

OS LAB MANUAL (CS23431)

Roll No:230701234

EX.NO:8

PRODUCER CONSUMER USING SEMAPHORES

Aim: To write a C program to do Inter Process Communication (IPC) using shared memory between sender process and receiver process

Program:

```
#include <stdio.h>
#include <stdlib.h>

int mutex = 1, full = 0, empty = 3, x = 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 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);
}
```

```

int main() {
    int n;
    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);
    default:
        printf("Invalid choice!");
    }
    }
    return 0;
}

```

Input:

```

pranav@Pranav:~$ vi eight.c
pranav@Pranav:~$ gcc eight.c
pranav@Pranav:~$ ./a.out

1. Produce
2. Consume
3. Exit

```

Output:

```

Enter choice: 1
Produced: 85 | Buffer: [85]

1. Produce
2. Consume
3. Exit
Enter choice: 2
Consumed: 85 | Buffer: []

1. Produce
2. Consume
3. Exit
Enter choice: 1
Produced: 43 | Buffer: [43]

1. Produce
2. Consume
3. Exit
Enter choice: 3
Exiting...
pranav@Pranav:~$ |

```