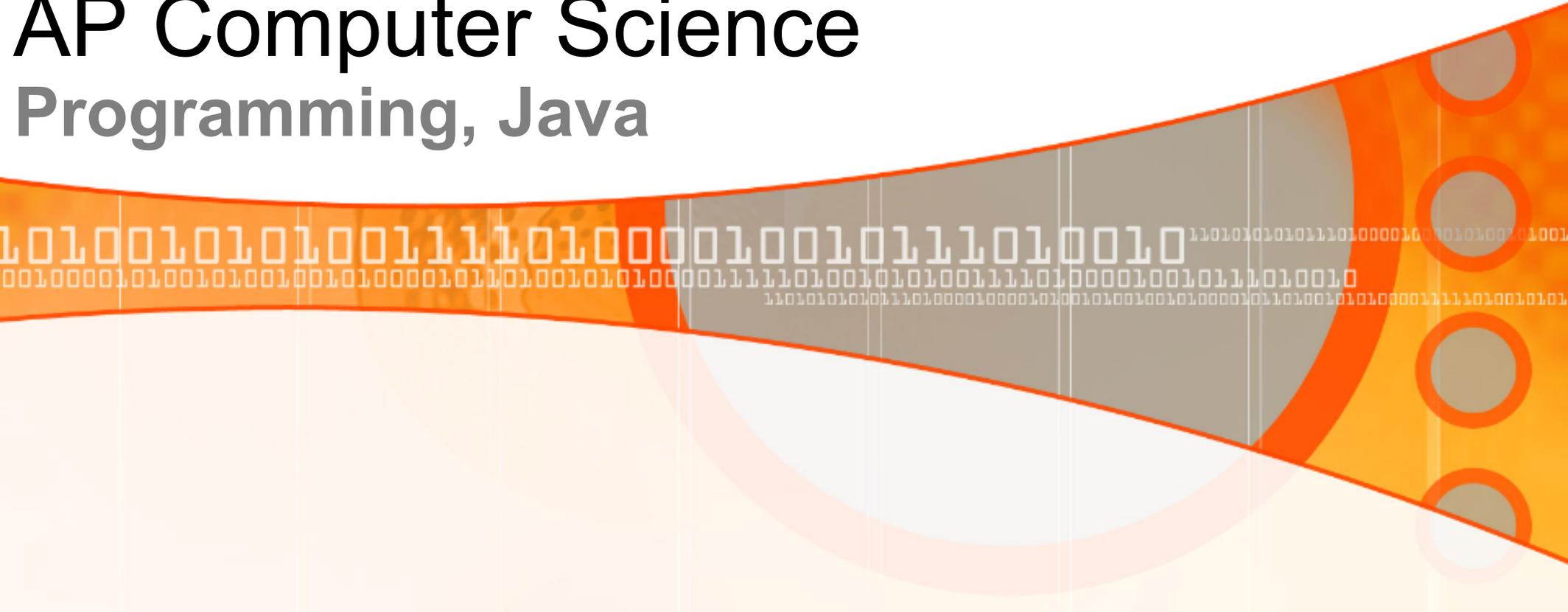


AP Computer Science Programming, Java

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A decorative graphic at the bottom of the slide. It features a horizontal band with a gradient from orange to grey. The band contains binary code (0s and 1s) in a light grey color. To the right of the band, there are several overlapping circles in shades of orange and grey. The background is white with a faint, large, light blue circle.

Google Interview Questions

- You are given 8 identical looking balls. One of them is heavier than the rest of the 7 (all the others weigh exactly the same). You are provided with a simple mechanical balance and you are restricted to only 3 uses. Find the heavier ball. Can you find it with 2 uses?



- How would you cut a rectangular cake into two equal pieces if a rectangular piece has already been cut out of it? The cut piece can be of any size and orientation. You are only allowed to make one straight cut.

Introductions!

- Your name
- Why you're here (future career? just curious?)
- Most interesting thing you've done with a computer

Grading

- **25% - Daily class work:**
 - Readings, worksheets, readings, reflections and “warm up exercises”
 - Collaboration, respect, leadership and participation
- **40% - Programming projects**
 - Where the learning happens! Applying new knowledge & skills
 - Primarily in-class
- **35% - Tests & Quizzes**
 - Key for succeeding on the AP Exam
 - Demonstrate long-term retention of essential content and application of new skills

You are granted a total of 6 “late days” for projects to use as needed for the entire year, up to 3 on any given project. 10% off per day thereafter.

