

# Case Study Submission Part-1

## Title: CITIZENS PROBLEM REPORTING CENTER

RollNo	Name	Contribution in case study
CB.EN. U4CSE19105	A V V L N BALRAM	RECEIVING DEPARTMENT
<b>CB.EN. U4CSE19137</b>	<b>P.S.V. AKASH</b>	<b>VERIFICATION DEPARTMENT</b>
CB.EN. U4CSE19154	T SAI JAYANTH	EXECUTION DEPARTMENT

### Description of the case study:

As the time grows, we need to develop our standards there one used to be a box for complaints earlier. So, why don't we transform that into digital. We are introducing citizens problem reporting center where three departments are available Namely Receiving, Verification, Execution. Here Receiving section will receive the complaints, Verification section will verify the complaints, Execute section will execute the complaints which are verified by the verification department.

### Why is Networking required?

Here we use networks in order to communicate between multiple departments. Also, execution department will communicate with various other offices in order to execute the verified problems. So, we need networking here for Receiving, Verification, Execution.

### List of Network performance parameters:

Normally the performance of a network is used to measure the service quality of a network as perceived by the user. To measure the performance of a network there are different ways depending on design of the network.

Parameters	Definition	Formula
Bandwidth	<p>The maximum amount of data transmitted over an internet connection in a given amount of time. It determines how rapidly the web server is able to upload the requested information.</p> <p>Digital Devices: bps(bytes per second)</p> <p>Analog Devices: cps(cycles per second)</p> <p>It is a potential measurement of a link.</p>	Expressed as <u>bits per second (bps)</u> , modern network links have greater capacity, which is typically measured in millions of bits per second ( <u>megabits per second</u> , or Mbps) or billions of bits per second ( <u>gigabits per second</u> , or Gbps).
Throughput	<p>The number of messages successfully transmitted per unit time. The maximum throughput of a network may be consequently higher than the actual throughput achieved in every day consumption.</p> <p>It is an actual measurement of how fast we can send the data.</p>	$R = I/T$ R : Rate(Throughput) I : Inventory T : Time
Transmission time	The time required for transmission of a message depends on the size of the message and the bandwidth of the channel.	Transmission time=Message size / Bandwidth
Propagation Time	Propagation time measures the time required for a bit to travel from the source to the destination. The propagation time is calculated by dividing the distance by the propagation speed.	Propagation time = Distance /Propagation speed
Processing Delay	Time taken by the processor to process the data packet is called processing delay.	

Queuing Delay	Time spent by the data packet waiting in the queue before it is taken for execution is called queuing delay.	
Packet Loss	Packet loss occurs when one or more packets of data travelling across a computer network fail to reach their destination. Due to network congestion	$\text{Efficiency} = 100\% * (\text{transferred} - \text{retransmitted}) / \text{transferred}$ $\text{Network Loss} = 100 - \text{Efficiency}$
Latency	<p>The time required to successfully send a packet across the network.</p> <p>The total time taken for a complete message to arrive at the destination, starting with the time when the first bit of the message is sent out from the source and ending with the time when the last bit of the message is delivered at the destination. Here Latency is also known as ping rate and measured in milliseconds.</p>	$\text{Latency} = \text{Propagation Time} + \text{Transmission Time} + \text{Queuing Time} + \text{Processing Delay.}$ $\text{Propagation Time} = \text{Distance} / \text{Propagation Speed}$
Jitter	Jitter is nothing but Packet delay Variance. The variation in the delay of received packets. It is considered as a problem when different packets of data face different delays in a network and the data at the receiver application is time sensitive i.e., audio or video data. It is measured in MilliSeconds(ms)	<p>Latency=sum of all delays</p> <p>To measure Jitter, we take the difference between samples, and then divide by the number of samples.</p>

## File Handling Operations using Socket Programming

### a. Description of the text file

We are having 7 columns in an csv file. Which is very important to validate and whenever the code got run in cmd prompt it will be reflected in an excel sheet also .

