CSE306 Software Quality in Practice

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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 😞
LEX08
.h and .c
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.
Team-based: use PRE teams

Demo
LEX09

Modeled development process

start

read & understand specifications

write tests

run tests

fail

implement

pass
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
\[ 3 \times (0+6+0+2+1+5) = 3 \times 14 = 42 \]

\[ 3+0+0+4+4 = 11 \]

\[ 42 + 11 = 53 \]
\[ 53 \mod 10 = 3 \]
\[ 10 - 3 = 7 \]
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?
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```c
int convert(char c) { return c - '0'; }
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```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'
    }
}
```
GNU make

- Who has invoked 'make'?  
- Who has modified a make file?  
- Who has written a make file from scratch?
make
What is it good for?

"You can use [make] to describe any task where some files must be updated automatically from others whenever the others change."

make and makefiles

- makefile contains rules that describe update dependencies
rules

target : prerequisites
recipe
rules

target : prerequisites

recipe

Must be a tab!