

EXPERIMENT-14

Write a program for congestion control using Leaky bucket algorithm.

Code and Output:

```

Experiment -4
a) ii) write a program for congestion control using leaky bucket algorithm
code:
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#define NOF_PACKETS 5
/*
int rand (int a)
{
    int m = (srand (1-10) * a);
    return m % a;
}
*/
#include <stdlib.h>
long int random (void);
The random() function uses a nonlinear additive feedback random no generator employing a default table / size 31 long integers to return successive pseudo-random number in the range from 0 to RAND_MAX.
the period of this random number generator is very large, approx
 $16 * ((2^{31}) - 1)$ .
int main()
{
    int packet = 0; [NOF_PACKETS], i, clk, b-4
    D-rate, P-sz = 0, P-sz, P-term, op;
    for (int i = 0; i < NOF_PACKETS; ++i)
        packet = sz[i] * random() / 100;
}
for (int i = 0; i < NOF_PACKETS; ++i)
{
    printf("Packet %d: ", i);
    scanf("%d", &packet);
    printf("Packet %d: ", i);
    scanf("%d", &packet);
    for (int j = 0; j < NOF_PACKETS; ++j)
    {
        if (packet < 0)
        {
            printf("Packet %d: ", j);
            scanf("%d", &packet);
        }
        else
        {
            printf("Packet %d: ", j);
            scanf("%d", &packet);
        }
    }
}

```

```

for (i=0; i < NOF-PACKETS; i++)
    printf("In packets [-1.d]: -1.d bytes\n", i,
        packet - eg[i]);
    printf("In order the output rate :");
    scanf("%-1.d", &o - rate);
    printf("Enter the bucket size :");
    scanf("%-1.d", &bsize);
    for (i=0; i < NOF-PACKETS; i++)
    {
        if (packet - eg[i] + p - eg - sm > bsize)
            if (packet - eg[i] > b - eg)
                printf("In In Incoming packet size (-1.d byte)
                    is greater than bucket capacity (-1.d bytes).
                    PACKET REJECTED", packet - eg[i], bsize);
            else
                printf("In In bucket capacity exceeded. PACKET
                    REJECTED\n");
        else
            p - eg - sm += packet - eg[i];
            printf("In In Incoming packet size : -1.d", packet - eg[i]);
            printf("In In Bytes remaining to transmit -1.d", p - eg - sm);
            // p - sm = random() * 10;
            printf("In In time left for transmission : -1.d write", p - sm);
            for (dh=10; dh <= p - write, dh += 2 * 10)
                while (p - eg - sm > 0)
                {
                    sleep(1);
                    if (p - eg - sm <= 0)
                        op = p - eg - sm, p - eg - sm = 0;
                    else
                        op = 0.5 * rate, p - eg - sm = 0.5 * rate;
                }
            printf("In In packet of size -1.d transmitted", op);
            printf("In In bytes remaining to transmit : -1.d,
                p - eg - sm);
    }
}

```


else
{
printf ("In no packets to transmit!\n");
}

e)

output:

packet [0] : 83 bytes

packet [1] : 86 bytes

packet [2] : 77 bytes

packet [3] : 15 bytes

packet [4] : 93 bytes

enter the output rate = 30

enter the packet size = 35

incoming packet size : 83

bytes remain for frame : 83

packets of size 30 transmitted ...

bytes remaining to transmit : 53

packets of size 30 transmitted ...

Bytes remaining to transmit : 23

packets of size 23 transmitted ...

Bytes remaining to transmit = 0

3/1/25

code:

```
capacity = 10
input_size = 4
out_size = 1
storage = 0
iterations = 4
```

```
for i in range(0,iterations):
    size_left = capacity - storage
    if input_size <= size_left:
        storage += input_size
    else:
        print("Packet lost: ",input_size)
    print(f"Buffer size = {storage} out of capacity {capacity}")
    storage -= 1
```

Output:

```
Output Clear
packet[0]:83 bytes
packet[1]:86 bytes
packet[2]:77 bytes
packet[3]:15 bytes
packet[4]:93 bytes
Enter the Output rate:30
Enter the Bucket Size:85

Incoming Packet size: 83
Bytes remaining to Transmit: 83
Packet of size 30 Transmitted---Bytes Remaining to Transmit: 53
Packet of size 30 Transmitted---Bytes Remaining to Transmit: 23
Packet of size 23 Transmitted---Bytes Remaining to Transmit: 0

Incoming Packet size: 86
Incoming packet size (86bytes) is Greater than bucket capacity (85bytes)-PACKET REJECTED

Incoming Packet size: 77
Bytes remaining to Transmit: 77
Packet of size 30 Transmitted---Bytes Remaining to Transmit: 47
Packet of size 30 Transmitted---Bytes Remaining to Transmit: 17
Packet of size 17 Transmitted---Bytes Remaining to Transmit: 0

Incoming Packet size: 15
Bytes remaining to Transmit: 15
Packet of size 15 Transmitted---Bytes Remaining to Transmit: 0

Incoming Packet size: 93
Incoming packet size (93bytes) is Greater than bucket capacity (85bytes)-PACKET REJECTED
```