BÀI TẬP 3:

Code:

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

#include <pthread.h>

#include <unistd.h>

#include <time.h>

#include <semaphore.h>

#define MAX\_THREAD 2

pthread\_t th[MAX\_THREAD];

pthread\_mutex\_t mutexBuffer;

sem\_t semEmpty;

sem\_t semFull;

int buffer[5];

int count = 0;

void\* producer(void\* args) {

//lap day du lieu vao

while (1) {

//Dua de lieu vao bo nho

int x = rand() % 100;

sleep(1);

sem\_wait(&semEmpty);

pthread\_mutex\_lock(&mutexBuffer);

buffer[count++] = x;

pthread\_mutex\_unlock(&mutexBuffer);

sem\_post(&semFull);

}

}

void\* consumer(void\* args) {

while (1) {

int y;

// Lay du lieu

sem\_wait(&semFull);

pthread\_mutex\_lock(&mutexBuffer);

y = buffer[count - 1];

count--;

pthread\_mutex\_unlock(&mutexBuffer);

sem\_post(&semEmpty);

// Consume

printf("Data %d\n", y);

sleep(1);

}

}

int main(int argc, char\* argv[]) {

srand(time(NULL));

pthread\_mutex\_init(&mutexBuffer, NULL);

sem\_init(&semEmpty, 0, 5);

sem\_init(&semFull, 0, 0);

int i;

for (i = 0; i < MAX\_THREAD; i++) {

int ret1=pthread\_create(&th[i], NULL, &producer, NULL);

int ret2=pthread\_create(&th[i], NULL, &consumer, NULL);

if (ret1 != 0){

printf("Thread producer [%d] created error\n", i);

}

if (ret2 != 0)

{

printf("Thread consumer [%d] created error\n", i);

}

}

for (i = 0; i < MAX\_THREAD; i++) {

if (pthread\_join(th[i], NULL) != 0) {

perror("Failed to join thread");

}

}

sem\_destroy(&semEmpty);

sem\_destroy(&semFull);

pthread\_mutex\_destroy(&mutexBuffer);

return 0;

}

Kết quả:

Text

Description automatically generated