

**Ex No.: 8****PRODUCER CONSUMER USING**

Date : 02.04.2025

**SEMAPHORE****Aim :**

To write a program to implement solution to producer consumer problem using semaphores.

**Code:**

```
#include <stdio.h>

#include <stdlib.h>

int mutex = 1, full = 0, x = 0;

int empty;

void Producer() {

    --mutex;

    ++full;

    --empty;

    x++;

    printf("Producer produces item %d\n", x);

    ++mutex;

}

void Consumer() {

    --mutex;

    --full;

    ++empty;

    printf("Consumer consumes item %d\n", x);

    x--;
```

```
    ++mutex;
}

int main() {

    int n;

    printf("Enter buffer size: ");

    scanf("%d", &empty);

    printf("1. Producer\n2. Consumer\n3. Exit\n");

    do {

        printf("Enter Your Choice: ");

        scanf("%d", &n);

        switch (n) {

            case 1:

                if (mutex == 1 && empty > 0) {

                    Producer();

                } else {

                    printf("Buffer full\n");

                }

                break;

            case 2:

                if (mutex == 1 && full > 0) {

                    Consumer();

                } else {

                    printf("Buffer empty\n");

                }

                break;
```

```

        case 3:

            exit(0);

            break;

        default:

            printf("Invalid choice\n");

            break;

    }

} while (n != 3);

return 0;

}

```

### Output:

```

Enter buffer size: 3
1. Producer
2. Consumer
3. Exit
Enter Your Choice: 1
Producer produces item 1
Enter Your Choice: 1
Producer produces item 2
Enter Your Choice: 1
Producer produces item 3
Enter Your Choice: 1
Buffer full
Enter Your Choice: 2
Consumer consumes item 3
Enter Your Choice: 2
Consumer consumes item 2
Enter Your Choice: 2
Consumer consumes item 1
Enter Your Choice: 2
Buffer empty
Enter Your Choice: 3

```

### Result:

Thus the program to implement solution to producer consumer problem using semaphores has been executed successfully.