

# Building Java Programs

## Chapter 8

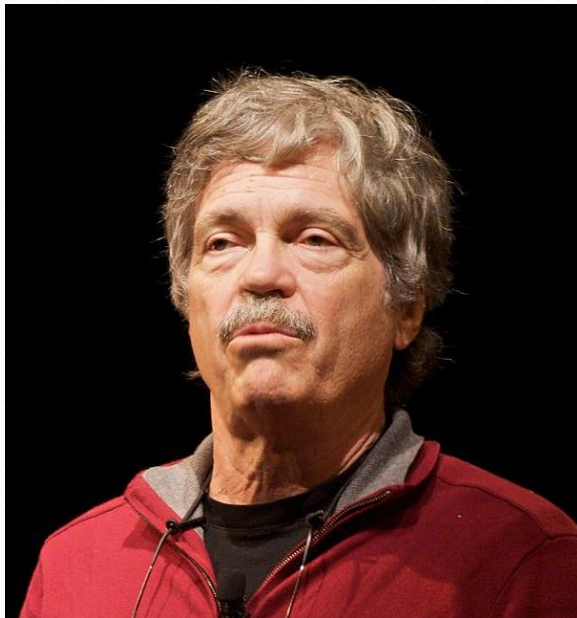
Lecture 18: Object Behavior (Methods)  
and Constructors, Encapsulation, `this`

**reading: 8.2 - 8.3, 8.5 – 8.6**

self-checks: #13-17

exercises: #5

# Xerox

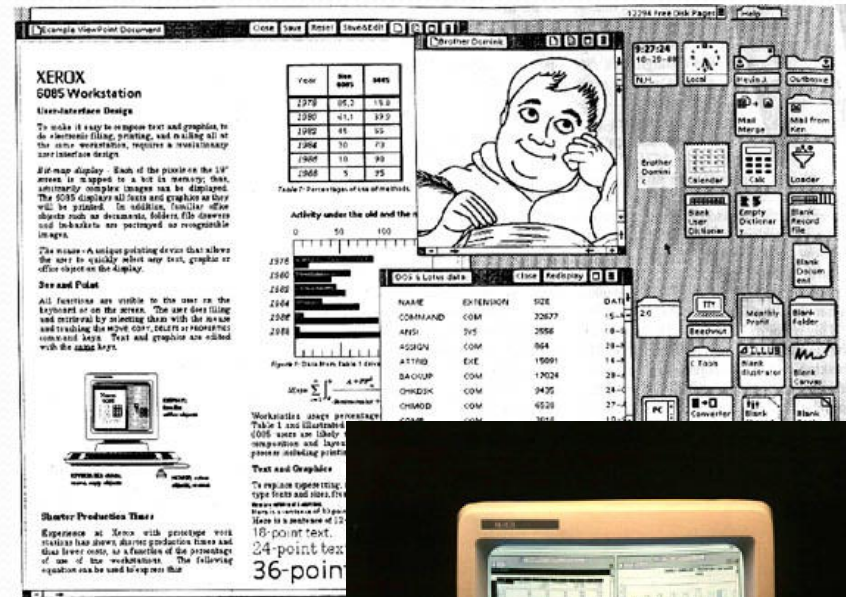


Alan Kay

Object-Oriented Programming



Alto  
(1973)



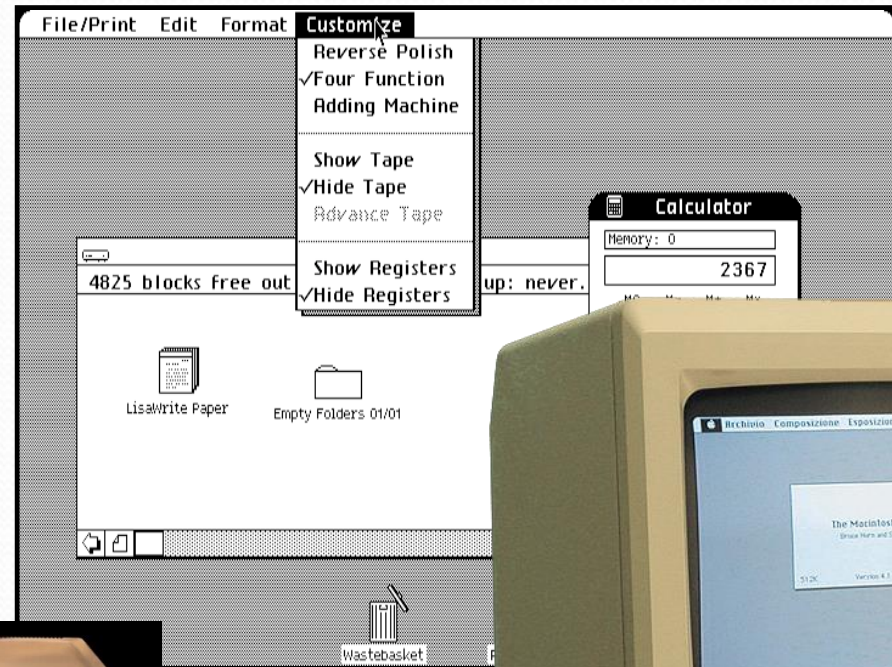
Star  
(1981)



