```
printf("Consumer consumed %d from index %d\n", item, out);
        print_buffer();
        out = (out + 1) % buffer;
        pthread_mutex_unlock(&mutex);
        sem_post(&empty);
        sleep(2);
    }
    return NULL;
}

int main() {
    pthread_t prod, cons;
    sem_init(&empty, 0, buffer);
    sem_init(&full, 0, 0);
    pthread_mutex_init(&mutex, NULL);

    pthread_create(&prod, NULL, producer, NULL);
    pthread_create(&cons, NULL, consumer, NULL);
    pthread_join(prod, NULL);
    pthread_join(cons, NULL);

    pthread_mutex_destroy(&mutex);
    sem_destroy(&empty);
    sem_destroy(&full);
    return 0;
}
```

OUTPUT:

```
manasvi@manasvi:/mnt/c/Users/bhute/Desktop/oslab/Ass 4$ gcc 4.c -o
four
manasvi@manasvi:/mnt/c/Users/bhute/Desktop/oslab/Ass 4$ ./four
Producer produced 1 at index 0
Buffer: [1, 0, 0, 0, 0]
Consumer consumed 1 from index 0
Buffer: [0, 0, 0, 0, 0]
Producer produced 2 at index 1
Buffer: [0, 2, 0, 0, 0]
Consumer consumed 2 from index 1
Buffer: [0, 0, 0, 0, 0]
Producer produced 3 at index 2
Buffer: [0, 0, 3, 0, 0]
Producer produced 4 at index 3
Buffer: [0, 0, 3, 4, 0]
Consumer consumed 3 from index 2
```

```
Buffer: [0, 0, 0, 4, 0]
Producer produced 5 at index 4
Buffer: [0, 0, 0, 4, 5]
Producer produced 6 at index 0
Buffer: [6, 0, 0, 4, 5]
Consumer consumed 4 from index 3
Buffer: [6, 0, 0, 0, 5]
Producer produced 7 at index 1
Buffer: [6, 7, 0, 0, 5]
Producer produced 8 at index 2
Buffer: [6, 7, 8, 0, 5]
Consumer consumed 5 from index 4
Buffer: [6, 7, 8, 0, 0]
Producer produced 9 at index 3
Buffer: [6, 7, 8, 9, 0]
```