7. Using Bucket Algorithm, design a program to achieve Traffic management at Flow level by implementing Closed Loop Control technique.

```c
#include <stdio.h>
int main() {
    int bucketSize, outputRate, line, packetRate[25], currentSize = 0;
    // Input bucket size and output rate
    printf("Enter bucket size and output rate: ");
    scanf("%d %d", &bucketSize, &outputRate);

    // Input number of lines
    printf("Enter the number of input lines: ");
    scanf("%d", &line);
    // Input the packet rate for each line
    printf("Enter packet rate for %d lines: ", line);
    for (int i = 0; i < line; i++) {
        scanf("%d", &packetRate[i]);
    }
    // Process each packet rate
    for (int i = 0; i < line; i++) {
        currentSize += packetRate[i];  // Add packet to the bucket
        // Check if bucket overflows
        if (currentSize <= bucketSize) {
            printf("Input from line %d with rate %d added to the bucket. Current size: %d\n", i + 1,
packetRate[i], currentSize);
        } else {
            currentSize -= packetRate[i];  // Discard packet if overflow

printf("Input from line %d with rate %d discarded. Current size: %d\n", i + 1, packetRate[i],
currentSize);

    }
```

```
    }
    // Output the packets at the specified output rate
    if (currentSize <= outputRate) {
        printf("All packets sent at output rate %d. Bucket empty.\n", currentSize);
        currentSize = 0;
    } else {
        currentSize -= outputRate;
        printf("Packets sent at output rate %d. Remaining bucket size: %d\n", outputRate,
currentSize);
    }
    return 0;
}
```

OUTPUT

```
Continue simulation? (y/n): n
acer@acer-VirtualBox:~/CN lab$ gcc 7.c
acer@acer-VirtualBox:~/CN lab$ ./a.out
Enter bucket size and output rate: 10
5
Enter the number of input lines: 3
Enter packet rate for 3 lines: 4
3
2
Input from line 1 with rate 4 added to the bucket. Current size: 4
Input from line 2 with rate 3 added to the bucket. Current size: 7
Input from line 3 with rate 2 added to the bucket. Current size: 9
Packets sent at output rate 5. Remaining bucket size: 4
acer@acer-VirtualBox:~/CN lab$
```