Name	Phone No	District	Pin code	Area	Problem	Verification
------	----------	----------	----------	------	---------	--------------

### b. List of operations completed with the File

VIEW  
UPDATE  
MODIFY

### c. Client-Side program with output for each operation

```
import socket
```

```
def client_program():
```

```
    print("V - VIEW")
```

```
    print("M - MODIFY")
```

```
    print("U - UPDATE")
```

```
    print("exit")
```

```
    client_socket = socket.socket()
```

```
    host = socket.gethostname()
```

```
    port = 1574
```

```
    print('WAITING FOR CONNECTION RESPONSE')
```

```
try:
    client_socket.connect((host,port))
except socket.error as e:
    print(str(e))

result = input(" => ")

while result.lower().strip()!="exit":
    client_socket.send(result.encode())
    data = client_socket.recv(4048).decode()

    print("RECEIVED FROM SERVER : \n"+ data)

    result = input('=>')

client_socket.close()

if __name__ == "__main__":
    client_program()
```

**d. Server-side program with output for each operation**

```
import socket
import os
from _thread import *
import pandas as pd

connection = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
ThreadCount = 0
try:
    connection.bind((socket.gethostname(), 1574))
except socket.error as e:
    print(str(e))

print('WAITING FOR AN CONNECTION..')
connection.listen(5)

col_names =
["Name","Phone_No","District","Pincode","Area","Problem","Verification"]
filename = "problem.csv"
df = pd.read_csv(filename)
df.columns = col_names

def showData(df,column_name,value):
    g = df.groupby(column_name)
    return g.get_group(value)
```

```
def getUserData(df,Name):  
    df = df.iloc[Name]  
    print(df)  
    return df  
  
def modifyData(df, Name, new_value):  
    for index in df.index:  
        if df.loc[index,"Name"] == Name:  
            df.loc[index,"Verification"] = new_value  
    return df  
  
def update(df):  
    df["Verification"] = df["Verification"].fillna("NotVerified")  
    return df  
  
def threaded_client(connection):  
  
    while True:  
        data = connection.recv(4048).decode('utf-8')  
  
        if not data:  
            break  
  
        data = str(data)  
        print("From Connected User : "+data)
```

```
    if data == "V":
        showData = df.to_string()
        connection.send(showData.encode())
    elif data.find("M") != -1:
        split_data = data.split()
        showData =
modifyData(df,split_data[1],split_data[2]).to_string()
        connection.send(showData.encode())
        df.to_csv("problem.csv",index=False)
    elif data.find("U") != -1:
        showData = update(df).to_string()
        connection.send(showData.encode())
        df.to_csv("problem.csv",index=False)
```

```
connection.close()
```

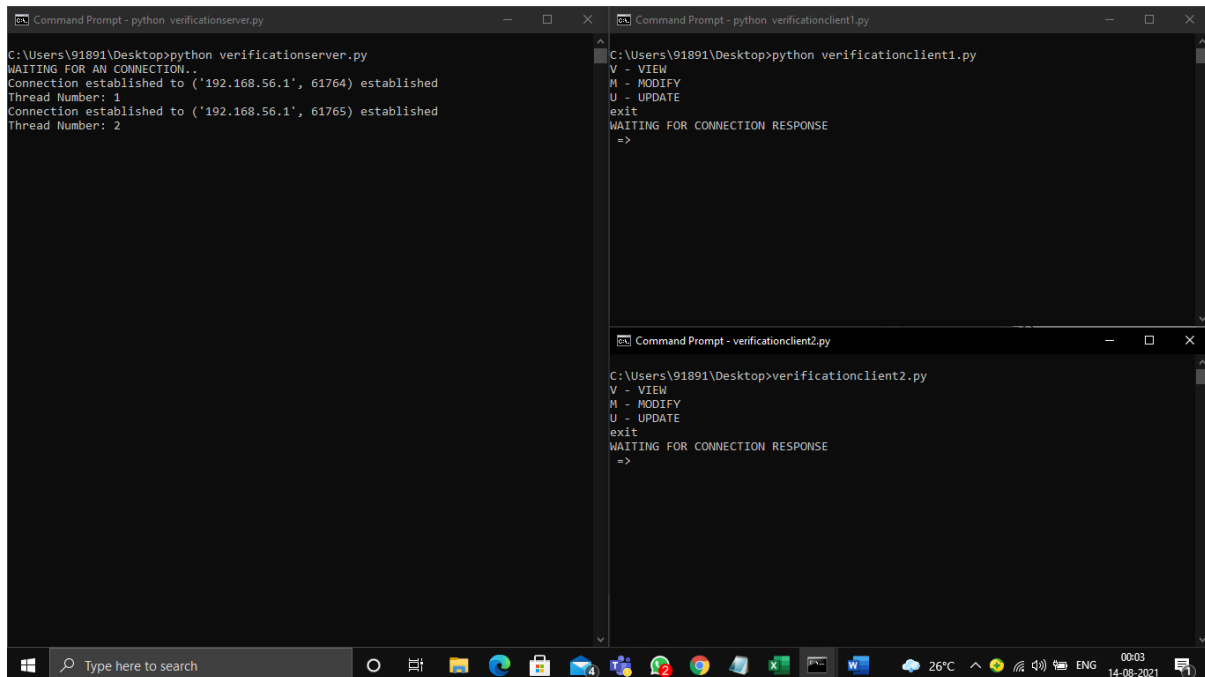
```
while True:
```

```
    clt, adr = connection.accept()
    print(f"Connection established to {adr} established")
    start_new_thread(threaded_client, (clt,))
    ThreadCount += 1
    print("Thread Number: " + str(ThreadCount))
```

```
connection.close()
```



