

Write a C-program to simulate Producer - consumer problem using semaphores.

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

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

```
int muten = 1, full = 0, empty = 3, n = 0;
```

```
int main()
```

```
{
```

```
int n;
```

```
void producer();
```

```
void consumer();
```

```
int wait(int);
```

```
int signal(int);
```

```
printf("\nEnter your choice:");
```

```
scanf("%d", &n);
```

```
switch(n)
```

```
{
```

```
case 1: if ((muten == 1) && (empty != 0))
```

```
producer();
```

```
else
```

```
printf("Buffer is full!!!");
```

```
break;
```

```
case 2: if ((muten == 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);
n++;
printf("\n Producer produces the item %d", n);
mutex = signal(mutex);
}
void consumer()
$
mutex = wait(mutex);
full = wait(full);
empty = signal(empty);
printf("\n consumer consumes item %d", n);
n--;
mutex = signal(mutex);
}
```

Output

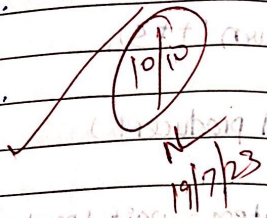
1. Producer
2. consumer
3. Exit

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 !!
 Enter your choice: 1.
 Producer produces the item 1.



```
1.Producer
2.Consumer
3.Exit
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:2

Consumer consumes item 2
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:
```