Ex. No.: 8

Date: 13.04.2024

## PRODUCER CONSUMER USING SEMAPHORES

#### Aim:

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

# **Program Code:**

```
#include <stdio.h>
#include <stdlib.h>
int mutex = 1, full = 0, empty = 3, x = 0;
void producer();
void consumer();
int wait(int);
int signal(int);
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);
         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("\nProducer produces the item %d", x);
  mutex = signal(mutex);
void consumer() {
  mutex = wait(mutex);
  full = wait(full);
  empty = signal(empty);
  printf("\nConsumer consumes item %d", x);
  mutex = signal(mutex);
}
```

# **Output:**

```
—(kali⊗kali)-[~/os/ex8]
_$./ex8
1.Producer
2.Consumer
3.Exit
Enter your choice: 1
Producer produces the item 1
Enter your choice: 2
Consumer consumes item 1
Enter your choice: 2
Buffer is empty!!
Enter your choice: 1
Producer produces the item 1
Enter your choice: 1
Producer produces the item 2
Enter your choice: 1
Producer produces the item 3
Enter your choice: 1
Buffer is full!!
Enter your choice: 3
  -(kali®kali)-[~/os/ex8]
```

### **Result:**

The above program executed successfully and output got verified.