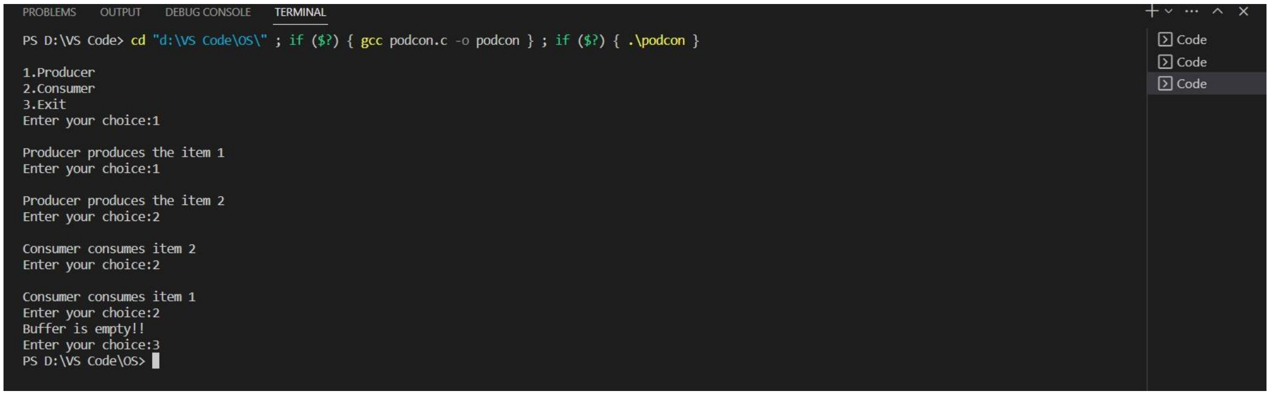
5.Write a C program to simulate producer-consumer problem using Semaphores.

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)
```

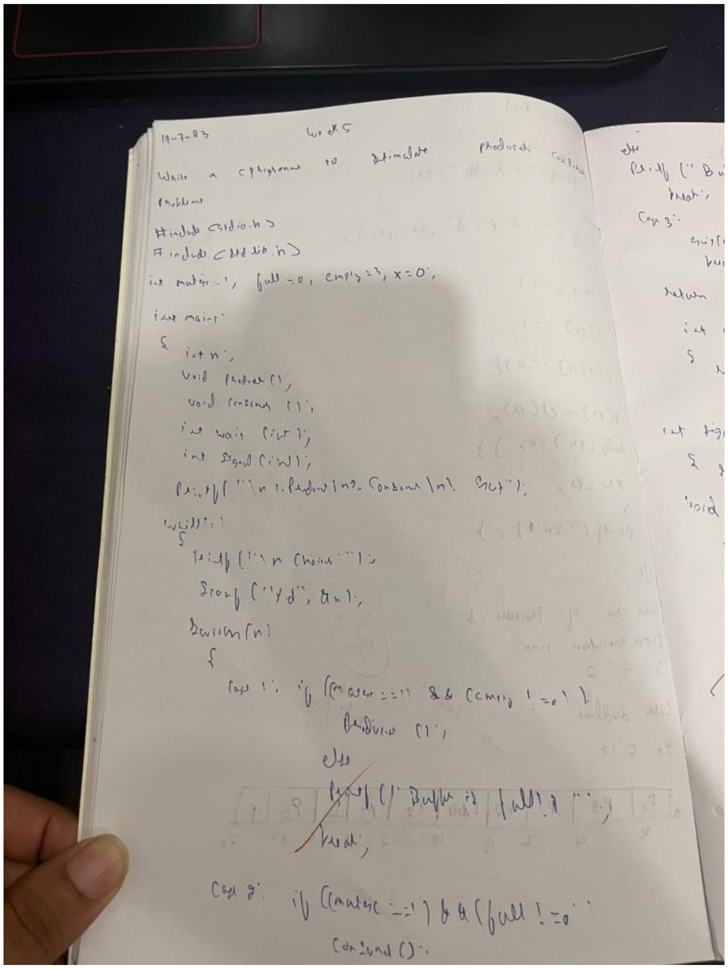
```
{
    return (--s);
}

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:



```
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>
```

