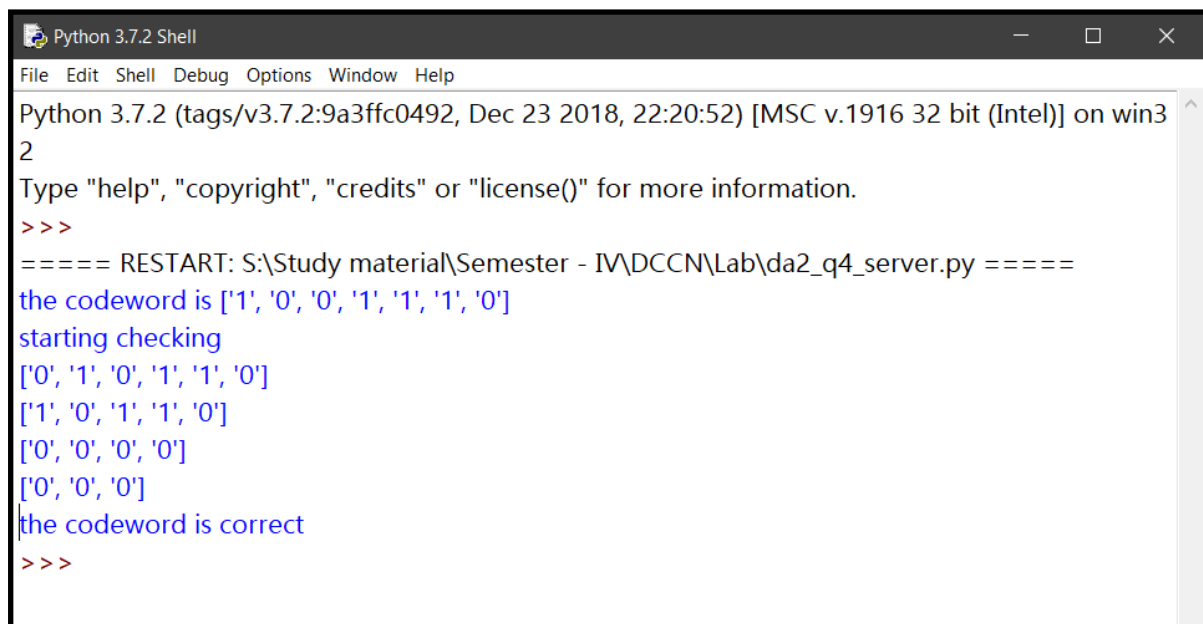
for i in range(len(b)-1):
    l.append("0")
print(l)
a=0
print("now Crc division starts")
for i in range(0,len(c)):
    if l[a]=="1":
        for j in range(0,len(b)):
            if b[j]==l[j]:
                l[j]="0"
            else:
                l[j]="1"
    else:
        for q in range(0,len(b)):
            if l[q]=="1":
                l[q]="1"
            else:
                l[q]="0"
    del l[0]
    print(l)
a=c+1
print("the remainder is",l)
str=''.join(a).encode()
str2=''.join(b).encode()
print("the codeword is",str)
print("sending codeword..")

```

```
s.send(str)
s.send(str2)
s.close
```

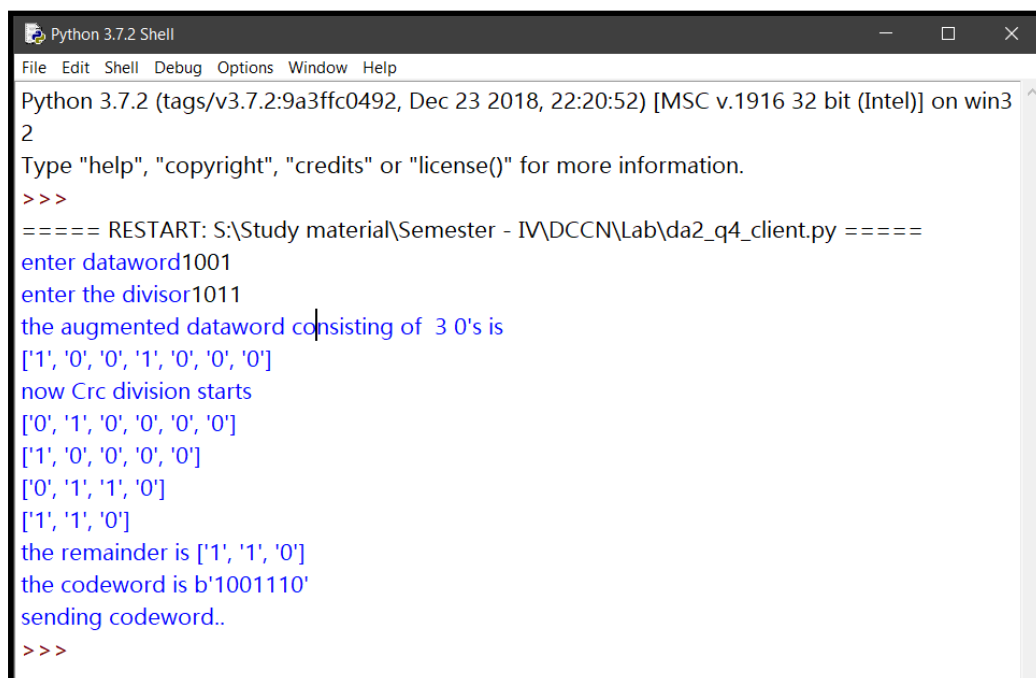
OUTPUT QUESTION 4

Server



```
Python 3.7.2 Shell
File Edit Shell Debug Options Window Help
Python 3.7.2 (tags/v3.7.2:9a3ffc0492, Dec 23 2018, 22:20:52) [MSC v.1916 32 bit (Intel)] on win3
2
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: S:\Study material\Semester - IV\DCCN\Lab\da2_q4_server.py =====
the codeword is ['1', '0', '0', '1', '1', '1', '0']
starting checking
['0', '1', '0', '1', '1', '0']
['1', '0', '1', '1', '0']
['0', '0', '0', '0']
['0', '0', '0']
the codeword is correct
>>>
```

Client



```
Python 3.7.2 Shell
File Edit Shell Debug Options Window Help
Python 3.7.2 (tags/v3.7.2:9a3ffc0492, Dec 23 2018, 22:20:52) [MSC v.1916 32 bit (Intel)] on win3
2
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: S:\Study material\Semester - IV\DCCN\Lab\da2_q4_client.py =====
enter dataword1001
enter the divisor1011
the augmented dataword consisting of 3 0's is
['1', '0', '0', '1', '0', '0', '0']
now Crc division starts
['0', '1', '0', '0', '0', '0']
['1', '0', '0', '0', '0']
['0', '1', '1', '0']
['1', '1', '0']
the remainder is ['1', '1', '0']
the codeword is b'1001110'
sending codeword..
>>>
```