

# README

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Brief description of how to test the program

## Project 2 The Sleeping Teaching Assistant

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```
gcc main.c
```

```
./a.out <The number of students>
```

For example:

```
Ubuntu 22.04 ARM64  Apr 2 03:42
Activities Terminal
parallels@Eve: ~/Desktop/Parallels Shared Folders/Home/Desktop/CS7343_Operating_System_and_Software_System/Assignments/HW5/Project_2/Code/C$ gcc main.c
parallels@Eve: ~/Desktop/Parallels Shared Folders/Home/Desktop/CS7343_Operating_System_and_Software_System/Assignments/HW5/Project_2/Code/C$ ./a.out 1
(create)student_visit_time:144691,usleeping...
1th students come here
1th student has chair, sit down. The waiting student number is:1
TA start teaching.
The number of waiting students: 0
1th arrived student finishes.This time TA service time is: 215
TA if no students will sleep
All students has finished. TA sleep
parallels@Eve: ~/Desktop/Parallels Shared Folders/Home/Desktop/CS7343_Operating_System_and_Software_System/Assignments/HW5/Project_2/Code/C$ ./a.out 2
(create)student_visit_time:144691,usleeping...
(create)student_visit_time:55233,usleeping...
1th students come here
1th student has chair, sit down. The waiting student number is:1
TA start teaching.
The number of waiting students: 0
2th students come here
2th student has chair, sit down. The waiting student number is:1
1th arrived student finishes.This time TA service time is: 143
TA if no students will sleep
TA start teaching.
The number of waiting students: 0
2th arrived student finishes.This time TA service time is: 845
TA if no students will sleep
All students has finished. TA sleep
parallels@Eve: ~/Desktop/Parallels Shared Folders/Home/Desktop/CS7343_Operating_System_and_Software_System/Assignments/HW5/Project_2/Code/C$
```

## Project 3 The Dining-Philosophers Problem

---