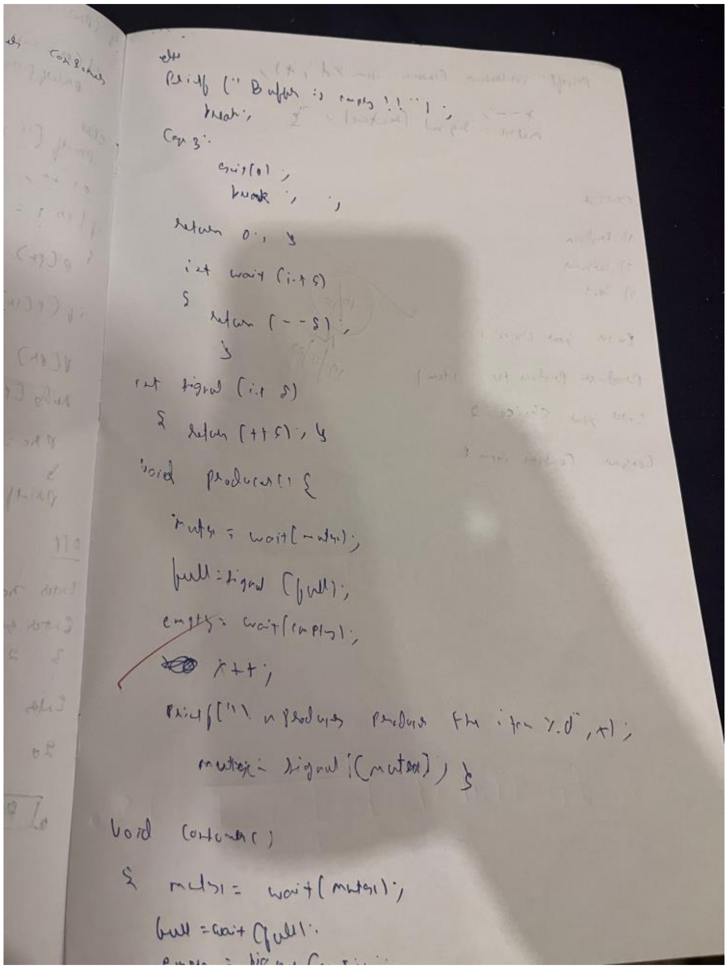
Observation:



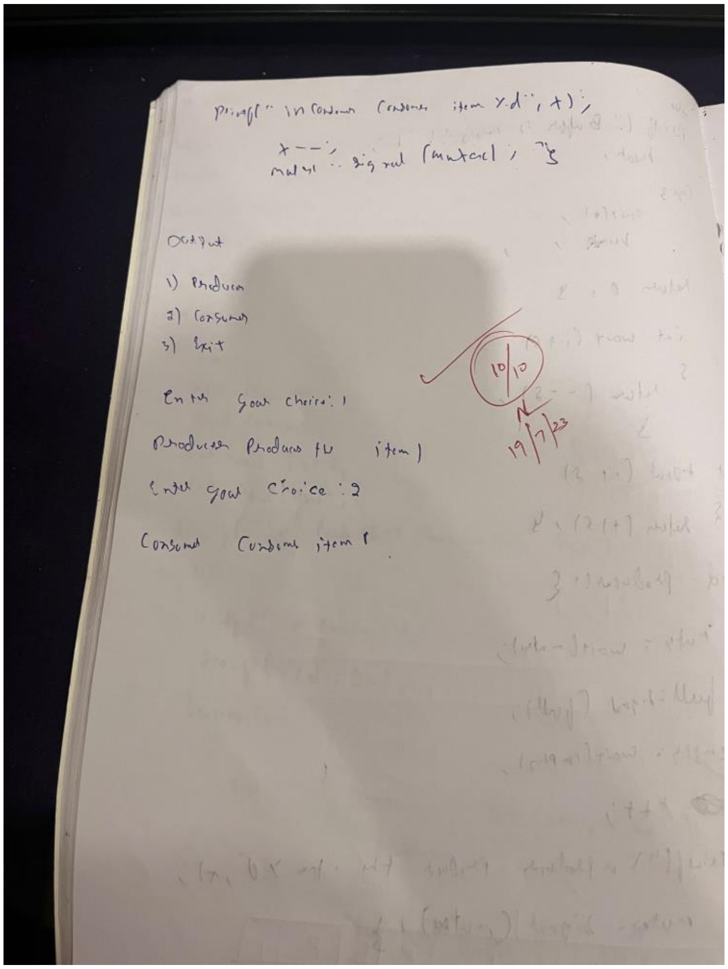
19-7-23 Week 5

Write a C program to Stimulate producer consumer problem

```
#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("\n 1.Producer\n2. Consumer\n3. Exit");
while(1)
 {
   printf("\n 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("\n producer produces the item %d", x);
     mutex = signal ((mutex)); }

void consumer()
 { mutex = wait(mutex);
   full = wait (full);
```



```
printf("\nConsumer Consumes item %d", x);
        x--;
        mutex = signal(mutex); }
```

Output

```
1) Producer
2) Consumer
3) Exit

Enter your choice: 1

Producer Produces the item 1

Enter your choice: 2

Consumer Consumes item 1
```

10/10

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