PRODUCER -CONSUMER PROBLEM

```
#include <stdio.h>
#include <stdlib.h>
#include <pthread.h>
#include <semaphore.h>
#include <unistd.h>
int buffer[SIZE];
int in = 0, out = 0;
sem_t empty, full, mutex;
void* producer(void* pno) {
    int item;
    for (int i = 0; i < 5; i++) {
        item = rand() % 100;
        sem_wait(&empty);
        sem_wait(&mutex);
        buffer[in] = item;
        printf("Producer produced %d\n", item);
        in = (in + 1) % SIZE;
        sem_post(&mutex);
        sem_post(&full);
        sleep(1);
    }
}

void* consumer(void* cno) {
    for (int i = 0; i < 5; i++) {
        sem_wait(&full);
        sem_wait(&mutex);
        int item = buffer[out];
```

```
        printf("Consumer consumed %d\n", item);
        out = (out + 1) % SIZE;
        sem_post(&mutex);
        sem_post(&empty);
        sleep(1);
    }
}
int main() {
    pthread_t pro, con;
    sem_init(&empty, 0, SIZE);
    sem_init(&full, 0, 0);
    sem_init(&mutex, 0, 1);
    pthread_create(&pro, NULL, producer, NULL);
    pthread_create(&con, NULL, consumer, NULL);
    pthread_join(pro, NULL);
    pthread_join(con, NULL);
    return 0;
}
```