Program 3. Develop a C program to simulate producer-consumer problem using semaphores.

```
#include <stdio.h>

void main()
{
   int buf[10], bufsize, in, out, pro, con, ch = 0;
   in = 0;
   out = 0;
   bufsize = 10;

   while (ch!= 3) {
      printf("\n1. Produce \t 2. Consume \t 3. Exit");
      printf("\nEnter your choice: ");
      scanf("%d", &ch);

      switch (ch)
{
         case 1:
            if ((in + 1) % bufsize == out)
               printf("\nBuffer is Full");
            else
            {
               printf("\nEnter the value: ");
               scanf("%d", &pro);
               buf[in] = pro;
               in = (in + 1) % bufsize;
            }
            break;

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

```
        case 3:printf("Exit the Program select correct option");
               break;


        default:
               printf("\nInvalid choice. Please enter 1, 2, or 3.");
        }
    }
}
```

Output:

```
krishna@ubuntu:~/Documents/OS LAB/program3$ cc prg3.c
krishna@ubuntu:~/Documents/OS LAB/program3$ ./a.out

1. Produce      2. Consume      3. Exit
Enter your choice: 1

Enter the value: 234

1. Produce      2. Consume      3. Exit
Enter your choice: 1

Enter the value: 567

1. Produce      2. Consume      3. Exit
Enter your choice: 2

The consumed value is 234
1. Produce      2. Consume      3. Exit
Enter your choice: 2

The consumed value is 567
1. Produce      2. Consume      3. Exit
Enter your choice: 2

Buffer is Empty
```