```
gcc main.c
```

```
./a.out <The times of philosopher eating>
```

For example:

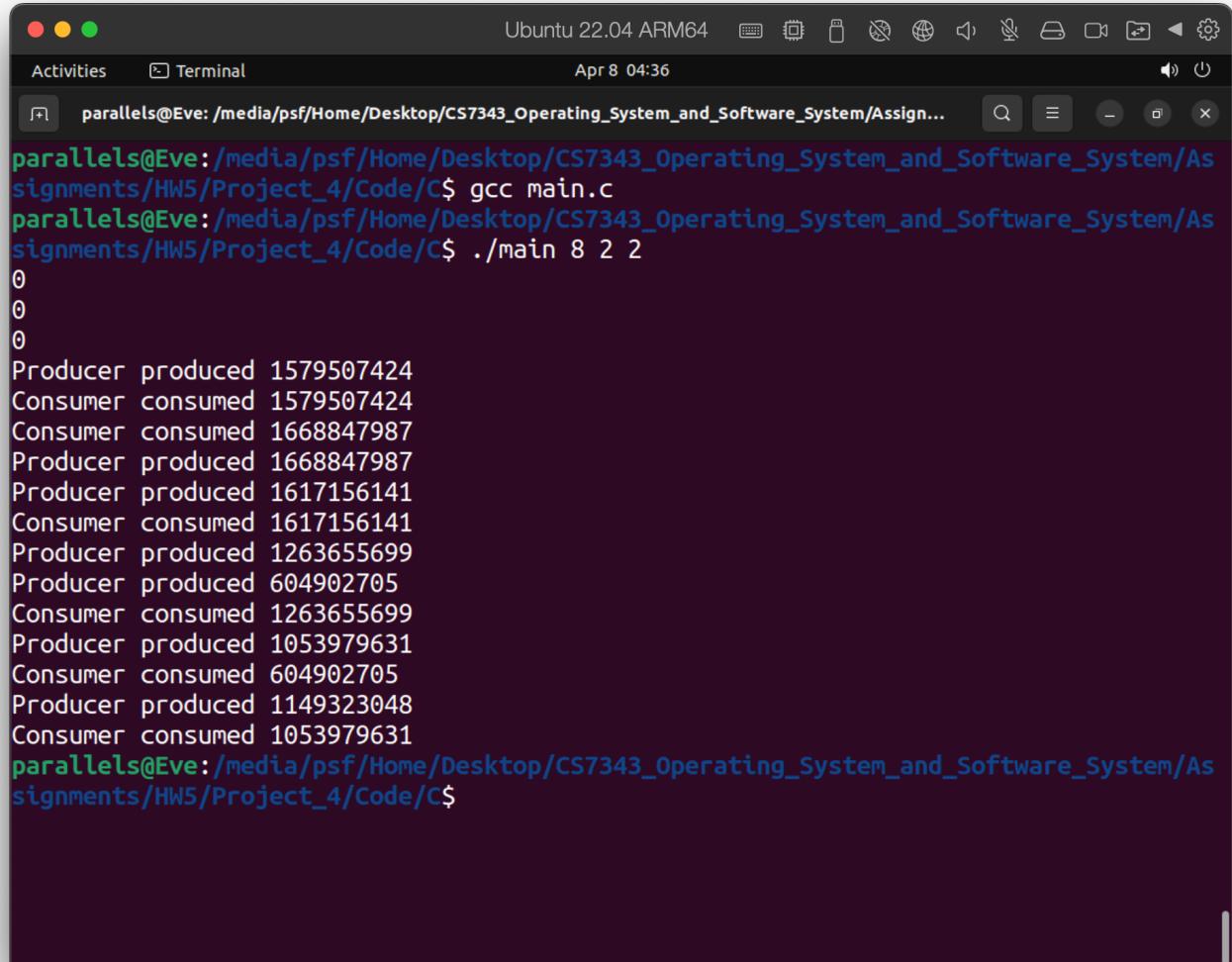
```
Ubuntu 22.04 ARM64 Terminal Apr 3 21:02
parallels@Eve:/media/psf/Home/Desktop/CS7343_Operating_System_and_Software_System/Assignments/HW5/Project_3/Code/C$ gcc main.c
parallels@Eve:/media/psf/Home/Desktop/CS7343_Operating_System_and_Software_System/Assignments/HW5/Project_3/Code/C$ ./a.out 1
Philosopher0 is thinking in 1 times.
Philosopher3 is thinking in 1 times.
Philosopher2 is thinking in 1 times.
Philosopher1 is thinking in 1 times.
Philosopher4 is thinking in 1 times.
Philosopher1 is ending 1 times thinking, time is 1 seconds
Philosopher1 is hungry now.
Philosopher1 is pickup chopsticks and eating in 1 times
Philosopher0 is ending 1 times thinking, time is 2 seconds
Philosopher0 is hungry now.
Philosopher3 is ending 1 times thinking, time is 2 seconds
Philosopher3 is hungry now.
Philosopher2 is ending 1 times thinking, time is 2 seconds
Philosopher2 is hungry now.
Philosopher3 is pickup chopsticks and eating in 1 times
Philosopher4 is ending 1 times thinking, time is 3 seconds
Philosopher4 is hungry now.
Philosopher1 is ending 1 times of eating.
Philosopher1 is put down chopsticks.
Philosopher0 is pickup chopsticks and eating in 1 times
Philosopher3 is ending 1 times of eating.
Philosopher3 is put down chopsticks.
Philosopher0 is ending 1 times of eating.
Philosopher0 is put down chopsticks.
Philosopher2 is pickup chopsticks and eating in 1 times
Philosopher4 is pickup chopsticks and eating in 1 times
Philosopher2 is ending 1 times of eating.
Philosopher2 is put down chopsticks.
Philosopher4 is ending 1 times of eating.
Philosopher4 is put down chopsticks.
parallels@Eve:/media/psf/Home/Desktop/CS7343_Operating_System_and_Software_System/Assignments/HW5/Project_3/Code/C$
```

## Project 4 The Producer-Consumer Problem

```
gcc main.c
```

```
./a.out <execute time> <producers number> <consumer number>
```

For example:



The image shows a terminal window on an Ubuntu 22.04 ARM64 system. The terminal title is "Terminal" and the date and time are "Apr 8 04:36". The command run is "gcc main.c" followed by "./main 8 2 2". The output displays a sequence of numbers produced by a producer and consumed by a consumer, with some intermediate values shown as 0.

```
parallels@Eve:/media/psf/Home/Desktop/CS7343_Operating_System_and_Software_System/Assignments/HW5/Project_4/Code/C$ gcc main.c
parallels@Eve:/media/psf/Home/Desktop/CS7343_Operating_System_and_Software_System/Assignments/HW5/Project_4/Code/C$ ./main 8 2 2
0
0
0
Producer produced 1579507424
Consumer consumed 1579507424
Consumer consumed 1668847987
Producer produced 1668847987
Producer produced 1617156141
Consumer consumed 1617156141
Producer produced 1263655699
Producer produced 604902705
Consumer consumed 1263655699
Producer produced 1053979631
Consumer consumed 604902705
Producer produced 1149323048
Consumer consumed 1053979631
parallels@Eve:/media/psf/Home/Desktop/CS7343_Operating_System_and_Software_System/Assignments/HW5/Project_4/Code/C$
```