

COMPUTER COMMUNICATION

NETWORKS

LAB EXPERIMENT 14

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DIVISION: G2; EA 3

AIM: To code a Sender Receiver Program for Go Back N ARQ implementation.

Code of the Program:

Sender:

```
import time,socket,sys
import random

print("\n Welocme to receiver module \n")
print("initializing.....\n")
time.sleep(1)

s= socket.socket()
shost=socket.gethostname()
ip=socket.gethostbyname(shost)
print(shost, "(", ip, ")\n")
host= input(str("enter server address: "))
port=1232
print("\n trying to connect to ", host, "(", port, ")\n")
time.sleep(1)
```

```
s.connect((host,port))
print("connected....\n")
```

```
while True:
```

```
    m=s.recv(1024)
    m=m.decode()
    if m != "bye":
        k=s.recv(1024)
        k=k.decode()
        k=int(k)
        i=0
        a=""
        b=""
        f=random.randint(0,1)
        message=""
        while i != k:

            f= random.randint(0, 1)
            if(f==0):
                b="ACK LOST"
                message=s.recv(1024)
                message=message.decode()
                s.send(b.encode())

            elif (f==1):
                b="ACK" + str(i)
                message=s.recv(1024)
                message=message.decode()

                s.send(b.encode())
                a=a + message
                i= i+1
            print("Received Message: ", m)
        else:
            print("\n Conection Terminated")
```

Receiver:

```
import time,socket,sys
```

```
def decimalTobinary(n):
    return n.replace("0b", "")
```

```
def binarycode(s):
    a_byte_array=bytearray(s,'utf8')
```

```
    byte_list=[]
```

```

for byte in a_byte_array:
    binary_representation=bin(byte)
    byte_list.append(decimalTobinary(binary_representation))

a=""
for i in byte_list:
    a=a+i
return a

print("Welcome to sender module \n")
print("Initializing.....\n")
time.sleep(1)

s=socket.socket()
host= socket.gethostname()
ip=socket.gethostbyname(host)
port=1232
s.bind((host,port))
print(host, "(", ip, ")\n")

s.listen(1)
print("Waiting for incomin connection....\n")

conn,addr=s.accept()
print("Received connection from", addr[0], "(", addr[1], ")\n")

while True:
    message= input(str("Message to be sent (Enter 'bye' to exit) ->"))
    conn.send(message.encode())
    if message == "bye":
        message="connection terminated"
        print("\n Connection terminated")
        conn.send(message.encode())
        print("\n")
        break
    message = binarycode(message)
    f=str(len(message))
    conn.send(f.encode())

    i=0
    j=0
    j=int(input("Enter the window size -> "))

    b=""

    j=j-1
    f=int(f)

```

```

k=j
while i !=f:
    while(i != (f-j)):
        conn.send(message[i].encode())
        b=conn.recv(1024)
        b=b.decode()
        print(b)
        if(b != "ACK LOST"):
            time.sleep(1)
            print("Acknowledgement Received! The sliding window is in the range " + (str(i+1)) + " to " +
str(k+1) + "Now sending next packet")
            i =i + 1
            k=k + 1

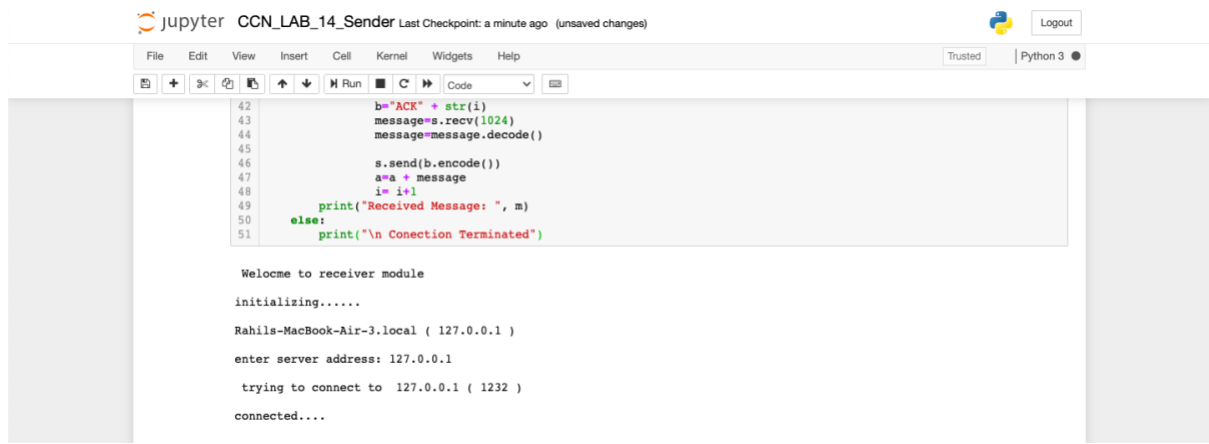
            time.sleep(1)
        else:
            time.sleep(1)
            print("Acknowledgement Received! The sliding window is in the range " + (str(i+1)) + " to " +
str(k+1) + "Now Resending next packet")
            time.sleep(1)
    while(i !=f):

        conn.send(message[i].encode())
        b=conn.recv(1024)
        b=b.decode()
        print(b)
        if(b != "ACK LOST"):
            time.sleep(1)
            print("Acknowledgement Received! The sliding window is in the range " + (str(i+1)) + " to " +
str(k) + "Now sending next packet")
            i=i+1
            time.sleep(1)
        else:
            time.sleep(1)
            print("Acknowledgement Received! The sliding window is in the range " + (str(i+1)) + " to " +
str(k) + "Now Resending same packet")
            time.sleep(1)

if name == "main":
    server_program()

