What is computer science?

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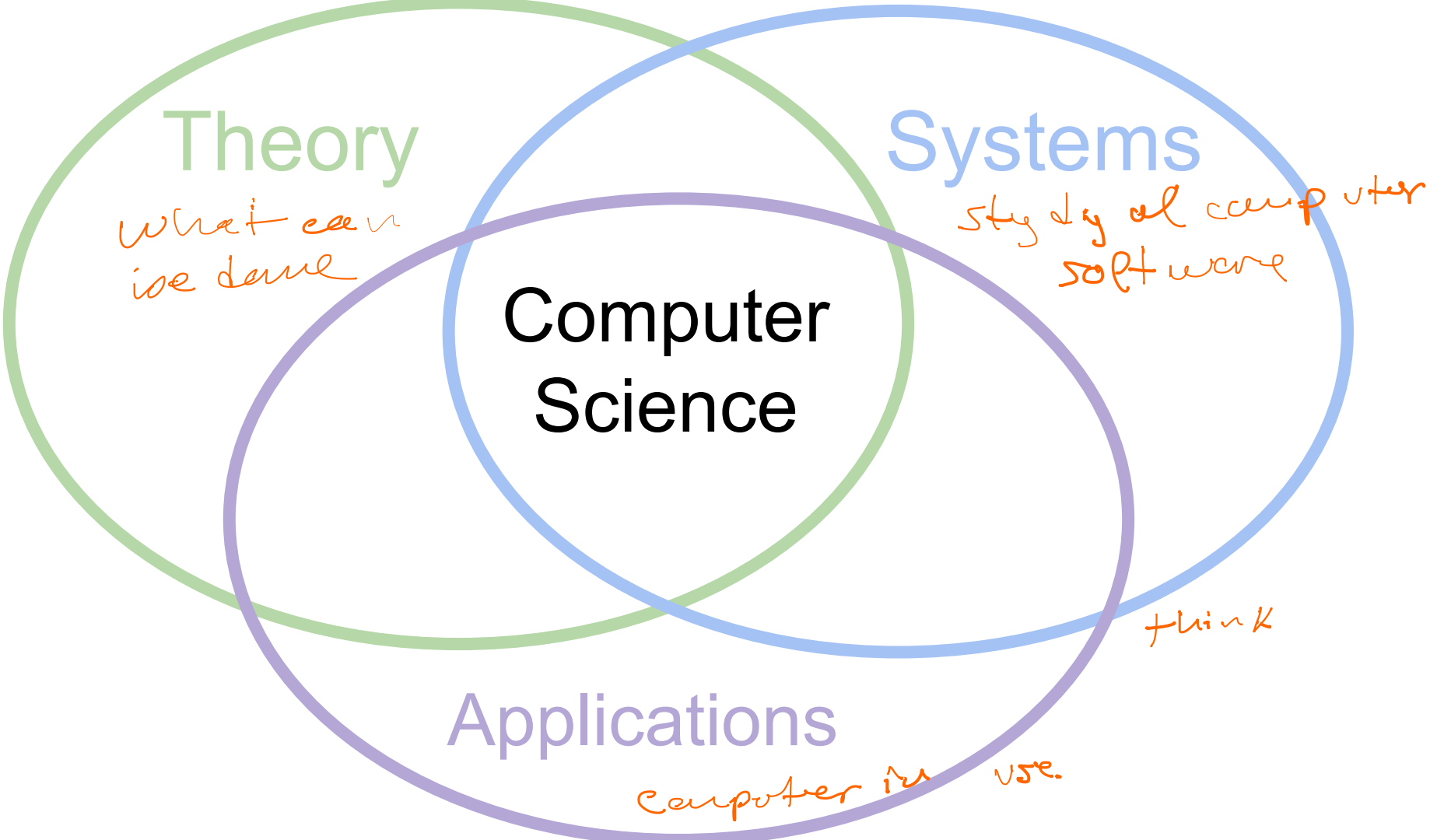
The science of computing

