

# AP Computer Science Programming, Java

A decorative graphic on the right side of the slide. It features a curved, funnel-like shape that tapers from left to right. The shape is filled with a gradient of orange and yellow. Inside the shape, there are several horizontal lines of binary code (0s and 1s) in a light gray color. On the right side of the shape, there are four circular patterns, each consisting of a solid orange circle surrounded by a larger, lighter orange ring. The overall design is modern and tech-oriented.

Garfield HS Mr. Bergquist, Sept 2013

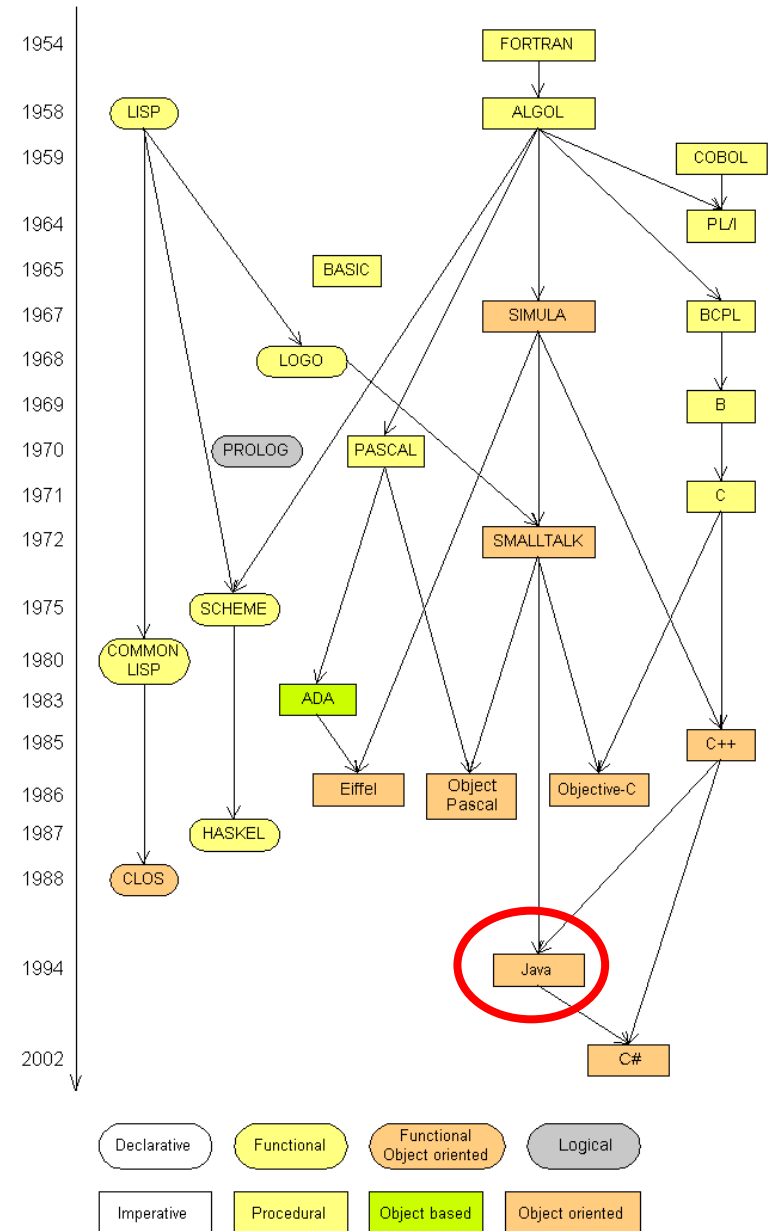
# Programming?

- **program:** A set of instructions to be carried out by a computer.
- **program execution:** The act of carrying out the instructions contained in a program.
- **programming language:** A systematic set of rules used to describe computations in a format that is editable by humans.

```
sub leap {  
    my $yr = $_[0];  
    if ($yr % 100 == 0) {  
        return ($yr % 400 == 0);  
    }  
    return ($yr % 4 == 0);  
}  
(Finding leap years in Perl!)
```

# Programming languages

- Formal expression
- Run on real machines
- Come in lots of flavors
- See [rosettacode.org](http://rosettacode.org)



