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Course Code: ITE3001
Course Title: Data Communication and Computer Networks
Slot: L7+L8

Digital Assignment

b) Sorting values in ascending and descending order. (End with 2,4,6,8)

server1.py ->

```
import socket
s = socket.socket()
print('socket created')

s.bind(('localhost', 9999))
s.listen(3)
print('waiting for Connection....')

while True:
    c, addr = s.accept()
    print('Got connection from', addr)
    data = c.recv(1024).decode('utf-8')
    arr = list(map(int, data.strip().split()))
    arr.sort()

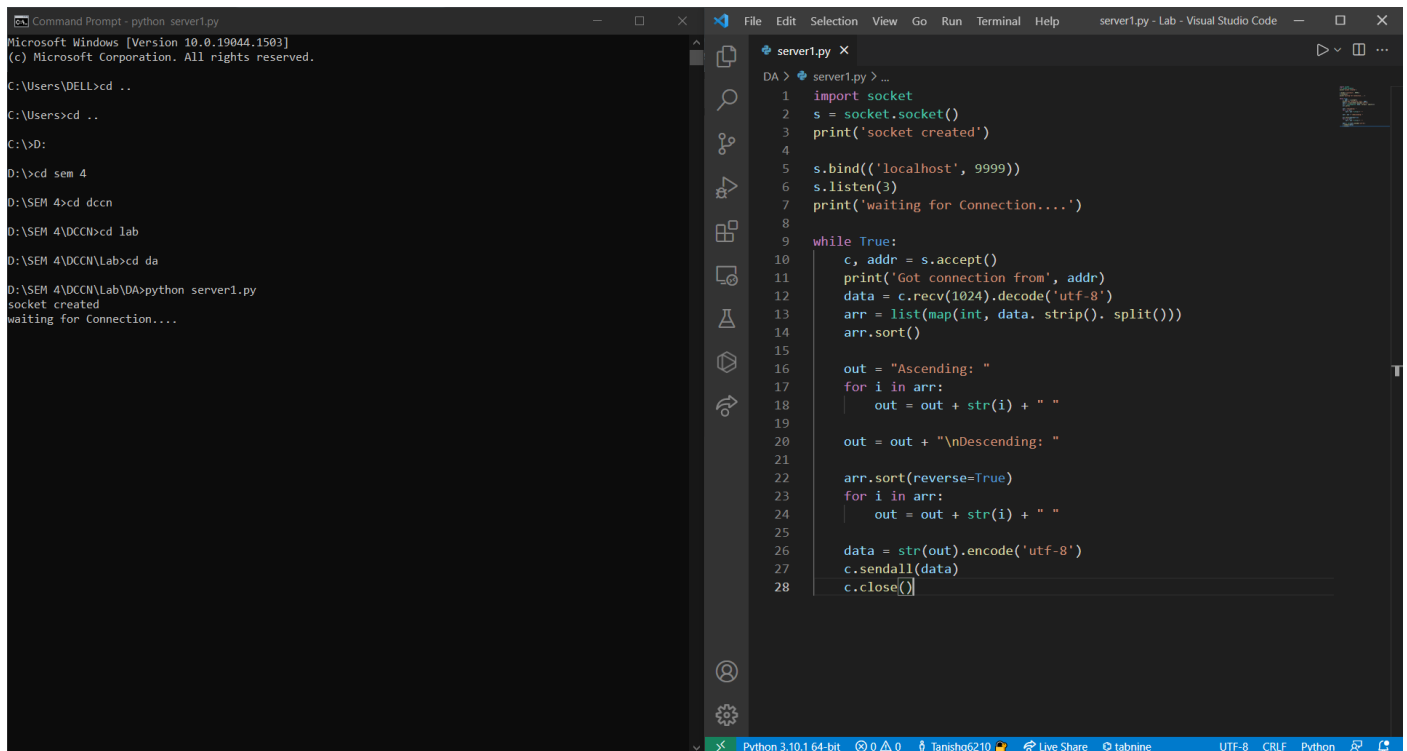
    out = "Ascending: "
    for i in arr:
        out = out + str(i) + " "

    out = out + "\nDescending: "

    arr.sort(reverse=True)
    for i in arr:
        out = out + str(i) + " "

    data = str(out).encode('utf-8')
    c.sendall(data)
    c.close()
```

