CSE306 Software Quality in Practice

Dr. Carl Alphonce
alphonc@buffalo.edu
343 Davis Hall
Spent 25 minutes trying to debug a syntax error. Turns out the database connection dropped and I had been typing queries into the bash terminal 😞
When stepping through code with debugger, why are declarations skipped?

```c
int foo() {
    int x;
    double y;
    y = f(x) * 3;  // why does debugger skip to here?
...
}
```
Answer

Declarations are handled by compiler at compile time. They have no run-time analogue.
EXP01

- Team-based: use PRE teams
- Demo
LEX09
Modeled development process

start

read & understand specifications

write tests

run tests

implement

fail

pass
Specification

The final digit of a Universal Product Code is a check digit computed as follows:

1. Add the digits in the odd-numbered positions (first, third, fifth, etc.) together and multiply by three.

2. Add the digits (up to but not including the check digit) in the even-numbered positions (second, fourth, sixth, etc.) to the result.

3. Take the remainder of the result divided by 10 (modulo operation) and if not 0, subtract this from 10 to derive the check digit.

https://en.wikipedia.org/wiki/Check_digit#UPC
3 * (0+6+0+2+1+5) = 3 * 14 = 42

3 + 0 + 0 + 4 + 4 = 11

42 + 11 = 53
53 % 10 = 3
10 - 3 = 7
char to int Conversion

If c is a char from '0' to '9', how can you convert it to an int from 0 to 9?
If c is a char from '0' to '9', how can you convert it to an int from 0 to 9? Without knowing any library functions:

```
int convert(char c) { return c - '0'; }
```
If c is a char from '0' to '9', how can you convert it to an int from 0 to 9? Without knowing any library functions:

```c
int convert(char c) { return c - '0'; }
```

```c
int convert(char c) {
    switch (c) {
        case '0': return 0;
        case '1': return 1;
        ...
        case '9': return 9;
        case 'X': return 10;    // CAN ALSO HANDLE 'X'
    }
}
```