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Lab 10.

Write a program for congestion control using Leaky bucket Algorithm.

* Leaky Bucket algorithm is a congestion control algorithm which uses Traffic Shaping mechanism to control the amount and rate of traffic sent to network.
* It helps to regulate rate of data transmission & reduces congestion.

* 2 types of traffic shaping algorithm
  1. Leaky Bucket 2. Token Bucket.

Algorithm for variable length packets

1. Initialize: a counter to n at tick of clock.
2. Repeat until n is smaller than packet size of packet at head of queue.
   a). pop of packet out of head of queue.
   b). Send packet P into network.
   c). Decrement counter by size of packet P.
3. Reset counter & go to step 1

Code:

```
#include <bits/stdc++.h>
using namespace std;
int main() {

int no_of_queries, storage=0, input_pkt_size, bucket_size,
output_pkt_size;
```

```
cout << "Enter the number of queries:";
cin >> no_of_queries;

cout << "Enter the bucket size:";
cin >> bucket_size;

cout << "Enter the input packet size:";
cin >> input_pkt_size;

cout << "Enter the output packet size:";
cin >> output_pkt_size;

for (int i=0; i<no_of_queries; i++) {

int size_left = bucket_size - storage;

if (input_pkt_size <= size_left) {
  storage += input_pkt_size;
} else {
  cout << "Packet loss =" << input_pkt_size << endl;
}

cout << "Buffer size" << storage << "out of bucket
  size" << bucket_size << endl;
storage -= output_pkt_size;
if (storage < 0) storage = 0;
}

return 0;
}
```

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Output:

Enter number of queries: 4
Enter bucket size: 10
Enter input bucket size: 4
Enter output bucket size: 1

Buffer size = 4 out of bucket size = 10
Buffer size = 7 out of bucket size = 10
Buffer size = 10 out of bucket size = 10

Packet loss = 4
Buffer size = 9 out of bucket size = 10