Server Output 1->



The screenshot shows a Windows Command Prompt window on the left and a Visual Studio Code editor on the right. The Command Prompt shows the following commands and output:

```
Microsoft Windows [Version 10.0.19044.1503]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL>cd ..
C:\Users>cd ..
C:\>D:
D:\>cd sem 4
D:\SEM 4>cd dccn
D:\SEM 4\DCCN>cd lab
D:\SEM 4\DCCN\Lab>cd da
D:\SEM 4\DCCN\Lab\DA>python server1.py
socket created
waiting for Connection....
```

The Visual Studio Code editor shows the code for `server1.py`:

```
1 import socket
2 s = socket.socket()
3 print('socket created')
4
5 s.bind(('localhost', 9999))
6 s.listen(3)
7 print('waiting for Connection....')
8
9 while True:
10     c, addr = s.accept()
11     print('Got connection from', addr)
12     data = c.recv(1024).decode('utf-8')
13     arr = list(map(int, data.strip().split()))
14     arr.sort()
15
16     out = "Ascending: "
17     for i in arr:
18         out = out + str(i) + " "
19
20     out = out + "\nDescending: "
21
22     arr.sort(reverse=True)
23     for i in arr:
24         out = out + str(i) + " "
25
26     data = str(out).encode('utf-8')
27     c.sendall(data)
28     c.close()
```

Client.py ->

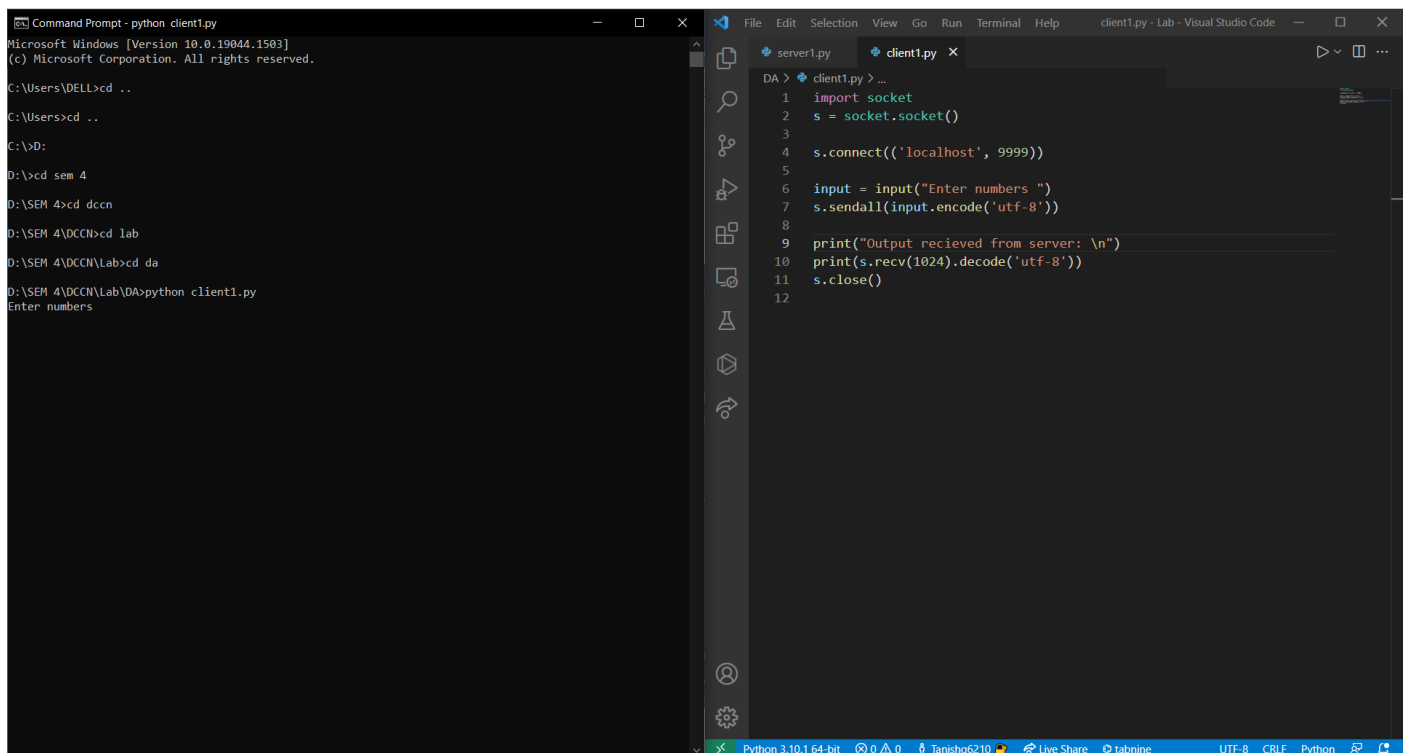
```
import socket
s = socket.socket()

s.connect(('localhost', 9999))

input = input("Enter numbers ")
s.sendall(input.encode('utf-8'))

print("Output recieved from server: \n")
print(s.recv(1024).decode('utf-8'))
s.close()
```