Getting help

- Cliche but true: no stupid question
- Ask early, ask often
- Seek help from classmates and try looking online
- I am often in class after school; ask if you want to meet
- email: embergquist@seattleschools.org and consult the class website for more resources.

Corporate Classroom Expectations

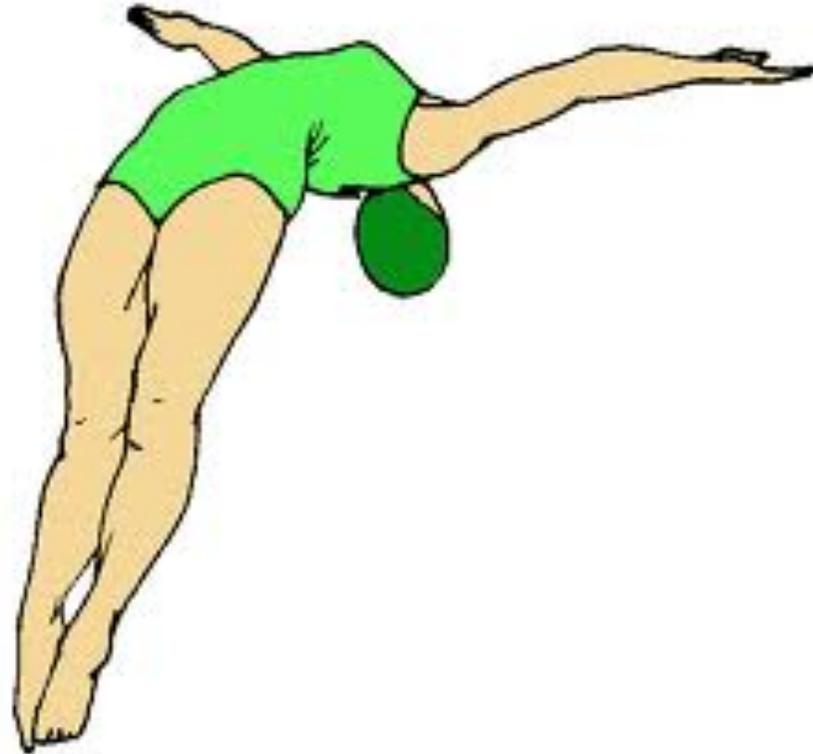
- This is an Occupational Education (CTE) class which includes:
 - The Goal to help students develop solid workplace skills
 - Higher expectations of professional behavior, independent effort and team cooperation
 - Leadership roles and opportunities
 - Follow our Professional Classroom Standards, Procedures and Garfield Rules

[Our Computer Science Classroom Guidelines linked here](#)

Goals

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

Dive in... in style!