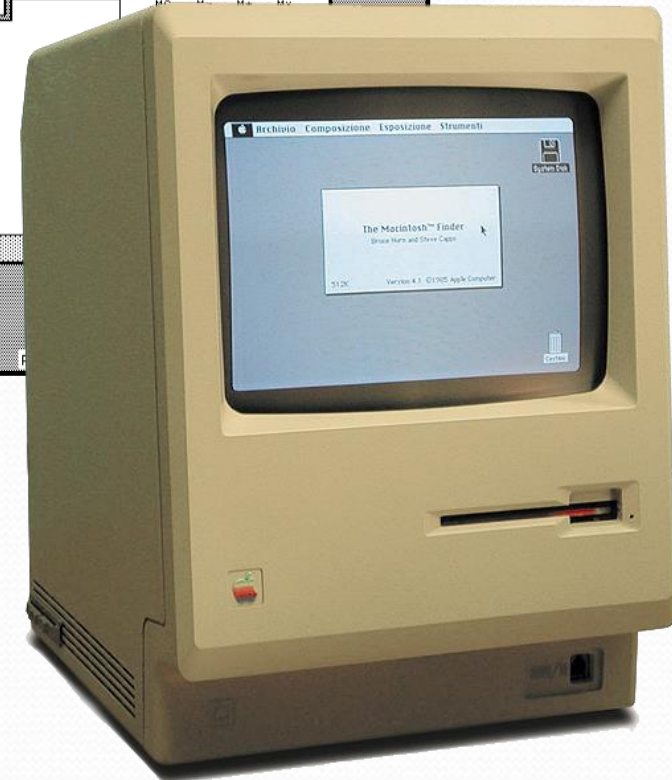
# Apple



Steve Jobs

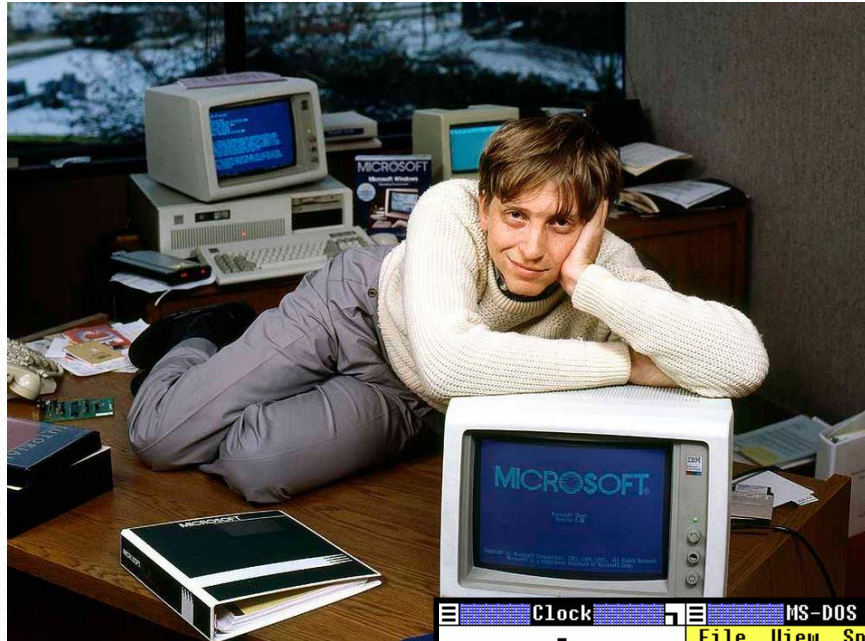


Lisa  
(1983)