Client Output 1->



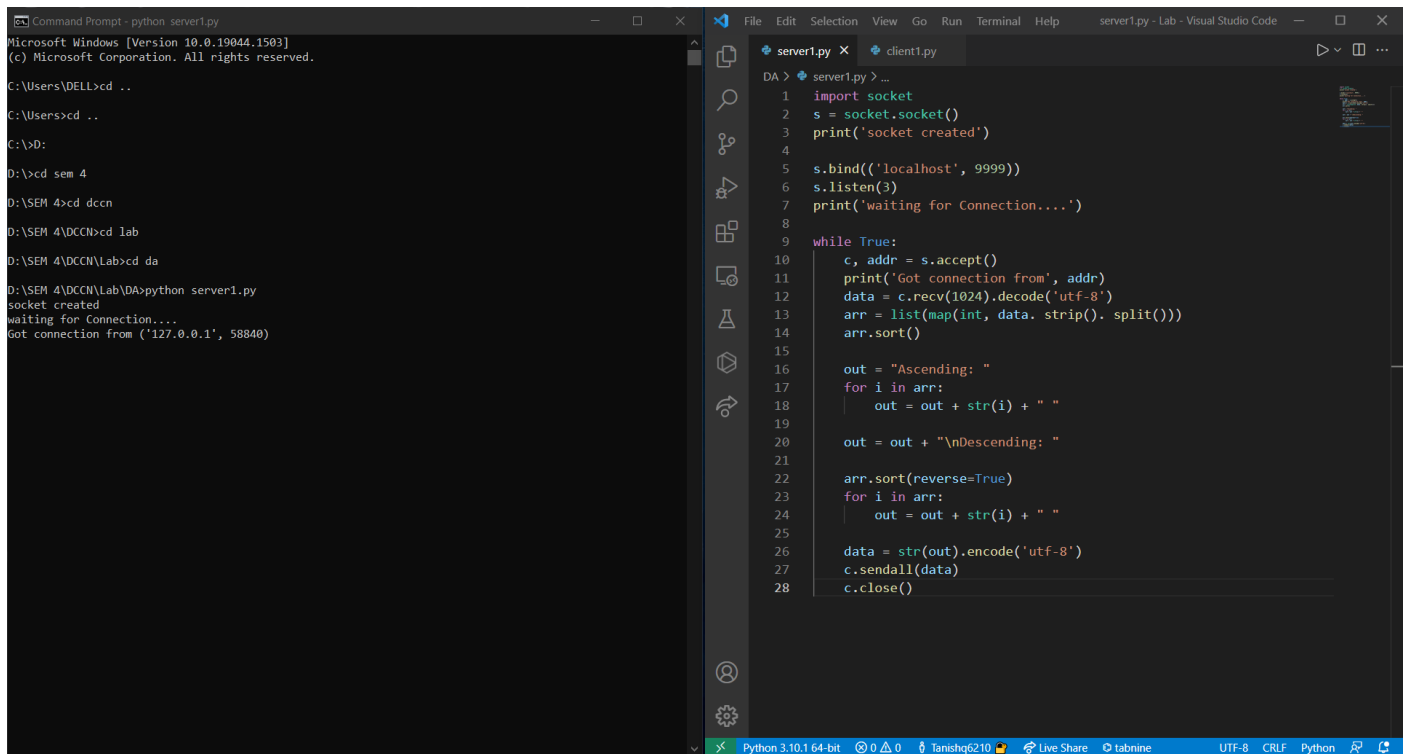
The image shows a Windows Command Prompt window on the left and a Visual Studio Code editor on the right. The Command Prompt shows the execution of a Python script, with the user entering 'Enter numbers' at the end. The Visual Studio Code editor shows the code for client1.py, which imports socket, connects to localhost:9999, sends input, receives output, and closes the connection.

```
Command Prompt - python client1.py
Microsoft Windows [Version 10.0.19044.1503]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL>cd ..
C:\Users>cd ..
C:\>D:
D:\>cd sem 4
D:\SEM 4>cd dccn
D:\SEM 4\DCCN>cd lab
D:\SEM 4\DCCN\Lab>cd da
D:\SEM 4\DCCN\Lab\DA>python client1.py
Enter numbers
```

```
server1.py  client1.py
DA > client1.py > ...
1  import socket
2  s = socket.socket()
3
4  s.connect(('localhost', 9999))
5
6  input = input("Enter numbers ")
7  s.sendall(input.encode('utf-8'))
8
9  print("Output recieved from server: \n")
10 print(s.recv(1024).decode('utf-8'))
11 s.close()
12
```

