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**Code :**

#include <stdio.h>

#include <unistd.h>

#include <semaphore.h>

#include <pthread.h>

int buffer[5];

int in, out;

sem\_t s, f, e;

void\* producer(void\* arg)

{

sem\_wait(&e);

sem\_wait(&s);

int data;

printf("\nEnter the Value ");

scanf("%d", &data);

buffer[in] = data;

printf("Producer Thread id = %ld and Producer Item = %d", pthread\_self(), data);sem\_post(&s); sem\_post(&f); sleep(2);

in = (in + 1) % 5;

sem\_post(&s);

sem\_post(&f);

sleep(2);

}

void\* consumer(void\* arg)

{

int conti = 0;

do

{

sem\_wait(&f);

sem\_wait(&s);

int val = buffer[out];

printf("\nConsumer Thread id = %ld and Consumer Item = %d", pthread\_self(), val);

out = (out + 1) % 5;

sem\_post(&s);

sem\_post(&e);

sem\_getvalue(&e, &conti);

} while (conti != 5);

}

int main()

{

pthread\_t p\_tid[5], c\_tid;

sem\_init(&s, 0, 1);

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

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

for (int i = 0; i < 5; i++)

{

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

}

pthread\_create(&c\_tid, NULL, consumer, NULL);

for (int i = 0; i < 5; i++)

{

pthread\_join(p\_tid[i], NULL);

}

pthread\_join(c\_tid, NULL);

return 0;

}

**Output :**

pranav@LAPTOP-TB69H925:~/TIA28$ gcc producerconsumer.c -lpthread

pranav@LAPTOP-TB69H925:~/TIA28$ ./a.out

Enter the Value 5

Producer Thread id = 140583908443712 and Producer Item = 5

Consumer Thread id = 140583792268864 and Consumer Item = 5

Enter the Value 2

Producer Thread id = 140583891658304 and Producer Item = 2

Enter the Value 9

Producer Thread id = 140583809054272 and Producer Item = 9

Enter the Value 1

Producer Thread id = 140583800661568 and Producer Item = 1

Enter the Value 0

Producer Thread id = 140583900051008 and Producer Item = 0

Consumer Thread id = 140583792268864 and Consumer Item = 2

Consumer Thread id = 140583792268864 and Consumer Item = 9

Consumer Thread id = 140583792268864 and Consumer Item = 1

Consumer Thread id = 140583792268864 and Consumer Item = 0

pranav@LAPTOP-TB69H925:~/TIA28$