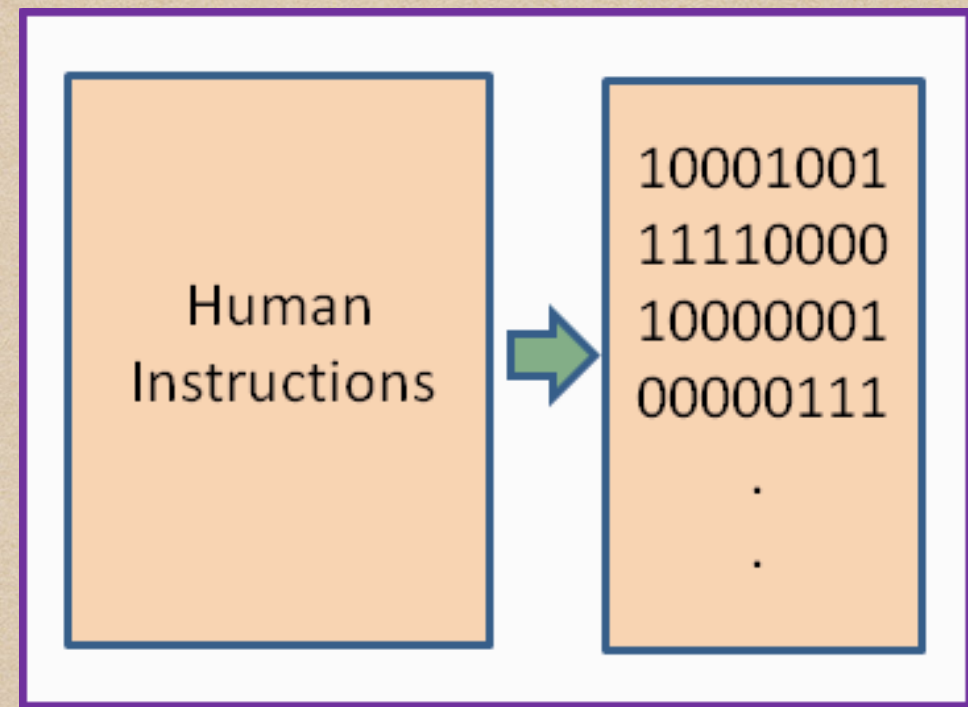


Lecture 1

Evan Drake

What is Programing?



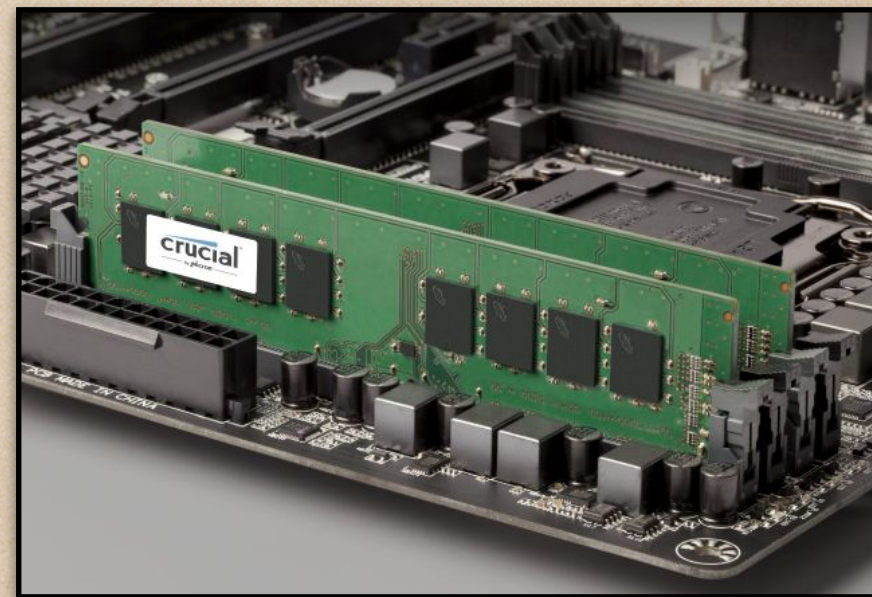
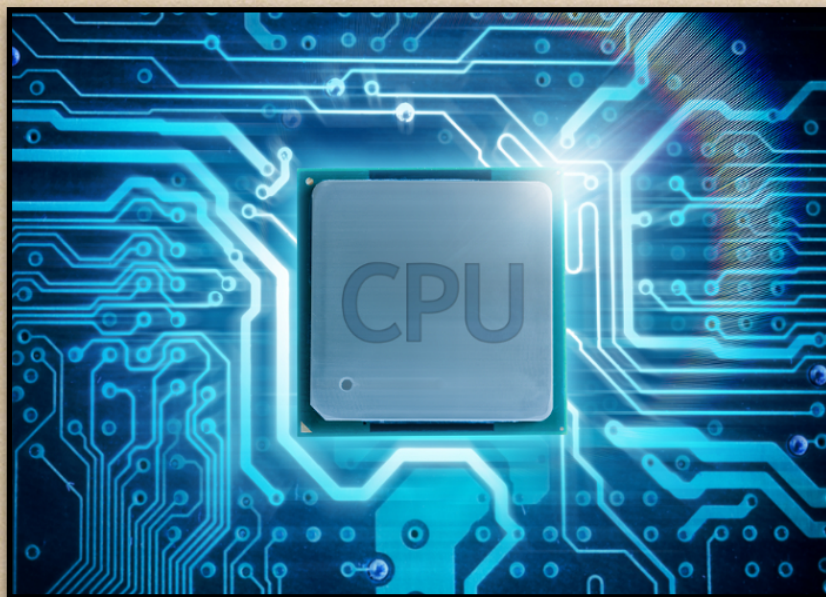
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Pieces of Programming

- ◆ Machine - Hardware
- ◆ Compiler - Software
- ◆ Code - Logic

Hardware

- ◆ CPU, RAM, Interface



Software

- ◆ Compiler: Text -> Machine language

```
int main() {  
    return 0;  
}
```

Human
Readable



main:

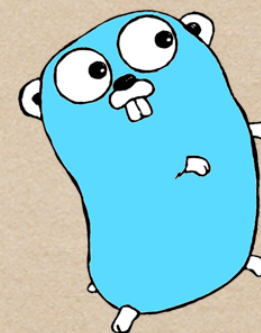
```
sub    sp, sp, #4  
mov    r0, #0  
str    r0, [sp]  
add    sp, sp, #4  
bx     lr
```

CPU instructions

Some Compilers



LLVM



GO



Rust

Code

- ◆ What do we need?
 - ◆ Writing? → (Manual, Editor)
 - ◆ Editing? → (Analysis Tools, Editor)

Editor: IDE

- ◆ Integrated-Development-Environment
- ◆ All-in-one solution
- ◆ Examples: VSCode, Sublime text, ZED

Editor: basic Editor

- ◆ Separate from other necessary software
- ◆ Terminal based in many cases
- ◆ Editor → VIM, Emacs, Helix, Notepad++

Analysis Tools

- ◆ Compiler (sometimes)
- ◆ Linter
- ◆ Language server
- ◆ Syntax highlighting

“Programming is the art of telling another human
being what one wants the computer to do.”

–Donald Knuth

Pseudocode



What is pseudocode?

And how do you spell it?

- ♦ Mix of English, Math, and Code

$$x \leftarrow 1$$
$$y \leftarrow 1$$
$$z = x + y$$

$$z = 2$$

Practice with pseudocode

Dreaded Peanut Butter Jar

Please Explain how to make a peanut butter sandwich step by step