Semaphores

```c
#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("\n Enter 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("\n Producer produces the item %d",x);
mutex=signal(mutex);
}
```

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

Output :-

```
PS C:\Users\dgs> cd "c:\Users\dgs\Desktop\OS OTT\os 1 vivek\OS 4 TO 10\"

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:3
PS C:\Users\dgs\Desktop\OS OTT\os 1 vivek\OS 4 TO 10>
```