Server Output 2 ->



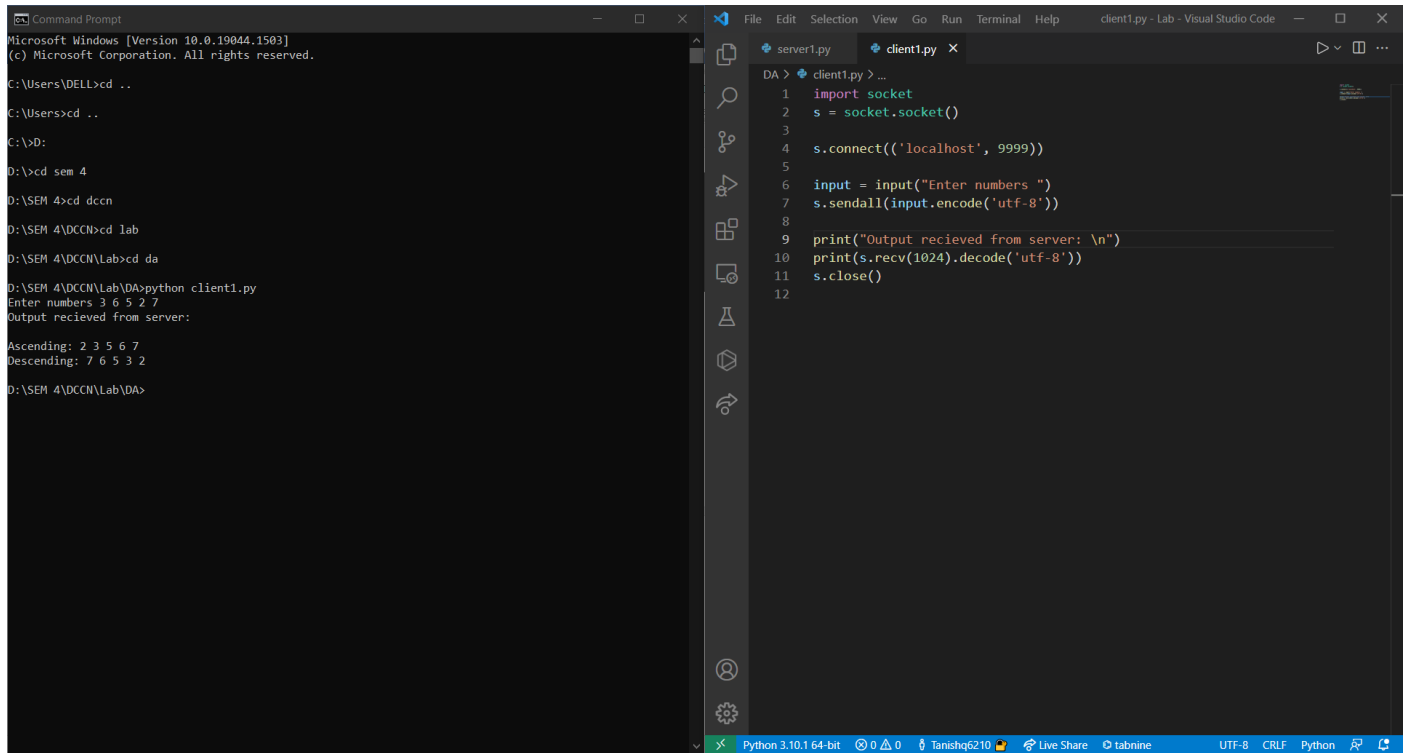
The image shows a Windows Command Prompt window on the left and a Visual Studio Code editor on the right. The Command Prompt shows the execution of a Python script, with the user entering 'socket created' and 'waiting for Connection....'. The Visual Studio Code editor shows the code for server1.py, which imports socket, binds to localhost:9999, listens for connections, and processes incoming data.

```
Command Prompt - python server1.py
Microsoft Windows [Version 10.0.19044.1503]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL>cd ..
C:\Users>cd ..
C:\>D:
D:\>cd sem 4
D:\SEM 4>cd dccn
D:\SEM 4\DCCN>cd lab
D:\SEM 4\DCCN\Lab>cd da
D:\SEM 4\DCCN\Lab\DA>python server1.py
socket created
waiting for Connection....
Got connection from ('127.0.0.1', 58840)
```

```
server1.py  client1.py
DA > server1.py > ...
1  import socket
2  s = socket.socket()
3  print('socket created')
4
5  s.bind(('localhost', 9999))
6  s.listen(3)
7  print('waiting for Connection....')
8
9  while True:
10     c, addr = s.accept()
11     print('Got connection from', addr)
12     data = c.recv(1024).decode('utf-8')
13     arr = list(map(int, data.strip().split()))
14     arr.sort()
15
16     out = "Ascending: "
17     for i in arr:
18         out = out + str(i) + " "
19
20     out = out + "\nDescending: "
21