```

OUTPUTS AND SCREENSHOTS:



```
jupyter CCN_LAB_14_Sender Last Checkpoint: a minute ago (unsaved changes)
```

```
File Edit View Insert Cell Kernel Widgets Help Trusted Python 3
```

```
42 b="ACK" + str(i)
43 message=s.recv(1024)
44 message=message.decode()
45
46 s.send(b.encode())
47 a=a + message
48 i= i+1
49 print("Received Message: ", m)
50 else:
51 print("\n Connection Terminated")
```

```
Welcome to receiver module

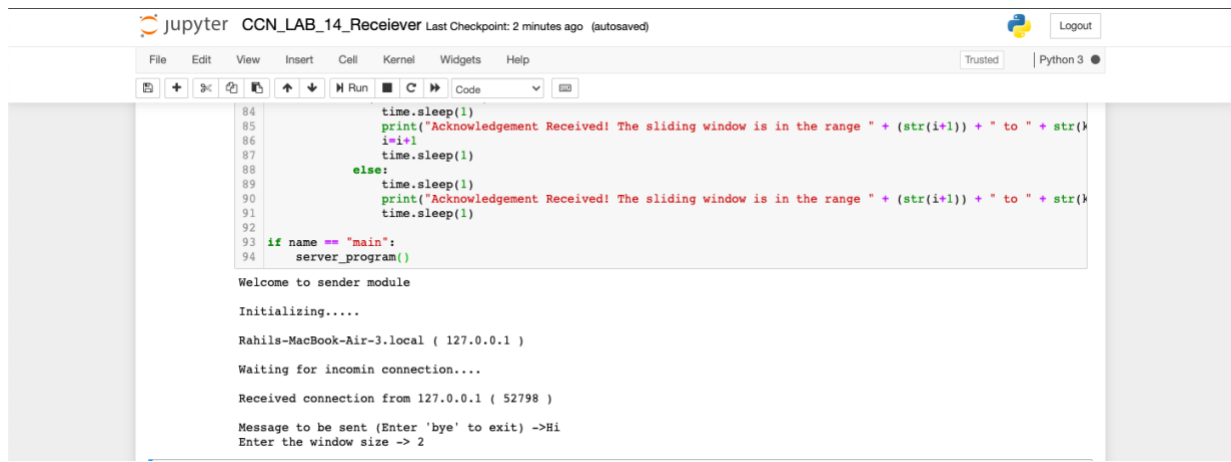
initializing.....

Rahils-MacBook-Air-3.local ( 127.0.0.1 )

enter server address: 127.0.0.1

trying to connect to 127.0.0.1 ( 1232 )

connected....
```



```
jupyter CCN_LAB_14_Receiever Last Checkpoint: 2 minutes ago (autosaved)
```

```
File Edit View Insert Cell Kernel Widgets Help Trusted Python 3
```

```
84 time.sleep(1)
85 print("Acknowledgement Received! The sliding window is in the range " + (str(i+1)) + " to " + str(i))
86 i=i+1
87 time.sleep(1)
88 else:
89 time.sleep(1)
90 print("Acknowledgement Received! The sliding window is in the range " + (str(i+1)) + " to " + str(i))
91 time.sleep(1)
92
93 if name == "main":
94 server_program()
```

```
Welcome to sender module

Initializing.....

Rahils-MacBook-Air-3.local ( 127.0.0.1 )

Waiting for incomin connection....

Received connection from 127.0.0.1 ( 52798 )

Message to be sent (Enter 'bye' to exit) ->Hi
Enter the window size -> 2
```



```
jupyter CCN_LAB_14 Last Checkpoint: 4 minutes ago (autosaved)
```

```
File Edit View Insert Cell Kernel Widgets Help Trusted Python 3
```

```
40
41 elif (f==1):
42 b="ACK" + str(i)
43 message=s.recv(1024)
44 message=message.decode()
