END SEM

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Question :

Write a UDP client program that sends a positive number to a UDP server program which finds the received number is a perfect number or not. The number is perfect number or not result to be printed by client finally.

A perfect number is a positive integer that is equal to the sum of its positive divisors, excluding the number itself. In other words, it has a positive divisor other than one or itself. For example, 6 is a positive number that is completely divisible by 1, 2, and 3. We know that the number is also divisible by itself but we will not include it in the addition of divisors. When we add these divisors **(1 + 2 + 3 = 6),** it produces 6, which is equal to the number that we have considered. So, we can say that 6 is a perfect number. Other perfect numbers are 28, 496, and 8128

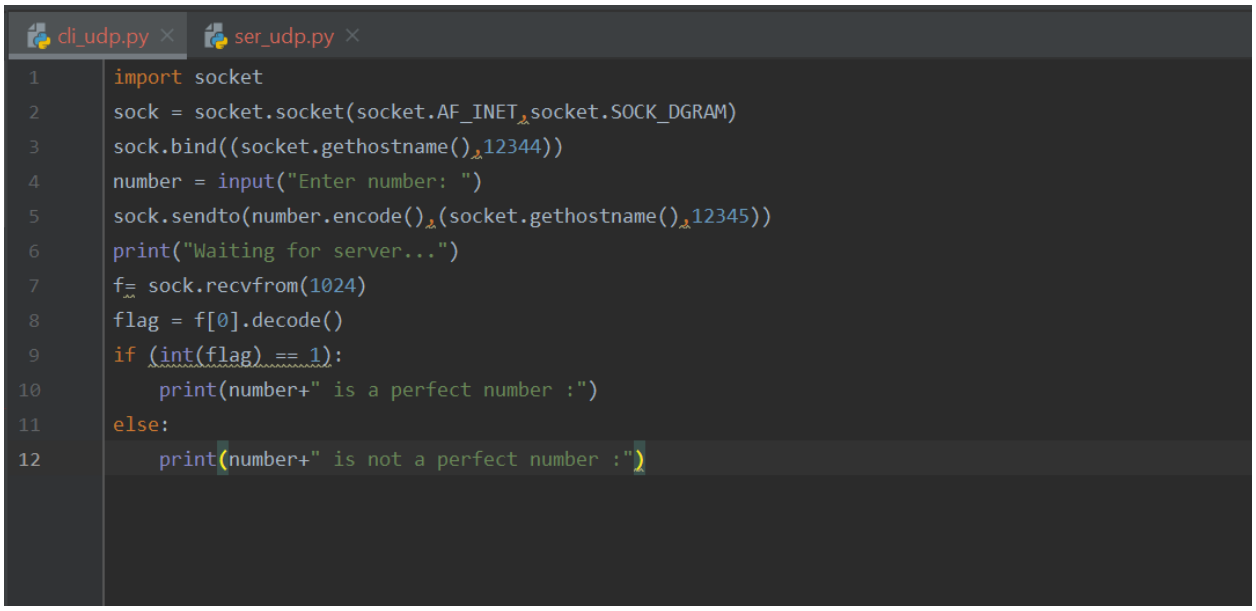
Code:
Client.py

```
import socket
sock = socket.socket(socket.AF_INET,socket.SOCK_DGRAM)
sock.bind((socket.gethostname(),12344))
number = input("Enter number: ")
sock.sendto(number.encode(),(socket.gethostname(),12345))
print("Waiting for server...")
f= sock.recvfrom(1024)
flag = f[0].decode()
if (int(flag) == 1):
    print(number+" is a perfect number :")
else:
    print(number+" is not a perfect number :")
```

Server.py

```
import socket
sock = socket.socket(socket.AF_INET,socket.SOCK_DGRAM)
sock.bind((socket.gethostname(),12345))
print("Waiting for client...")
number = sock.recvfrom(1024)
num = number[0].decode()
print("Received Number:",num," from",number[1])
num = int(num)
def isperfect(n):
  flag=0
  sum = 1
  i = 2
  while i * i <= n:
    if n % i == 0:
      sum = sum + i + n / i
    i += 1
  if sum==n and n!=1:
    flag=1
  else:
    flag=0

  return flag
d=isperfect(num)
sock.sendto(str(d).encode(),(socket.gethostname(),12344))
```



cli_udp.py | ser_udp.py

```python
import socket
sock = socket.socket(socket.AF_INET,socket.SOCK_DGRAM)
sock.bind((socket.gethostname(),12345))
print("Waiting for client...")
number = sock.recvfrom(1024)
num = number[0].decode()
print("Received Number:",num," from",number[1])
num = int(num)
def isperfect(n):
    flag=0
    sum = 1
    i = 2
    while i * i <= n:
        if n % i == 0:
            sum = sum + i + n / i
        i += 1
    if sum==n and n!=1:
        flag=1
    else:
        flag=0

    return flag
d=isperfect(num)

sock.sendto(str(d).encode(),(socket.gethostname(),12344))

```

```
Microsoft Windows [Version 10.0.19042.928]
(c) Microsoft Corporation. All rights reserved.

C:\Users\chathurya\Downloads>py ser_udp.py
Waiting for client...
Received Number: 12  from ('192.168.56.1', 12344)

C:\Users\chathurya\Downloads>py ser_udp.py
Waiting for client...
Received Number: 6  from ('192.168.56.1', 12344)

C:\Users\chathurya\Downloads>py ser_udp.py
Waiting for client...
Received Number: 28  from ('192.168.56.1', 12344)

C:\Users\chathurya\Downloads>
```

```
Microsoft Windows [Version 10.0.19042.928]
(c) Microsoft Corporation. All rights reserved.

C:\Users\chathurya\Downloads>py cli_udp.py
Enter number: 12
Waiting for server...
12 is not a perfect number :

C:\Users\chathurya\Downloads>py cli_udp.py
Enter number: 6
Waiting for server...
6 is a perfect number :

C:\Users\chathurya\Downloads>py cli_udp.py
Enter number: 28
Waiting for server...
28 is a perfect number :

C:\Users\chathurya\Downloads>
```