computer algorithms

programming languages

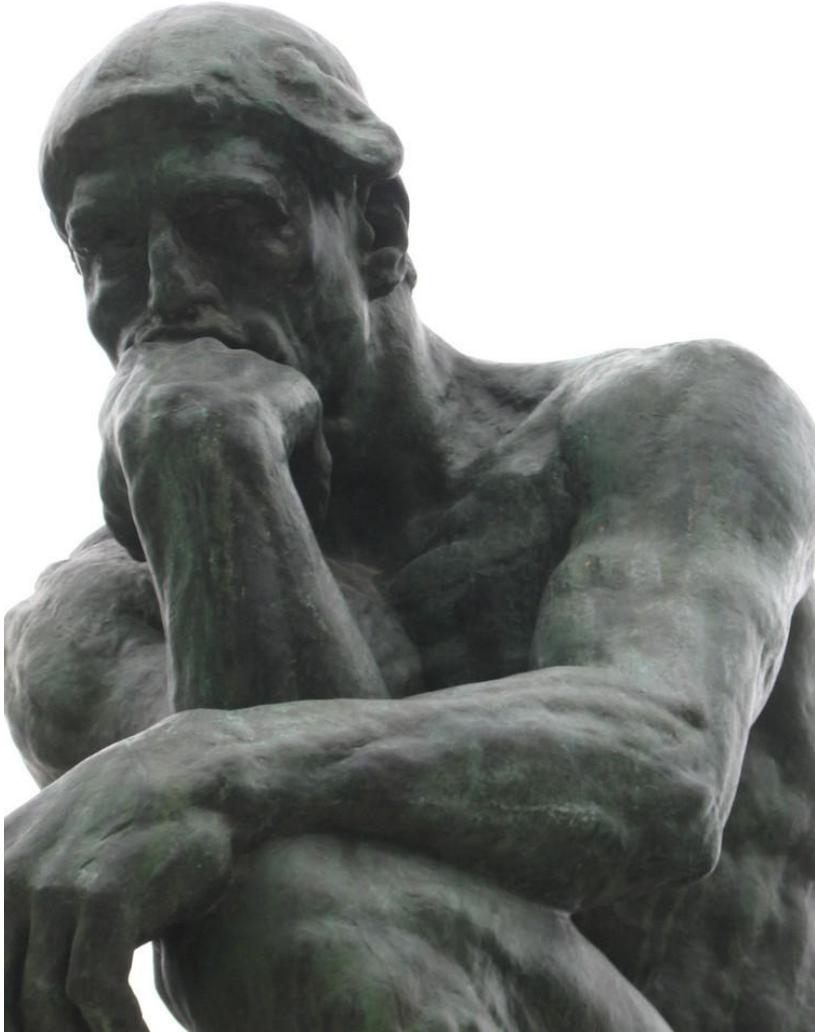
computer hardware


Theory
what can be done
Systems
study of computer software
Computer Science
think
Applications
computer in use.

What do computer scientists do?

Thinking computationally

Divide into tasks.
Think carefully.



build the software.
moves data around the computer, run programs
spell files out.

Linux™

UNIX (operating system)

