OS LAB MANUAL (CS23431)

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EX.NO:8

PRODUCER CONSUMER USING SEMAPHORES

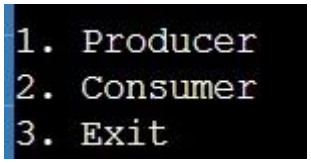
Aim: To write a C program to do Inter Process Communication (IPC) using shared memory between sender process and receiver process

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:



Output:

```
Enter your choice: 1

Producer produces item 1
Enter your choice: 2

Consumer consumes item 1
Enter your choice: 2

Buffer is empty!!
Enter your choice: 2

Buffer is empty!!
Enter your choice: 1

Producer produces item 1
Enter your choice: 1

Producer produces item 2
Enter your choice: 2

Consumer consumes item 2
Enter your choice: 2

Consumer consumes item 1
Enter your choice: 2

Buffer is empty!!
```