

# CPE-390 2022S Quiz #1 (no pressure, diagnostic)

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

1. (20 points) Definitions

a. What is a bit? How is it represented mathematically, and how is one really stored on a computer?

b. What is a byte? How many different values can be encoded in a single byte?

2. (20 points) State what is output by each of the following loops. If the loop is infinite, show the first three values and then state that it is infinite. If it is not infinite but too long to write, show the first 3 values, ... and the final value. Note that the cast `int(i)` is just to make sure we are printing the result as a number, which would be required if we really did this and tested it.

a.

```
for (uint8_t i = 0; i < 300; i++)  
    cout << int(i);
```

b.

```
for (uint16_t i = 0; i < 10; i++)  
    cout << int(i);
```

3. (20 points) Find the error(s) in the following code

```
bool isPrime(uint64_t n) {  
    for (int i = 1; i <= n; i++)  
        if (n % i == 0)  
            return false;  
    else  
        return true;  
}
```

Test with:

```
cout << isPrime(5) << isPrime(9) << isPrime(16) << isPrime(18) <<  
'\n';
```

4. (40 points) Write functions to make the following calls work:

```
int x[] = {1, 2, 5, 6};  
cout << mean(x, 4) << '\n'; // should print 3.5
```