

Program 15

Write a program for congestion control using Leaky bucket algorithm.

Code :

Leaky Bucket

In the network layer, before the network can make quality of service guarantees, it must know that traffic is being guaranteed. One of the main causes of congestion is that traffic is often highly bursty.

Two types of traffic shaping :-

1. Leaky bucket
2. Token bucket

Ex: Let $m = 1000$.
packet size: 200 700 500 450 800 200
Since $n > \text{size of packet at head}$
of the queue i.e. $n > 200$...
Therefore, $n = 1000 - 200 = 800$.
Packet size of 200 is sent into network.
200 700 500 450 800 200
Now again $n > \text{size of packet at head}$
of queue i.e. $n > 700$.
Therefore, $n = 800 - 700 = 100$.

Code

```
# include <stdio.h>
int main() {
    int incoming, outgoing, bucket_size;
    n_store = 0;
    printf("Enter bucket size, outgoing rate and n_store");
    scanf("%d %d %d", &bucket_size, &outgoing, &n_store);
    while (n_store > 0) {
        printf("Enter incoming packet size");
        scanf("%d", &incoming);
```

```
pf ("Incoming packet size : /d \n", incoming)
```

```
if (incoming <= (bucket-size - store)) {
```

```
    store += incoming;
```

```
    pf ("Bucket buffer size : /d out of /d \n",
```

```
        store, bucket-size)
```

```
}
```

```
else {
```

```
    pf ("Dropped : /d no. of packets \n", incoming,
```

```
        (bucket-size - store))
```

```
    pf ("Bucket buffer size : /d out of /d \n",
```

```
        store, bucket-size)
```

```
    store = bucket-size;
```

```
}
```

```
store = store - outgoing;
```

```
pf ("After outgoing : /d bytes left out  
    : /d in buffers \n", store, bucket-size)
```

```
}
```

Output

Clear

```
Generated packets: [80, 63, 57, 12, 69]
Enter bucket size: 60
Enter output rate: 30
Packet of size 80 bytes exceeds bucket capacity (60 bytes) - REJECTED
Packet of size 63 bytes exceeds bucket capacity (60 bytes) - REJECTED

Packet of size 57 bytes added to bucket
Bytes in bucket: 57
Transmitting 30 bytes
Bytes remaining in bucket: 27
Transmitting 27 bytes
Bytes remaining in bucket: 0

Packet of size 12 bytes added to bucket
Bytes in bucket: 12
Transmitting 12 bytes
Bytes remaining in bucket: 0
Packet of size 69 bytes exceeds bucket capacity (60 bytes) - REJECTED

=== Code Execution Successful ===
```