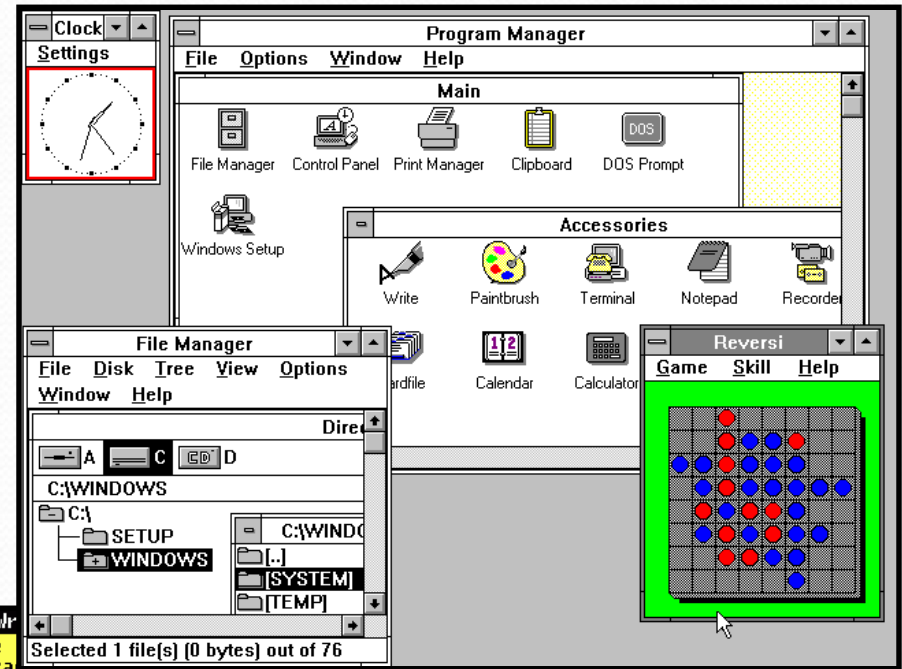


Macintosh  
(1984)

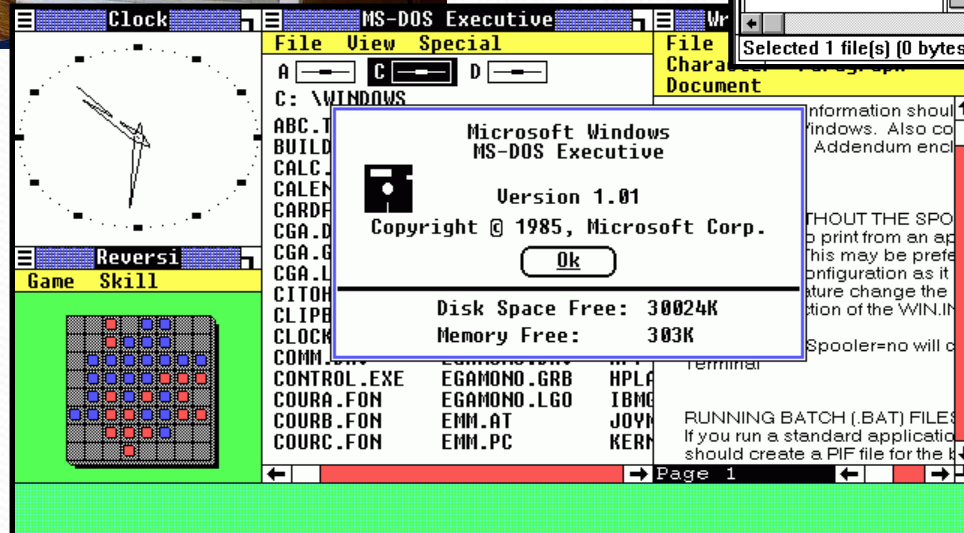
# Microsoft



Bill Gates



Windows 3.0  
(1990)



Windows 1.0  
(1985)



# Why objects?

- Primitive types don't model complex concepts well
  - Cost is a double. What's a person?
  - Classes are a way to define new types
  - Many objects can be made from those types
- Values of the same type often are used in similar ways
  - Promote code reuse through instance methods

# Kinds of methods

- **accessor:** A method that lets clients examine object state.
  - Examples: `distance`, `distanceFromOrigin`
  - often has a `non-void` return type
- **mutator:** A method that modifies an object's state.
  - Examples: `setLocation`, `translate`



# Constructors

- **constructor**: Initializes the state of new objects.

```
public type(parameters) {  
    statements;  
}
```

- runs when the client uses the `new` keyword
- no return type is specified;  
it implicitly "returns" the new object being created
- If a class has no constructor, Java gives it a *default constructor* with no parameters that sets all fields to 0.