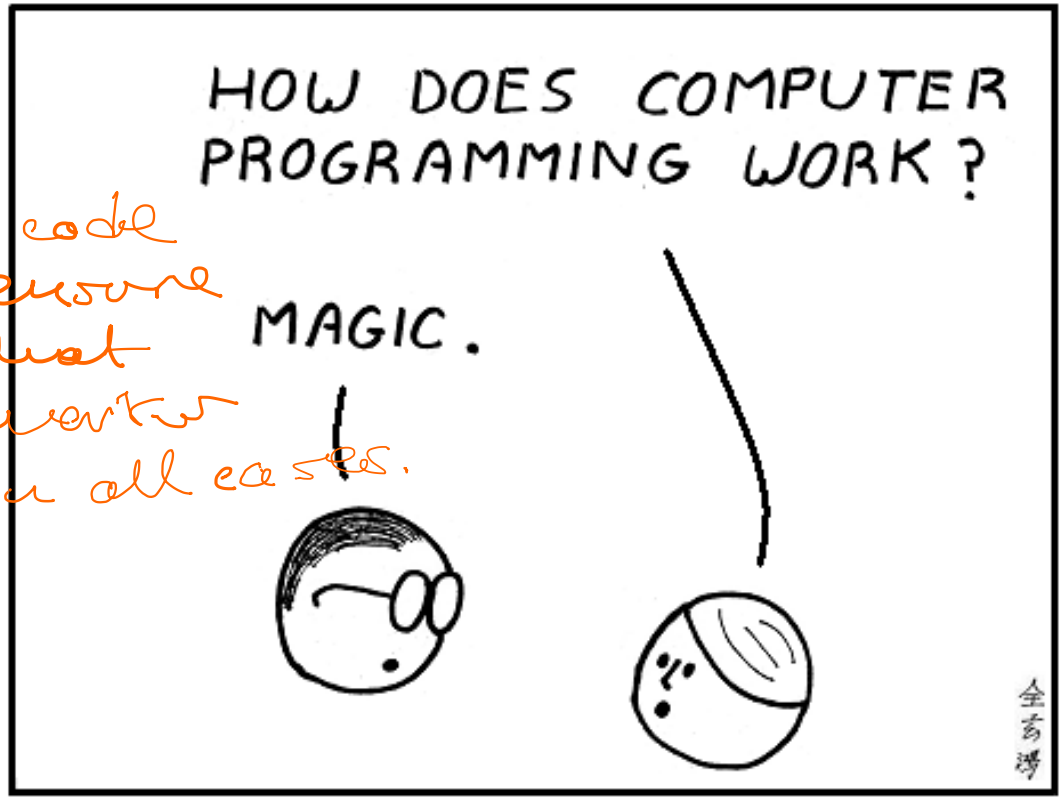
Programming: how we talk to computers

Python — we like natural language.
Tell the computer what to do.

```
while (<genefile>) {
    chomp;
    if (/^>/) { # header line
    }
    else {
        ($seq) = split(" ");
        $total_length += length($seq);
        for ($i=0; $i<length($seq); $i++) {
            $next = substr($seq,$i,1);
            if ($next eq 'g' || $next eq 'G') { $g_ct++; }
            if ($next eq 'c' || $next eq 'C') { $c_ct++; }
            if ($next eq 'a' || $next eq 'A') { $a_ct++; }
            if ($next eq 't' || $next eq 'T') { $t_ct++; }
        }
    }
}
```

Engineering: good code is hard

test code ensure that works in all cases.



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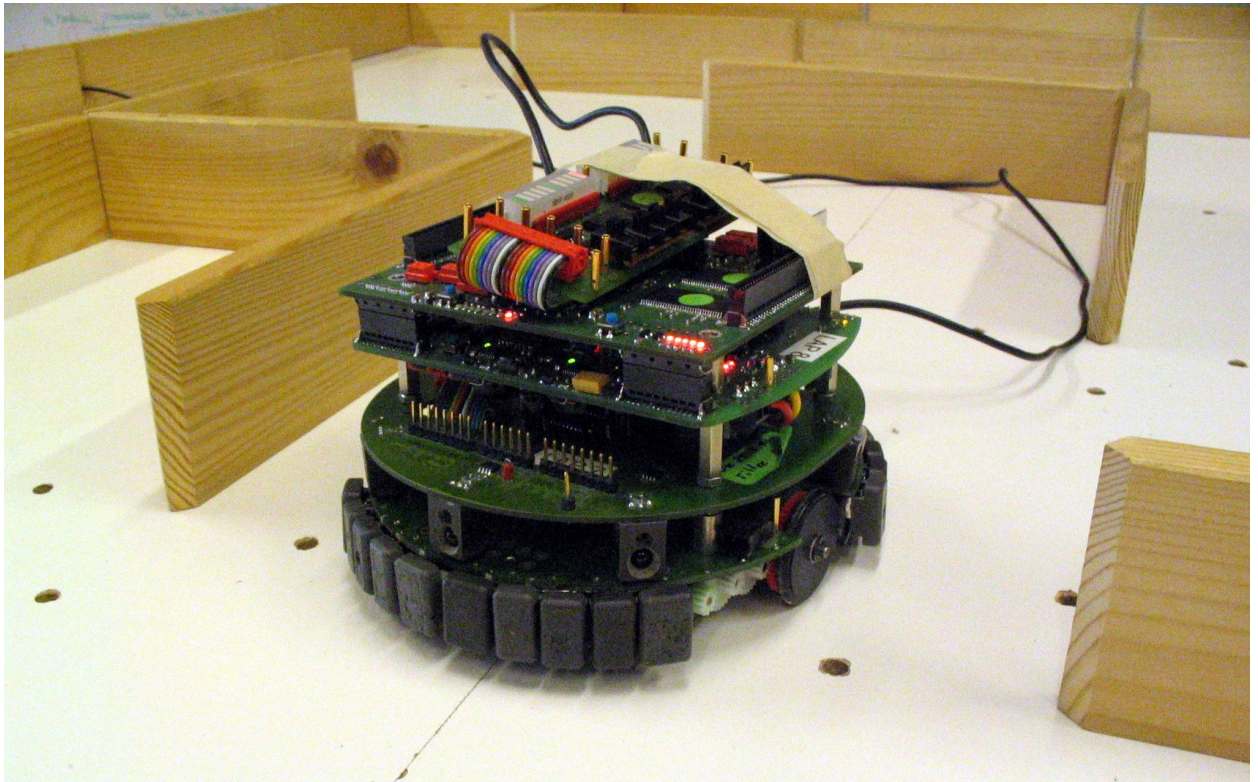
Devices

how the software talks to the device directly