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);
  χ++;
  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

Consumer consumes item 1
Enter your choice:3

Buffer is empty||
Enter your choice:3

PS D:\VS Code\OS> ■
```

Observation:

```
output !
19/07/29

6) Write a c program to simulate producer-consumer problem
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                                                                      Enter cholu
   Using semaphores.
                      grings ("hold pale") con many
                                                                       producer
Hinculde Kerdie W
# include (stallib.h)
                                                                       producer
int muter=1, full=0, emptag=3, n=0;
                                                                       2.
                                                                       Consumer
but mainerd
                                                                       2 .
                                                                       consumer
      int n)
      void producerci;
      void consumeres;
                                                                       2.
       int vocateint;
                                                                        Buffer
      int signal(14)
     while (1) of
       mint e "Finder your choice in");
     Drivite (" in 1. Produce in 2. consume in 3. Enit " )')
     Scant ( wood , don);
     Swittel (n) 1
        Core 1: if (mulen == 1) did(enpty; =0)
                   produce (0);
                  printly Boller is fell (");
                break;
       Case >: it ((muter = =1) 66 (feel ( =0))
                consumer ();
                else mint ("Buffer is empty ! 1 ~ " ");
       a shit break; I is or about P in I is +
       Cose 3: exittor;
                  break!
 actor o!
 int wait limb of
             reduca (-- 5); 4
 int signal ( but 3) (
          return (++5) 1 4
 Noid produce() {
       muter = wait (muter);
        Pull = signal (full);
empty=would (empty);
      Private (" in Producer produces the ; tem of d v", n);
      mutex = signal (muten);
void consumeres of
   muter = vooi- (mulen);
   full = vooit (full);
   empty = signal (empty);
   private, in consumer consumer stam angen, 1)
   muter = signal (muter);
```

output; in Producer 2 consumer Enter choice: in Producer 2 consumer produces item) 3. Eni+. 1. producer produces item 2 consumer consumes item 2. consumer consumes item, 2, Buffer is empty.