

**CSCI 40300/ECE 40800**  
**Operating Systems– Fall 2016**  
**Quiz 2**  
**Solutions**

Name: \_\_\_\_\_

Question:	1	Total
Points:	10	10
Score:		

Normalized Total to 100 =  $100 \times \text{Total}/10 =$  \_\_\_\_\_ (what will appear in OnCourse gradebook).

1. (10 points) What is the output of the following code?

```
#include <stdio.h>

main()
{
    int x=1;
    printf("One: x=%d\n", x);
    if (fork()) {
        x++;
    }
    fork();
    x++;
    printf("Two: x=%d\n", x);
}
```

**Answer:**

```
One: x=1
Two: x=3
Two: x=3
Two: x=2
Two: x=2
```

Name: \_\_\_\_\_

**Explanation:** The parent process after the first `fork()` does not increment `x`, but the child process does. This is because in the parent process `fork()` returns the pid of the child process ( $> 0$ ) making the if statement condition true. But in the child process `fork()` returns 0, making the condition of the if statement false. The second fork clones the two processes with these values of `x` and they increment the corresponding values. Thus, two of the four cloned processes will have `x` value 3 and the other 2 will have `x` value 2.