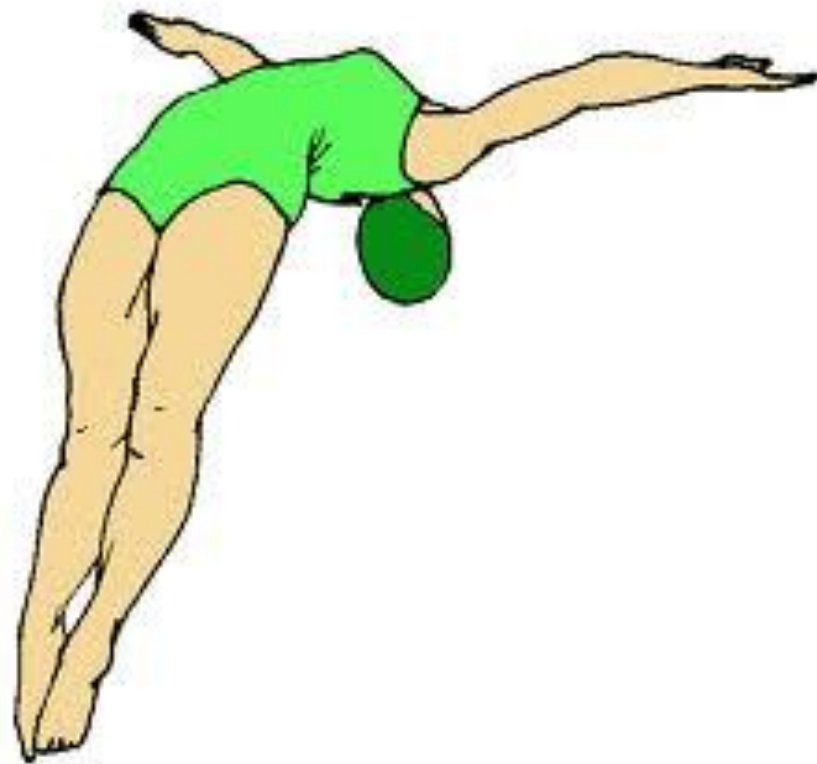
# Why Java?

- Relatively simple
- Object-oriented (modern!!)
- Existing libraries
- Platform independent
- Widely used
  - #1 in popularity ie <http://langpop.com/>

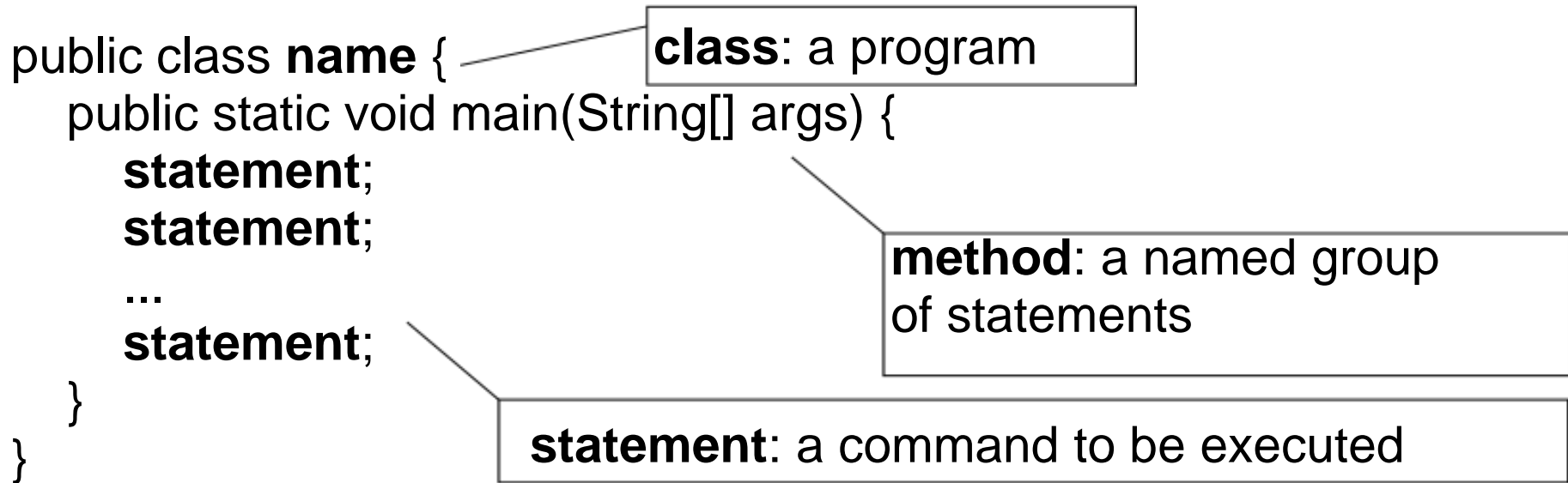
# Goals

- Basics of procedural, object-oriented design
- Interesting application domains
- Beautiful code, NOT hacks
- Java syntax

**Dive in... in style!**



# Structure of a Java program



- Every executable Java program consists of a **class**,
  - that contains a **method** named `main`,
    - that contains the **statements** (commands) to be executed.

# Compiling/running programs

## 1. Write it.

- **code** or **source code**: The set of instructions in a program.

## 2. Compile it.

- **compile**: Translate a program from one language to another.
- **byte code**: The Java compiler converts your code into a format named *byte code* that runs on many computer types.

## 3. Run (execute) it.

- **output**: The messages printed to the user by a program.

