

5. Write a C program to simulate producer-consumer problem using Semaphores.

Code:

```
#include<stdio.h>
#include<stdlib.h>

int mutex=1,full=0,empty=3,x=0;

int main()
{
    int n;
    void producer();
    void consumer();
    int wait(int);
    int signal(int);
    printf("\n1.Producer\n2.Consumer\n3.Exit");
    while(1)
    {
        printf("\nEnter your choice:");
        scanf("%d",&n);
        switch(n)
        {
            case 1:  if((mutex==1)&&(empty!=0))
                      producer();
                    else
                      printf("Buffer is full!!!");
                    break;
            case 2:  if((mutex==1)&&(full!=0))
                      consumer();
                    else
                      printf("Buffer is empty!!!");
                    break;
            case 3:
                      exit(0);
                      break;
        }
    }

    return 0;
}

int wait(int s)
```

```

{
    return (--s);
}

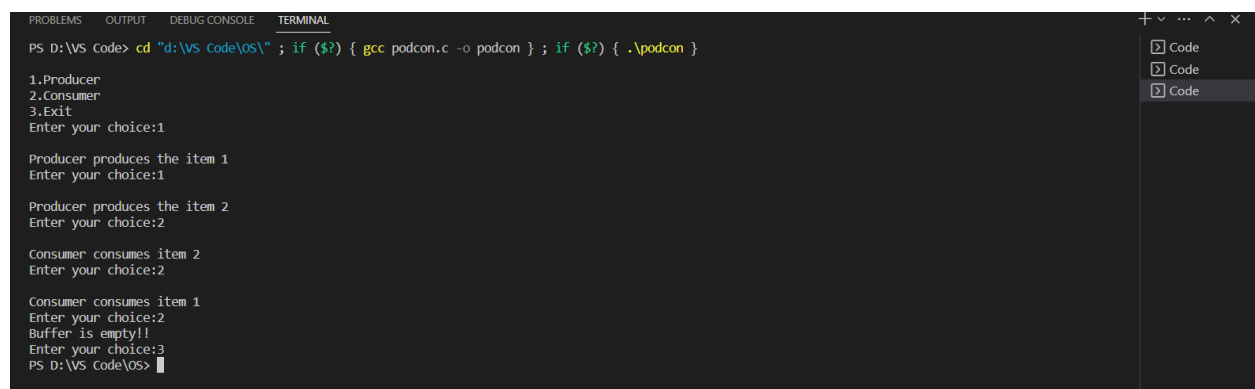
int signal(int s)
{
    return(++s);
}

void producer()
{
    mutex=wait(mutex);
    full=signal(full);
    empty=wait(empty);
    x++;
    printf("\nProducer produces the item %d",x);
    mutex=signal(mutex);
}

void consumer()
{
    mutex=wait(mutex);
    full=wait(full);
    empty=signal(empty);
    printf("\nConsumer consumes item %d",x);
    x--;
    mutex=signal(mutex);
}

```

Output:



```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS D:\VS Code> cd "d:\VS Code\OS\" ; if ($?) { gcc podcon.c -o podcon } ; if ($?) { .\podcon }
1.Producer
2.Consumer
3.Exit
Enter your choice:1

Producer produces the item 1
Enter your choice:1

Producer produces the item 2
Enter your choice:2

Consumer consumes item 2
Enter your choice:2

Consumer consumes item 1
Enter your choice:2
Buffer is empty!!
Enter your choice:3
PS D:\VS Code\OS>

```

Observation:

19/07/23

Q) Write a C program to simulate producer-consumer problem using Semaphores.

```
#include <stdio.h>
#include <stdlib.h>
int mutex=1, full=0, empty=3, n=0;

int main() {
    int n;
    void producer();
    void consumer();
    int wait(int);
    int signal(int);

    while(1) {
        printf("Enter your choice n");
        printf("\n1. Produce\n2. consume\n3. Exit");
        scanf("%d", &n);
        switch(n) {
            case 1: if (mutex==1 && (empty!=0))
                    produce();
                else
                    printf("Buffer is full\n");
                    break;
            case 2: if (mutex==1 && (full!=0))
                    consumer();
                else
                    printf("Buffer is empty!!\n");
                    break;
            case 3: exit(0);
                    break;
        }
    }
    return 0;
}

int wait(int s) {
    return (--s);
}

int signal(int s) {
    return (++s);
}

void produce() {
    mutex = wait(mutex);
    full = signal(full);
    empty = wait(empty);
    n++;
    printf("\nProducer produces the item %d\n", n);
    mutex = signal(mutex);
}

void consumer() {
    mutex = wait(mutex);
    full = wait(full);
    empty = signal(empty);
    printf("\nConsumer consumes item %d\n", n);
    n--;
    mutex = signal(mutex);
}
```

output:

Enter choice
1.
Producer
1.
Producer
2.
Consumer
2.
Consumer
2.
Buffer

output

Enter choice: 1. Producer 2. Consumer 3. Exit.

1.
producer produces item 1

1.
producer produces item 2

2.
consumer consumes item 2.

2.
consumer consumes item 1

2.
Buffer is empty.

Q
19/7/23