

Lab 1 Report

CSL 6010 - Cyber Security

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**** I have macbook, so Ubuntu was not installed in it. That's why I have used VS code to execute these code and the output is shown in terminal of VS code itself ****

Q1)

q1_server.py

```
q1_server.py > ...
1  import socket
2  import sys
3
4  try:
5      s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
6      print ("Socket successfully created")
7  except socket.error as err:
8      print ("socket creation failed with error %s" %(err))
9
10 port = 80
11
12
```

q1_client.py

```
q1_client.py > ...
1  import socket
2  #create socket
3  s = socket.socket()
4  host = '127.0.0.1'
5  port = 80
6  #connect to server on computer
7  s.connect(('127.0.0.1',port))
8  #recieve data from server
9  print(s.recv(1024).decode())
10 s.close()
```

Output:

Server

```
PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE
● rahulbarodia@Rahuls-MacBook-Air Lab1_CS % python3 q1_server.py
  Socket successfully created
○ rahulbarodia@Rahuls-MacBook-Air Lab1_CS %
```

Client

```
PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE
○ rahulbarodia@Rahuls-MacBook-Air Lab1_CS % python3 q1_client.py
```

Q2)

q2_client.py

```
q2_client.py > ...
1  import socket
2  import sys
3
4  try:
5      s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
6      print ("Socket successfully created")
7  except socket.error as err:
8      print ("socket creation failed with error %s" %(err))
9
10 port = 80
11
12 try:
13     host_ip = socket.gethostbyname('iitj.ac.in')
14 except socket.gaierror:
15
16     print ("there was an error resolving the host")
17     sys.exit()
18
19 s.connect((host_ip, port))
20
21 print ("the socket has successfully connected to iitj")
```

Output:

Server

```
PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE
● rahulbarodia@Rahuls-MacBook-Air Lab1_CS % python3 q2_client.py
  Socket successfully created
  the socket has successfully connected to iitj
○ rahulbarodia@Rahuls-MacBook-Air Lab1_CS %
```

Q3)

q3_server.py

```
q3_server.py > ...
1
2 import socket
3
4 # Define IP address and ports
5 if __name__ == "__main__":
6     ip = "127.0.0.1"
7     port = 1235
8     # Create the server socket
9     server = socket.socket(socket.AF_INET , socket.SOCK_STREAM)
10    server.bind((ip , port))
11    server.listen(5)
12    # If 6th connection tries to connect, it will be refused.
13
14
15    while(True):
16        client , address = server.accept()
17        print(f"Successfully established connection - {address[0]} : {address[1]} ")
18        string = client.recv(1024)
19        string = string.decode("utf-8")
20
21        print("Sending string as it is: ")
22        print(string)
23
24        client.close()
```

q3_client.py

```
q3_client.py > ...
1 import socket
2
3 # Define IP address and ports
4 if __name__ == "__main__":
5     ip = "127.0.0.1"
6     port = 1235
7
8     server = socket.socket(socket.AF_INET , socket.SOCK_STREAM)
9     server.connect((ip , port))
10
11    string = input("Enter the string: ")
12    server.send(bytes(string, "utf-8"))
```

Output:

Server

```
PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE
○ rahulbarodia@Rahuls-MacBook-Air Lab1_CS % python3 q3_server.py
  Successfully established connection - 127.0.0.1 : 53687
  Sending string as it is:
  abcd
  █
```

Client

```
PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE
○ rahulbarodia@Rahuls-MacBook-Air Lab1_CS % python3 q3_client.py
  Enter the string: abcd█
```

Q4)

q4_server.py

```
q4_server.py > ...
1  import socket
2  # Define IP address and ports
3  if __name__ == "__main__":
4      ip = "127.0.0.1"
5      port = 1236
6      # Create the server socket
7      server = socket.socket(socket.AF_INET , socket.SOCK_STREAM)
8      server.bind((ip , port))
9      server.listen(5)
10     # If 6th connection tries to connect, it will be refused.
11     while(True):
12         client , address = server.accept()
13         print(f"Successfully established connection - {address[0]} : {address[1]} ")
14         string = client.recv(1024)
15         string = string.decode("utf-8")
16
17         print("Sending string as it is: ")
18         print(string)
19
20         string = string.upper()
21
22         print("Sending string in UPPERCASE: ")
23         print(string)
24
25         client.close()
```

q4_client.py

```
q4_client.py > ...
1  import socket
2
3  # Define IP address and ports
4  if __name__ == "__main__":
5      ip = "127.0.0.1"
6      port = 1236
7
8      server = socket.socket(socket.AF_INET , socket.SOCK_STREAM)
9      server.connect((ip , port))
10
11     string = input("Enter the string: ")
12     server.send(bytes(string, "utf-8"))
```

Output:

Server

```
PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE
○ rahulbarodia@Rahuls-MacBook-Air Lab1_CS % python3 q4_server.py
Successfully established connection - 127.0.0.1 : 53698
Sending string as it is:
abcd
Sending string in UPPERCASE:
ABCD
█
```

Client

```
PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE
● rahulbarodia@Rahuls-MacBook-Air Lab1_CS % python3 q4_client.py
Enter the string: abcd
○ rahulbarodia@Rahuls-MacBook-Air Lab1_CS % █
```

Q5)

q5_server.py

```
q5_server.py > ...
1  import socket
2  # Define IP address and ports
3  if __name__ == "__main__":
4      ip = "127.0.0.1"
5      port = 1237
6      # Create the server socket
7      server = socket.socket(socket.AF_INET , socket.SOCK_STREAM)
8      server.bind((ip , port))
9      server.listen(5)
10     # If 6th connection tries to connect, it will be refused.
11     while(True):
12         client , address = server.accept()
13         print(f"Successfully established connection - {address[0]} : {address[1]} ")
14         string = client.recv(1024)
15         string = string.decode("utf-8")
16         print("Sending string as it is: ")
17         print(string)
18         string = string.lower()
19         string = string[::-1]
20         print("Sending string in reverse(But not in UPPERCASE): ")
21         print(string)
22         client.close()
```

q5_client.py

```
q5_client.py > ...
1  import socket
2
3  # Define IP address and ports
4  if __name__ == "__main__":
5      ip = "127.0.0.1"
6      port = 1237
7
8      server = socket.socket(socket.AF_INET , socket.SOCK_STREAM)
9      server.connect((ip , port))
10
11     string = input("Enter the string: ")
12     server.send(bytes(string, "utf-8"))
```


Output:

Server

```
PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE
○ rahulbarodia@Rahuls-MacBook-Air Lab1_CS % python3 q5_server.py
Successfully established connection - 127.0.0.1 : 53722
Sending string as it is:
abcd
Sending string in reverse(But not in UPPERCASE):
dcba
█
```

Client

```
PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE
● rahulbarodia@Rahuls-MacBook-Air Lab1_CS % python3 q5_client.py
Enter the string: abcd
○ rahulbarodia@Rahuls-MacBook-Air Lab1_CS % █
```