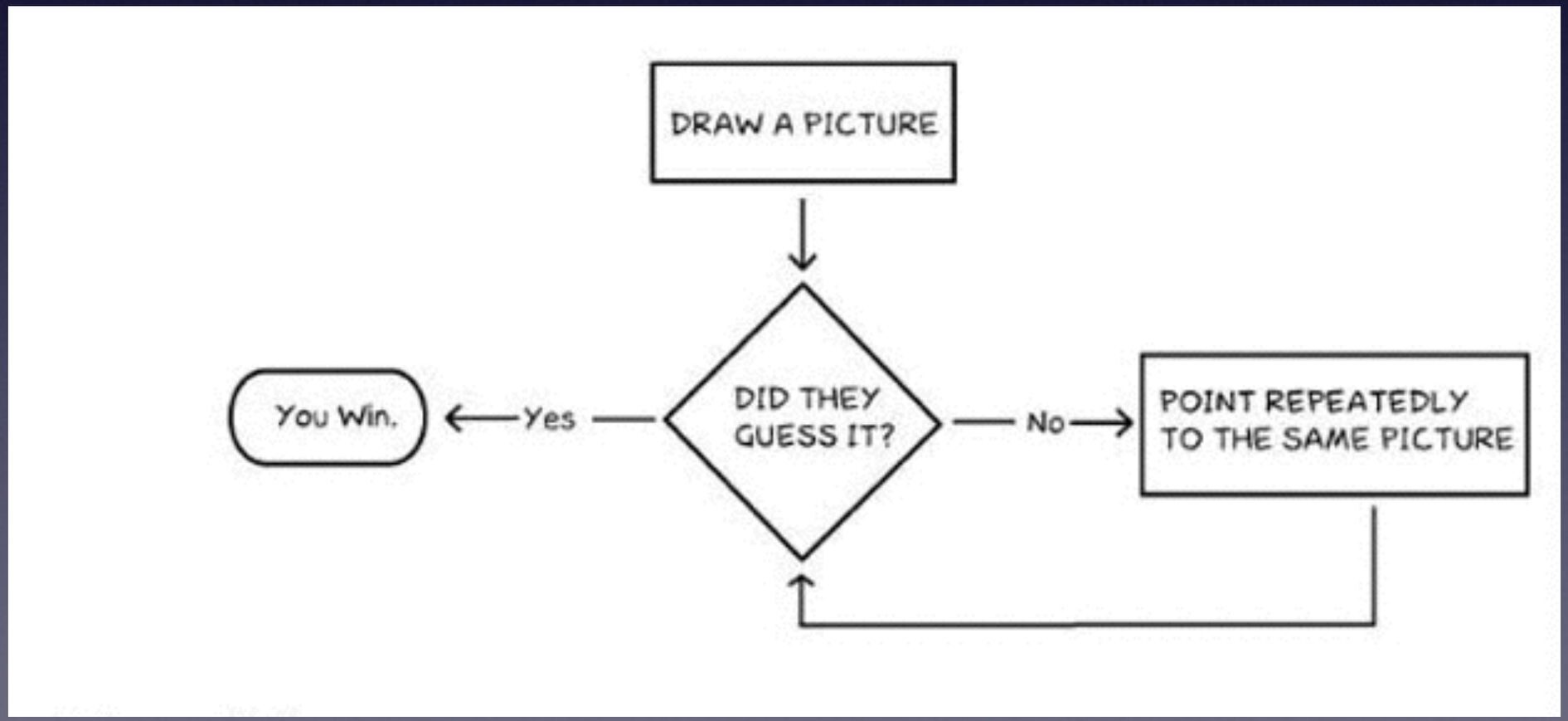
Introduction to software and Swift

CS112 Unit 1

Max Luttrell, Fall 2016

algorithms

- an **algorithm** is a sequence of instructions to complete a task



buying veggies

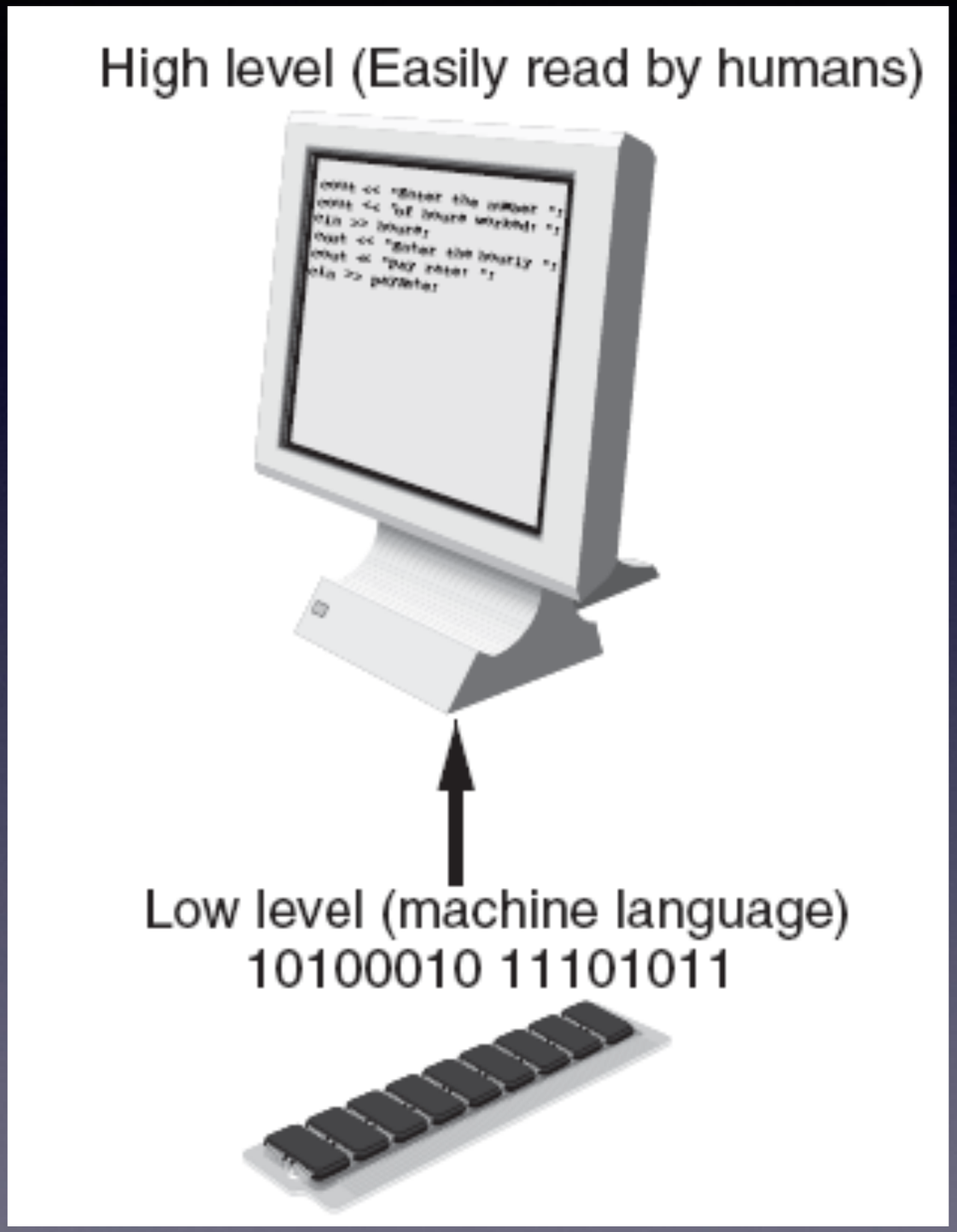
1. Go to the farmers market
2. Find your favorite vendor
3. Repeat for each veggie you want:
    A. See if the veggies look fresh
    B. If they are fresh, pick up the veggies and put them in a bag
4. Pay the vendor for the veggies in your bag
5. Exit the farmer’s market

Exercise 1A

- Introduce yourself to your neighbor
- Together, write an algorithm to make a cup of tea

software intro

- high level language, e.g. **Swift**, Objective-C, C++, Java, C, JavaScript
  - **platform-independent**
  - human readable
- low level language
  - very simple computer instructions, e.g. “add two numbers”
  - platform-dependent
  - **machine language** (binary codes) or equivalent **assembly language** (short abbreviations for commands)



making software work

- compiler
  - translates a high level language to low level language
  - examples: **Xcode**, g++, Microsoft Visual Studio, etc.
- Operating system (OS)
  - between software/hardware
  - allocates resources, coordinates tasks
  - examples: **iOS**, MacOS, Windows, Linux, Android

software life cycle

- analysis
- design
- implementation
- testing
- maintenance
- obsolescence

a little history…

- at first, iOS apps were developed in a programming language called Objective-C

Obj-C

C

Swift

- in 2014, Apple released Swift

Xcode - compiler for iOS

- translate your Swift code to machine code

Swift

```
let sub = Submarine(depth: 0)
sub.dive { (ballast) -> Status in
    if let subject = ballast {
        subject.registerObserver(se
        subject.synchronize()
    }
sub.powerSelfCheck().notify()
if let simulator = Simulator.boot(s
    simulator.add(sub)
}
```

Compiler

Xcode
app development tools

- Apple's Integrated Development Environment (IDE)

Xcode + Instruments + iOS Simulator

playgrounds

- in Xcode, we can get started learning Swift by using a **playground**

Exercise 1B

- Make sure you can connect to Insight and view our course schedule
  - https://insight.ccsf.edu
- Make sure you can download HW1.playground and run it