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14. Write a program for congestion control using leaky bucket algorithm.

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#define NOF_PACKETS 5
/* int rand(int a){
    int rn = (random()%10)%a;
    return rn == 0?1:rn;
}*/
/* #include<stdlib.h>
    long int random(void);
*/
int main(){
  int packet_sz[NOF_PACKETS],i,clk,b_size,o_rate,
    p_sz_rm=0, p_sz, p_time, op;
  for(i=0;i<NOF_PACKETS;i++)
      packet_sz[i] = random()%100;
  for(i=0;i<NOF_PACKETS;i++)
      printf("\n packet[%d]:%d bytes\t",i,
          packet_sz[i]);
  printf("\n Enter the output rate");
  scanf("%d",&o_rate);
  printf("Enter the Bucket size:");
  scanf("%d",&b_size);
  for(i=0;i<NOF_PACKETS;i++){
    if(packet_sz[i]+p_sz_rm>b_size)
      if(packet_sz[i]>b_size)
        printf("Incoming packet size
          (%d bytes) is greater
          than bucket capacity
          (%d bytes)-PACKET-REJECTED",
          packet_sz[i],b_size);
```

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```
else
    printf("\n\n Bucket capacity exceeded
            d - PACKETS REJECTED!!");
else {
    p_sz_rmt = packet_sz[i];
    printf("\n\n Incoming packet size: %d",
            packet_sz[i]);
    printf("\n Bytes remaining to transmit: %d",
            p_sz_rmn);
    // p_time = random() * 10;
    // printf("\n Time bft for transmission: %d units",
            p_time);
    // for(clk=10; clk<=p_time; clk+=10)
    while(p_sz_rmn>0){
        sleep(1);
        if(p_sz_rmn){
            if(p_sz_rmn<=0_rate)
                op=p_sz_rmn, p_sz_rmn=0;
            else
                op=0_rate, p_sz_rmn-=0_rate;
            printf("\n Packet of size %d
                    transmitted", op);
            printf("--- Bytes Remaining
                    to transmit %d", p_sz_rmn);
        } else {
            printf("\n No packets to transmit");
        }
    }
}
}
}
```

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inside while loop

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O/p of Leaky bucket

packet[0]: 83 bytes
packet[1]: 86 bytes
packet[2]: 77 bytes
packet[3]: 15 bytes
packet[4]: 93 bytes
Enter the o/p 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 --- " " " " : 23
" " " 23 " --- " " " " : 0

Incoming packet size (86 bytes) is greater than bucket capacity (85 bytes) - PACKET REJECTED

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

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