22     arr.sort(reverse=True)
23     for i in arr:
24         out = out + str(i) + " "
25
26     data = str(out).encode('utf-8')
27     c.sendall(data)
28     c.close()
```

Client Output 2 ->



The image shows a Windows Command Prompt window and a Visual Studio Code editor window. The Command Prompt window displays the execution of a client program, while the Visual Studio Code editor shows the source code of the client program.

Command Prompt Output:

```
Microsoft Windows [Version 10.0.19044.1503]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL>cd ..
C:\Users>cd ..
C:\>D:
D:\>cd sem 4
D:\SEM 4>cd dccn
D:\SEM 4\DCCN>cd lab
D:\SEM 4\DCCN\Lab>cd da
D:\SEM 4\DCCN\Lab\DA>python client1.py
Enter numbers 3 6 5 2 7
Output recieved from server:

Ascending: 2 3 5 6 7
Descending: 7 6 5 3 2
D:\SEM 4\DCCN\Lab\DA>
```

Visual Studio Code Editor:

The editor shows the source code of the client program, `client1.py`. The code is as follows:

```
1 import socket
2 s = socket.socket()
3
4 s.connect(('localhost', 9999))
5
6 input = input("Enter numbers ")
7 s.sendall(input.encode('utf-8'))
8
9 print("Output recieved from server: \n")
10 print(s.recv(1024).decode('utf-8'))
11 s.close()
12
```

The status bar at the bottom of the Visual Studio Code window indicates the following information:

- Python 3.10.1 64-bit
- 0 0
- Tanishq6210
- Live Share
- Tabnine
- UTF-8 CRLF Python