

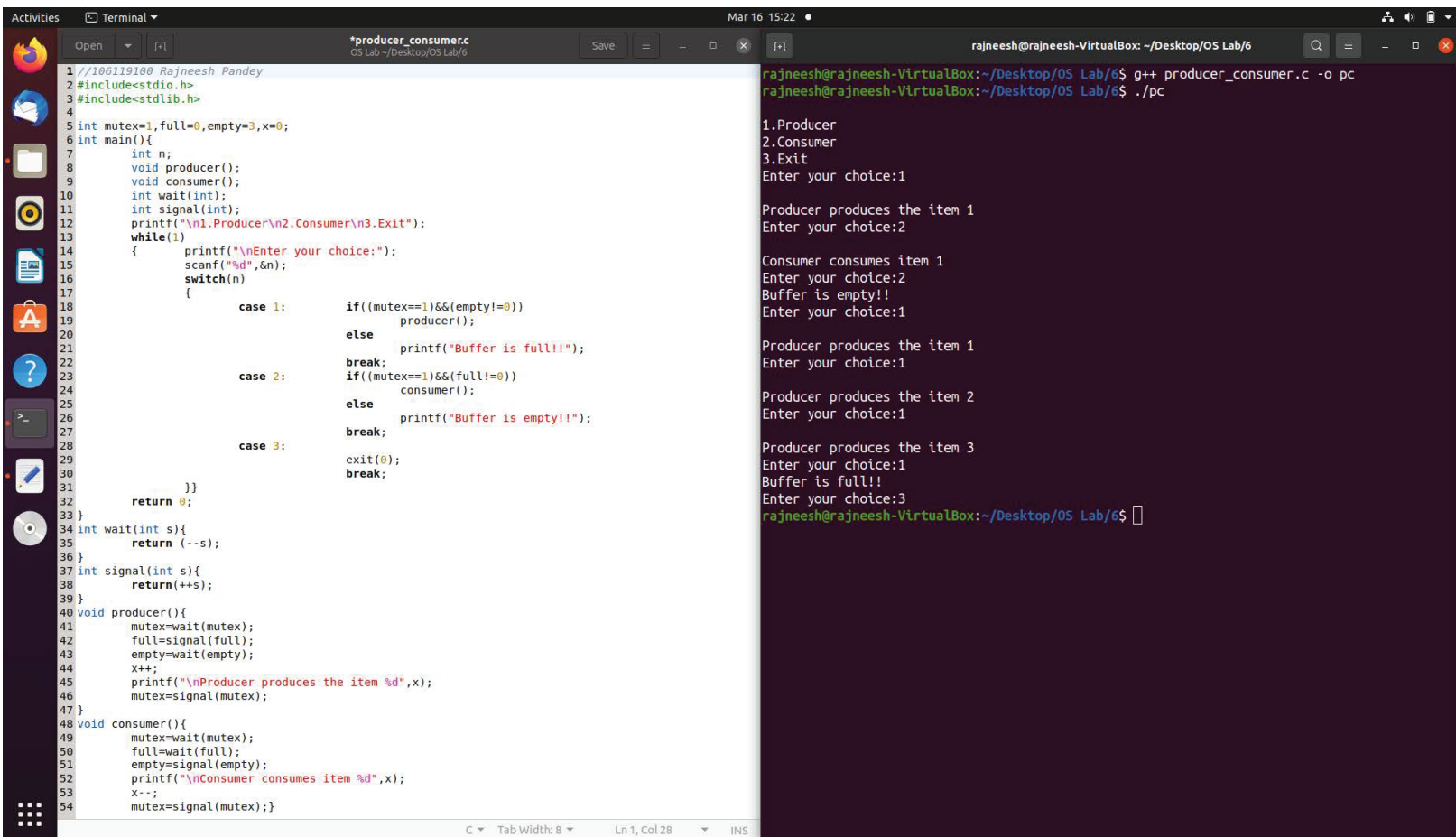
OS Lab(CSLR42) - Lab 6 - 16/03/2021

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Question 1:

Producer consumer problem is also known as bounded buffer problem. In this problem we have two processes, producer and consumer, who share a fixed size buffer. Producer work is to produce data or items and put in buffer. Consumer work is to remove data from buffer and consume it. We have to make sure that producer do not produce data when buffer is full and consumer do not remove data when buffer is empty.

Program and Input/Output



```
1 //106119100 Rajneesh Pandey
2 #include<stdio.h>
3 #include<stdlib.h>
4
5 int mutex=1,full=0,empty=3,x=0;
6 int main(){
7     int n;
8     void producer();
9     void consumer();
10    int wait(int);
11    int signal(int);
12    printf("\n1.Producer\n2.Consumer\n3.Exit");
13    while(1)
14    {
15        printf("\nEnter your choice:");
16        scanf("%d",&n);
17        switch(n)
18        {
19            case 1: if((mutex==1)&&(empty!=0))
20                    producer();
21                    else printf("Buffer is full!!");
22                    break;
23            case 2: if((mutex==1)&&(full!=0))
24                    consumer();
25                    else printf("Buffer is empty!!");
26                    break;
27            case 3: exit(0);
28                    break;
29        }
30    }
31    return 0;
32 }
33
34 int wait(int s){
35     return (--s);
36 }
37 int signal(int s){
38     return(++s);
39 }
40 void producer(){
41     mutex=wait(mutex);
42     full=signal(full);
43     empty=wait(empty);
44     x++;
45     printf("\nProducer produces the item %d",x);
46     mutex=signal(mutex);
47 }
48 void consumer(){
49     mutex=wait(mutex);
50     full=wait(full);
51     empty=signal(empty);
52     printf("\nConsumer consumes item %d",x);
53     x--;
54     mutex=signal(mutex);}
```

```
rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/6$ g++ producer_consumer.c -o pc
rajneesh@rajneesh-VirtualBox:~/Desktop/OS Lab/6$ ./pc
1.Producer
2.Consumer
3.Exit
Enter your choice:1
Producer produces the item 1
Enter your choice:2
Consumer consumes item 1
Enter your choice:2
Buffer is empty!!
Enter your choice:1
Producer produces the item 1
Enter your choice:1
Producer produces the item 2
Enter your choice:1
Producer produces the item 3
Enter your choice:1
Buffer is full!!
Enter your choice:3
rajneesh@rajneesh-VirtualBox:~/Desktop/OS Lab/6$
```