

Name: Maimoona Khilji  
Program: BS-Data Science

## Operating System – Lab 19

---

**Task 1:** Solve Producer and Consumer problem using binary semaphores

**Code:**

```
#include<pthread.h>
#include <iostream>
#include <cstdlib>
#include<semaphore.h>
using namespace std;
int counter=0,next_consumed=0,next_produced=0;
int buffer[1000];
int in=0;
int out=0;
int i=0,j=0;
int BUFFER_SIZE=100;
sem_t S;

void *producer(void *param){
    while (i<=2) {

        sem_wait(&S);
        /* produce an item in next produced */
        while (counter == BUFFER_SIZE)
            ;/* do nothing */
        buffer[in] = next_produced;
        in = (in + 1) % BUFFER_SIZE;
        counter++;
        cout<<counter<<" in producer"<<endl;

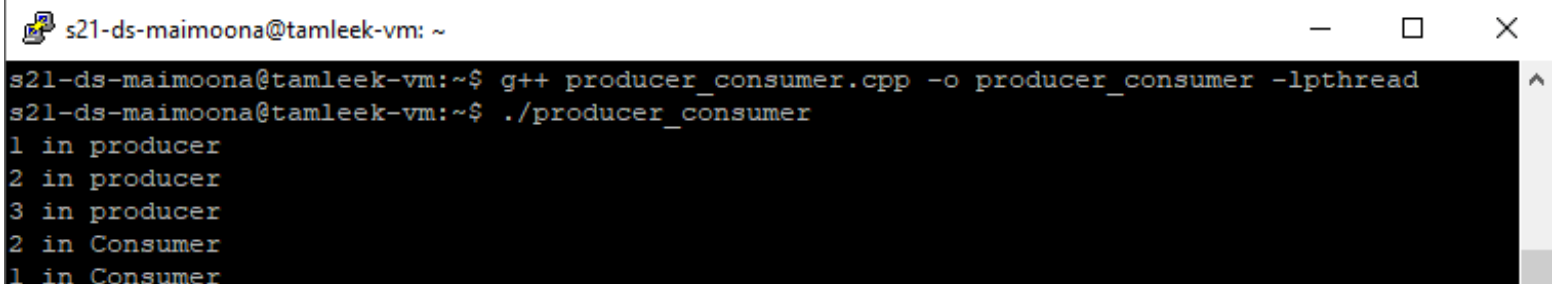
        i++;
        sem_post(&S);
    }
    pthread_exit(NULL);
}
```

```
void *consumer(void *param){
    while (j<=2) {
        sem_wait(&S);

        while (counter == 0)
```

Name: Maimoona Khilji  
Program: BS-Data Science

### Output:



```
s21-ds-maimoona@tamleek-vm: ~  
s21-ds-maimoona@tamleek-vm:~$ g++ producer_consumer.cpp -o producer_consumer -lpthread  
s21-ds-maimoona@tamleek-vm:~$ ./producer_consumer  
1 in producer  
2 in producer  
3 in producer  
2 in Consumer  
1 in Consumer
```

**Name: Maimoona Khilji**  
**Program: BS-Data Science**