Code :

```
#include <stdio.h>
#include <stdlib.h>
int mutex = 1, empty, full = 0, x = 0;
int wait(int s) {
   return (--s);
}
int signal(int s) {
   return (++s);
}
void producer() {
   mutex = wait(mutex);
   full = signal(full);  // Correct: Increase full count when producing
   empty = wait(empty);  // Correct: Decrease empty count when producing
   x++;
   printf("\nThe Producer has produced item %d\n", x);
   mutex = signal(mutex);
}
void consumer() {
   mutex = wait(mutex);
   full = wait(full);  // Correct: Decrease full count when consuming
   empty = signal(empty);  // Correct: Increase empty count when consuming
   printf("\nThe Consumer has consumed item %d\n", x);
   x--;
   mutex = signal(mutex);
}

int main() {
   int n;
   printf("Enter size of Buffer: ");
   scanf("%d", &empty);  // Get buffer size
```

```
    printf("\n1. Producer\n2. Consumer\n3. Exit\n");
  while (1) {
        printf("Enter your choice: ");
        scanf("%d", &n);
        switch (n) {
            case 1:
                if (mutex == 1 && empty != 0)
                    producer();
                else
                    printf("\nBuffer is Full\n");
                break;
            case 2:
                if (mutex == 1 && full != 0)
                    consumer();
                else
                    printf("\nBuffer is Empty\n");
                break;
            case 3:
                exit(0);
            default:
                printf("Invalid choice\n");
                break;
        }
    }
    return 0;
}
```

Output :

```
Enter size of Buffer: 3

1. Producer
2. Consumer
3. Exit
Enter your choice: 1

The Producer has produced item 1
Enter your choice: 1

The Producer has produced item 2
Enter your choice: 1

The Producer has produced item 3
Enter your choice: 1

Buffer is Full
Enter your choice: 2

The Consumer has consumed item 3
Enter your choice: 2

The Consumer has consumed item 2
Enter your choice: 2

The Consumer has consumed item 1
Enter your choice: 3
```