6. **Construct a C program to simulate producer-consumer problem using semaphores.**

**#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);**

**}**

