ProducerConsumer.c

#include<stdio.h>

#include<stdlib.h>

#include<pthread.h>

#include<semaphore.h>

#include<unistd.h>

int count=0, in=0, out=0, buffer[5];

sem\_t full,empty;

pthread\_mutex\_t m;

void \* producer(void \* t\_num)

{

int thread\_num=\*(int \*)t\_num;

while(1)

{

sem\_wait(&empty);

pthread\_mutex\_lock(&m);

if(count>=5)

printf("\nBUFFER FULL!!!\n");

else

{

buffer[in]=rand()%100;

printf("\nPRODUCER %d has produced: %d\n",thread\_num,buffer[in]);

in=(in+1)%5;

count++;

}

pthread\_mutex\_unlock(&m);

sem\_post(&full);

}

pthread\_exit(0);

}

void \* consumer(void \* t\_num)

{

int thread\_num=\*(int \*)t\_num;

while(1)

{

sem\_wait(&full);

pthread\_mutex\_lock(&m);

if(count<=0)

printf("\nBUFFER EMPTY!!!\n");

else

{

printf("\nCONSUMER %d has consumed %d\n",thread\_num,buffer[out]);

out=(out+1)%5;

count--;

}

pthread\_mutex\_unlock(&m);

sem\_post(&empty);

}

pthread\_exit(0);

}

int main()

{

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

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

pthread\_mutex\_init(&m,0);

pthread\_t proth[10],conth[10];

int i,j,num\_pro,num\_con;

printf("\nPlease enter the total number of producers");

scanf("%d",&num\_pro);

printf("\nPlease enter the total number of consumers");

scanf("%d",&num\_con);

for(i=0;i<num\_pro;i++)

pthread\_create(&proth[i],NULL,producer,&i);

for(i=0;i<num\_con;i++)

pthread\_create(&conth[i],NULL,consumer,&i);

for(i=0;i<num\_pro;i++)

pthread\_join(proth[i],NULL);

for(i=0;i<num\_con;i++)

pthread\_join(conth[i],NULL);

pthread\_mutex\_destroy(&m);

sem\_destroy(&full);

sem\_destroy(&empty);

}

Output:

CONSUMER 0 has consumed 48

CONSUMER 2 has consumed 87

CONSUMER 0 has consumed 18

CONSUMER 5 has consumed 41

PRODUCER 0 has produced: 35

PRODUCER 0 has produced: 4

PRODUCER 3 has produced: 37

PRODUCER 4 has produced: 95

CONSUMER 2 has consumed 35

CONSUMER 5 has consumed 4

PRODUCER 1 has produced: 39