## OUTPUT FOR BOTH CLIENTS AND SERVER



The screenshot displays three overlapping Windows Command Prompt windows. The top-left window, titled 'Command Prompt - python verificationserver.py', shows the server's output: it starts by running 'python verificationserver.py', then enters a 'WAITING FOR AN CONNECTION...' state. It successfully establishes two connections to '192.168.56.1' on ports 61764 and 61765, with thread numbers 1 and 2 respectively. The top-right window, titled 'Command Prompt - python verificationclient1.py', shows the first client's output: it runs 'python verificationclient1.py', displays a menu with 'V - VIEW', 'M - MODIFY', and 'U - UPDATE', followed by 'exit' and 'WAITING FOR CONNECTION RESPONSE'. The bottom window, titled 'Command Prompt - verificationclient2.py', shows the second client's output: it runs 'verificationclient2.py', displays the same menu, followed by 'exit' and 'WAITING FOR CONNECTION RESPONSE'. The Windows taskbar at the bottom shows the system clock as 00:03 on 14-08-2021.

```
Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION...
Connection established to ('192.168.56.1', 61764) established
Thread Number: 1
Connection established to ('192.168.56.1', 61765) established
Thread Number: 2

Command Prompt - python verificationclient1.py
C:\Users\91891\Desktop>python verificationclient1.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=>

Command Prompt - verificationclient2.py
C:\Users\91891\Desktop>verificationclient2.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=>
```

# VIEW

```
Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 61764) established
Thread Number: 1
Connection established to ('192.168.56.1', 61765) established
Thread Number: 2
From Connected User : V

Command Prompt - python verificationclient1.py
C:\Users\91891\Desktop>python verificationclient1.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=> V

Command Prompt - verificationclient2.py
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

C:\Users\91891>cd desktop
C:\Users\91891\Desktop>verificationclient2.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=> V
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 chirala Drainage Problem Not_Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Not_Verified
=>
```

```
Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 61764) established
Thread Number: 1
Connection established to ('192.168.56.1', 61765) established
Thread Number: 2
From Connected User : V
From Connected User : V

Command Prompt - python verificationclient1.py
C:\Users\91891\Desktop>python verificationclient1.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=> V
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 chirala Drainage Problem Not_Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Not_Verified
=>

Command Prompt - verificationclient2.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=> V
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 chirala Drainage Problem Not_Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Not_Verified
=>
```

# MODIFY

```
Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 50474) established
Thread Number: 1
Connection established to ('192.168.56.1', 50475) established
Thread Number: 2
From Connected User : V
From Connected User : V
From Connected User : M Balu Verified

Command Prompt - python verificationclient1.py
=>M Akash Verified

Command Prompt - python verificationclient2.py
=>M Balu Verified
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 chirala Drainage Problem Not_Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Verified
=>
```

```
Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 50474) established
Thread Number: 1
Connection established to ('192.168.56.1', 50475) established
Thread Number: 2
From Connected User : V
From Connected User : V
From Connected User : M Balu Verified
From Connected User : M Akash Verified

Command Prompt - python verificationclient1.py
=>M Akash Verified
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 chirala Drainage Problem Not_Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Verified
=>

Command Prompt - python verificationclient2.py
1 Akash 8919884900 prakasam 523155 chirala Drainage Prob
lem Not_Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Prob
lem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminat
ing Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brot
her Verified
=>
```