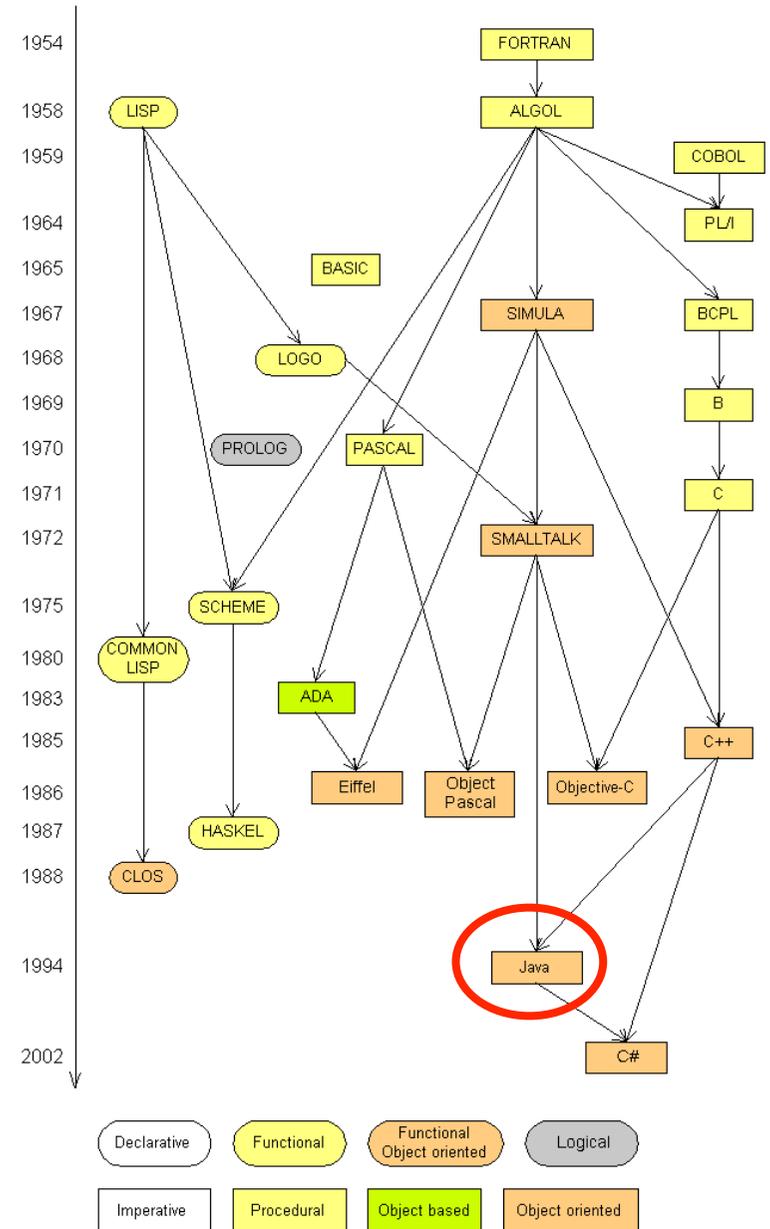
Programming?

- **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

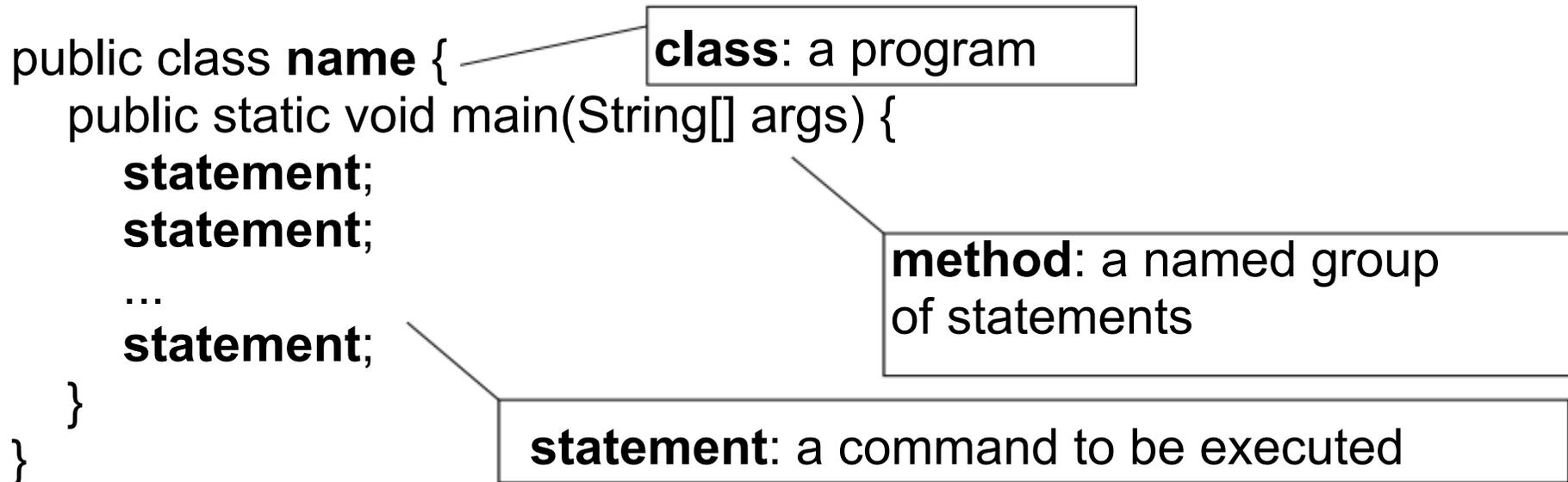
- Formal expression
- Run on real machines
- Come in lots of flavors
- See rosettacode.org



Why Java?

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

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.