45
46 s.send(b.encode())
47 a=a + message
48 i= i+1
49 print("Received Message: ", m)
50 else:
51 print("\n Connection Terminated")
```

```
Welcome to receiver module

initializing.....

Rahils-MacBook-Air-3.local ( 127.0.0.1 )

enter server address: 192.168.1.12

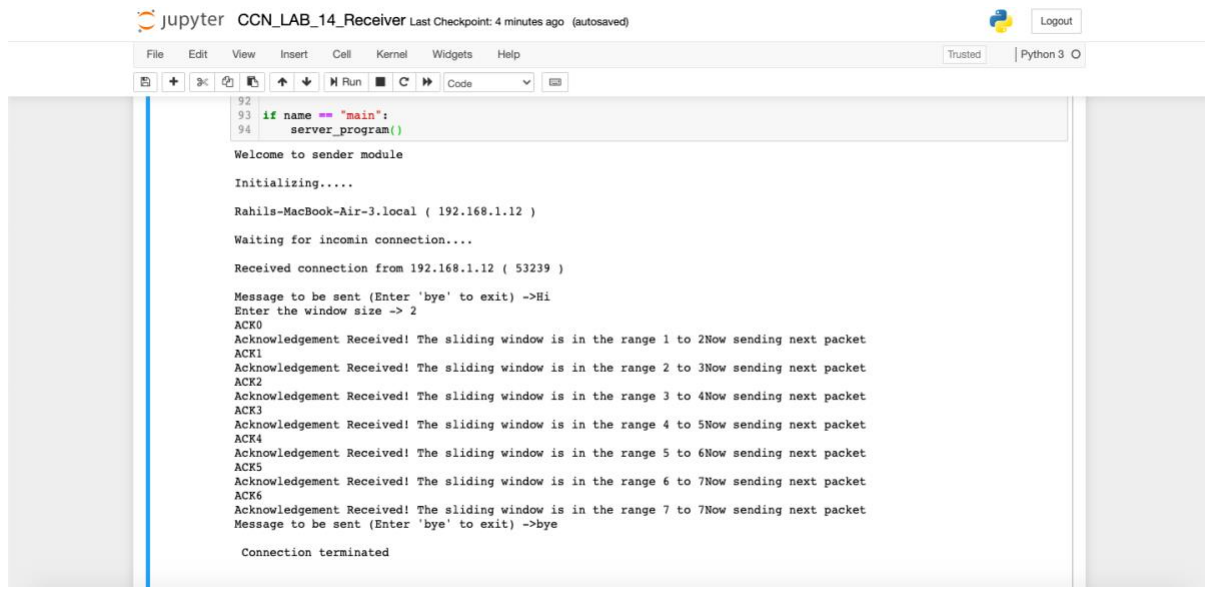
trying to connect to 192.168.1.12 ( 1232 )

connected....

Received Message: Hi

Conection Terminated
```

```
In [ ]: 1
In [ ]: 1
```



```
92
93 if name == "main":
94     server_program()

Welcome to sender module

Initializing.....

Rahils-MacBook-Air-3.local ( 192.168.1.12 )

Waiting for incomin connection....

Received connection from 192.168.1.12 ( 53239 )

Message to be sent (Enter 'bye' to exit) ->Hi
Enter the window size -> 2
ACK0
Acknowledgement Received! The sliding window is in the range 1 to 2Now sending next packet
ACK1
Acknowledgement Received! The sliding window is in the range 2 to 3Now sending next packet
ACK2
Acknowledgement Received! The sliding window is in the range 3 to 4Now sending next packet
ACK3
Acknowledgement Received! The sliding window is in the range 4 to 5Now sending next packet
ACK4
Acknowledgement Received! The sliding window is in the range 5 to 6Now sending next packet
ACK5
Acknowledgement Received! The sliding window is in the range 6 to 7Now sending next packet
ACK6
Acknowledgement Received! The sliding window is in the range 7 to 7Now sending next packet
Message to be sent (Enter 'bye' to exit) ->bye

Connection terminated
```

CONCLUSION: From this experiment we have an understanding of a Sender Receiver Program for Go Back N ARQ implementation.