# UPDATE

```
Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 50474) established
Thread Number: 1
Connection established to ('192.168.56.1', 50475) established
Thread Number: 2
From Connected User : V
From Connected User : V
From Connected User : M Balu Verified
From Connected User : M Akash Verified
From Connected User : U

Command Prompt - python verificationclient1.py
=>M Akash Verified
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 chirala Drainage Problem Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Verified
=>U
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 chirala Drainage Problem Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Verified
=>
```

```
Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 50474) established
Thread Number: 1
Connection established to ('192.168.56.1', 50475) established
Thread Number: 2
From Connected User : V
From Connected User : V
From Connected User : M Balu Verified
From Connected User : M Akash Verified
From Connected User : U
From Connected User : U

Command Prompt - python verificationclient1.py
4 Balu 9005643216 Nellore 764235 police His Brot
her Verified
=>U
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Prob
lem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road dam
age Not_Verified
1 Akash 8919884900 prakasam 523155 chirala Drainage Prob
lem Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Prob
lem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminat
ing Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brot
her Verified
=>
```

```
Command Prompt - python verificationclient2.py
=>U
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 chirala Drainage Problem Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Verified
=>
```

```
Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 51131) established
Thread Number: 1
Connection established to ('192.168.56.1', 51132) established
Thread Number: 2
From Connected User : U

Command Prompt - python verificationclient1.py
C:\Users\91891\Desktop>verificationclient1.py
'verificationclient1.py' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\91891\Desktop>python verificationclient1.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=> U
RECEIVED FROM SERVER :
0 Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 Chirala Drainage Problem Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Verified
5 Geetha 9656372741 Chirala 523155 Near surya hospital waste not take NotVerified

Command Prompt - python verificationclient2.py
C:\Users\91891\Desktop>python verificationclient2.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=> -
```

```
Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 51131) established
Thread Number: 1
Connection established to ('192.168.56.1', 51132) established
Thread Number: 2
From Connected User : U
From Connected User : U

Command Prompt - python verificationclient1.py
C:\Users\91891\Desktop>verificationclient1.py
'verificationclient1.py' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\91891\Desktop>python verificationclient1.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=> U
RECEIVED FROM SERVER :
0 Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 Chirala Drainage Problem Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Verified
5 Geetha 9656372741 Chirala 523155 Near surya hospital waste not take NotVerified

Command Prompt - python verificationclient2.py
C:\Users\91891\Desktop>python verificationclient2.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=> U
RECEIVED FROM SERVER :
0 Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 Chirala Drainage Problem Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Verified
5 Geetha 9656372741 Chirala 523155 Near surya hospital waste not take NotVerified
```

problem - Excel Akash Penugonda

File Home Insert Page Layout Formulas Data Review View Help Tell me what you want to do Share

Clipboard Font Alignment Number Styles Cells Editing

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Name	Phone_No	District	Pincode	Area	Problem	Verification									
2	Balaram	6300321435	visakhapatnam	425346	Simhachalam	Road damage	Not_Verified									
3	Akash	8919884900	prakasam	523155	chirala	Drainage Problem	Verified									
4	Manu	7674813874	Visakhapatnam	530028	Simhachalam	Municipality Problem	Not_Verified									
5	Raghava	9392694305	prakasam	563412	Opp water tank	Water is contaminating	Not_Verified									
6	Balu	9005643216	Nellore	764235	police	His Brother	Verified									
7	Geetha	9656372741	Chirala	523155	Near surya hospital	waste not take	NotVerified									
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																
21																
22																
23																

problem

Ready Type here to search 26°C 00:19 14-08-2021

**SUBMITTED BY :**

**PENUGONDA SAI VENKATA AKASH**

**[CB.EN.U4CSE19137]**

**(CSE – B)**