Q Aim: To write a C program to simulate producer-consumer problem using Semaphores

Program

```
#include<stdio.h>
int main()
{
int buffer[10], bufsize, in, out, produce,
consume, choice=0; in=0;
out=0;
bufsize=10;
while(choice!=3)
{
printf("\n1. Produce\t 2. Consume\t
3. Exit");
printf("\nEnter your choice:");
scanf("%d", &choice);
switch(choice)
{
case 1: if((in+1)%bufsize==out)
printf("\n Buffer is full");
else
```

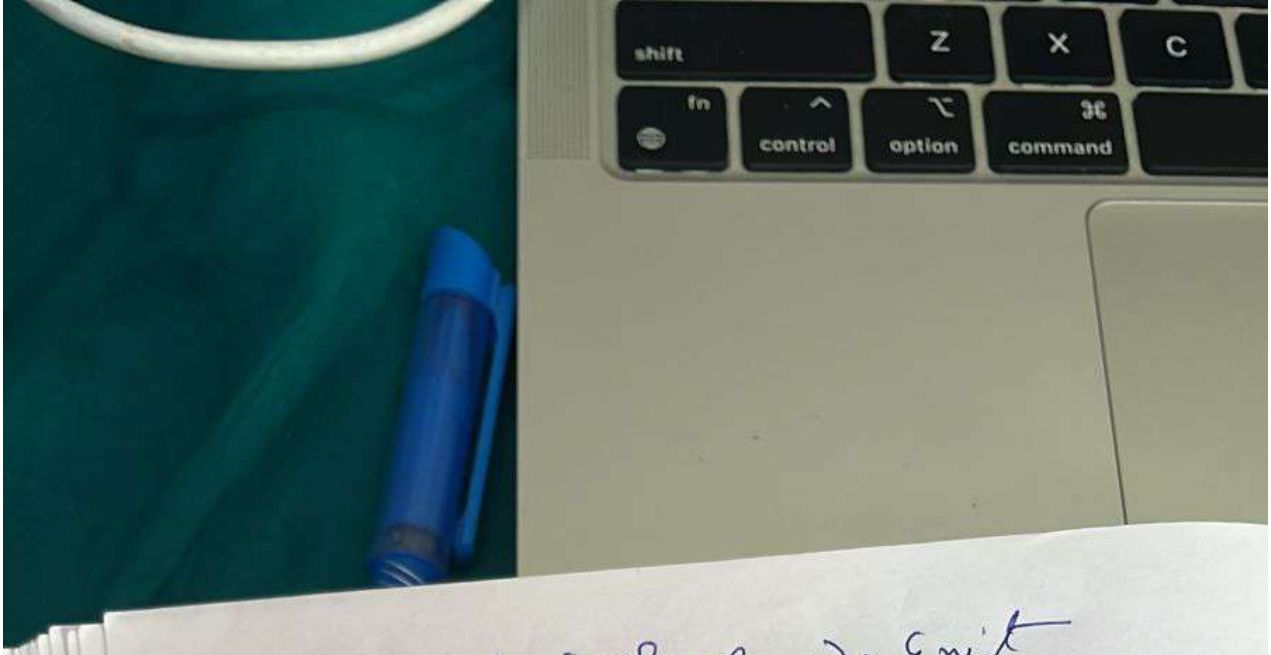
```
{
}
break;
printf("\n Enter the value");
    scanf("%d", &produce);
  buffer[in] = produce;
    in = (in+1) % buf size;
        case 2: if (in == out)
          printf("\n Buffer is empty");
        }
    }
  }
  else
  {
  consume = buffer[out];
    printf("\n The consumed value is %d",
                consume);
          out = (out+1) % buf size;
        }
        break;
```

out put

1. Produce 2. consume 3. Exit

Enter your choice: 2

Buffer is empty



1. Produce 2. Consume 3. Exit

Enter your choice : 2

The consumed value is 100

1. Produce 2. Consume 3. Exit

Enter your choice : 3

Q Deadlock avoidance

Aim : To simulate bankers algo

Deadlock avoidance (Banker's alg

Source code

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
```

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```
            printf("\nBuffer is Full");
        else {
            printf("\nEnter the value: ");
            scanf("%d", &produce);
            buffer[in] = produce;
            in = (in + 1) % bufsize;
        }
        break;

    case 2:
        if (in == out)
            printf("\nBuffer is Empty");
        else {
            consume = buffer[out];
            printf("\nThe consumed value is %d", consume);
            out = (out + 1) % bufsize;
        }
        break;

    case 3:
        break;

    default:
        printf("\nInvalid choice. Please enter a valid choice.");
    }
}

return 0;
```

Terminal

```
1. Produce  2. Consume  3. Exit
Enter your choice: 2
Buffer is Empty
1. Produce  2. Consume  3. Exit
Enter your choice: 1
Enter the value: 100
1. Produce  2. Consume  3. Exit
Enter your choice: 2
The consumed value is 100
1. Produce  2. Consume  3. Exit
Enter your choice: 3
```

javascript:void(0)