

Homework 2 outputs

1.

```
antran@Anthonys-Air Homework2 % gcc question1.c
antran@Anthonys-Air Homework2 % ./a.out
Parent process id: 64699
Child process id: 64700
Created new group with child process...
Child process group id: 64700
antran@Anthonys-Air Homework2 %
```

a. Used `setpgid()` to create new process group with group id of child process.
2.

```
antran@Anthonys-Air Homework2 % gcc question2.c
antran@Anthonys-Air Homework2 % ./a.out
Mutex lock -> Thread 6163345408 incremented variable to 1000 -> Mutex unlock
Mutex lock -> Thread 6163918848 incremented variable to 2000 -> Mutex unlock
antran@Anthonys-Air Homework2 %
```

a. Used mutex lock to let each thread increment global variable one at a time.
3.

```
antran@Anthonys-Air Homework2 % gcc question3.c
antran@Anthonys-Air Homework2 % ./a.out
Enter a number: 98
Parent received message from child: 98
antran@Anthonys-Air Homework2 %
```

a. Used pipes to create child and parent processes. Child reads input from the user and writes to the parent.
4.

```
antran@Anthonys-Air Homework2 % ./a.out
Thread 6104379392 incremented variable to 1000
Thread 6103805952 incremented variable to 2000
antran@Anthonys-Air Homework2 %
```

a. Semaphores used to separate each thread when incrementing variable
5.

```
antran@Anthonys-Air Homework2 % gcc question5.c
antran@Anthonys-Air Homework2 % ./a.out
Process 1 is running
Process 2 is running
Process 2 cant join: DEADLOCKED!!
antran@Anthonys-Air Homework2 %
```

a. Caused deadlock because 2 processes are competing for same resource
6.

```
antran@Anthonys-Air Homework2 % gcc question6.c
antran@Anthonys-Air Homework2 % ./a.out
Enter a number:
Timeout!!
antran@Anthonys-Air Homework2 %
```

a. Used 2 threads. One thread to measure timeout, one to read input.
7.

```
antran@Anthonys-Air Homework2 % gcc question7.c
antran@Anthonys-Air Homework2 % ./a.out
Program to add 250 + 250 using threads
Thread 6096465920 adds total sum to 250
Thread 6097039360 adds total sum to 500
Total sum is: 500
antran@Anthonys-Air Homework2 %
```

a. Program where 2 threads communicate to add 250 and 250