

C++

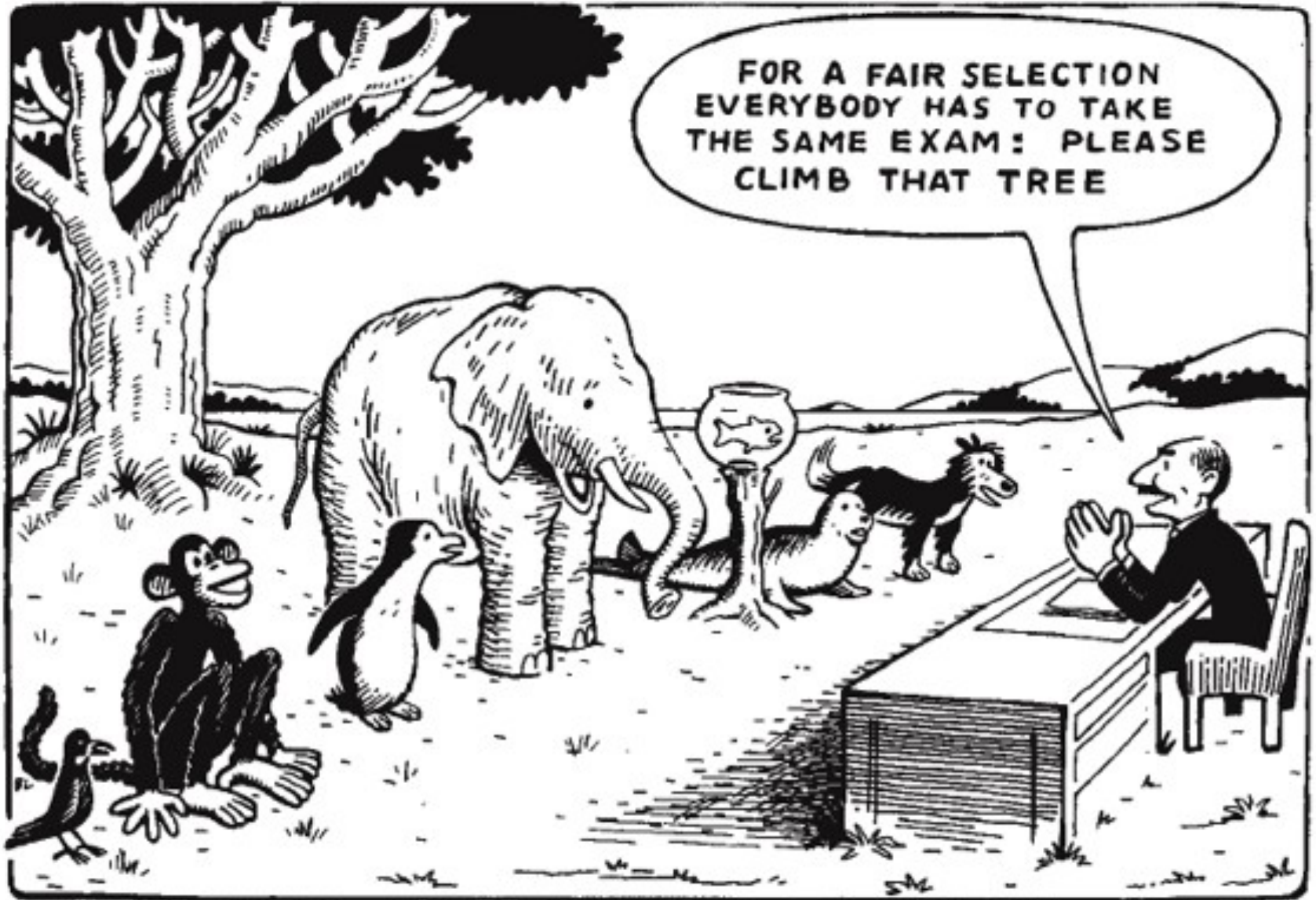
SWE315

Lesson 1

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FOR A FAIR SELECTION
EVERYBODY HAS TO TAKE
THE SAME EXAM: PLEASE
CLIMB THAT TREE



Lesson 1

- In this lesson:
 - Syllabus + overview
 - Resources to help you
 - Programs:
 - “Hello world”: First program!
 - Converting Inches to cm. (Variables)
 - (slides→) PBM/PGM/PPM File format.
 - System call (and `str.c_str()`)
 - Homework 1
 - Lab work

KISS

- Keep It Simple !!
 - Self documenting
 - Clear thinking
 - Clean code
 - Don't over use the language
 - Comment as appropriate

What Google says about it?

“**C++ is the main development language used by many of Google's open-source projects.** As every C++ programmer knows, the language has many powerful features, but this power brings with it complexity, which in turn can make code more bug-prone and harder to read and maintain.

“

“... Another issue this guide addresses is that of **C++ feature bloat**. C++ is a huge language with many advanced features. In some cases we constrain, or even ban, use of certain features. We do this to keep code simple and to avoid the various common errors and problems that these features can cause. This guide lists these features and explains why their use is restricted.”



What does Bjarne Stroustrup has to say about it?

“C++ is the most widely used language in engineering areas: <http://www.research.att.com/~bs/applications.html> “

- (NOT!) For students
 - who want to become language lawyers
 - We try not to get bogged down in technical obscurities
 - who are assumed to be a bit dim and fairly lazy
 - We try not to spoon feed

C++

- C Heritage:
 - Low Level
 - Simple code
- ++:
 - Object oriented
 - Generic programming

“Hello World”

- The “main()” function
 - Function header
 - Function body
- Preprocessor directives
 - #include <iostream>
 - Using namespace std;
- cout
 - “endl” manipulator
 - “\n” escape-sequence

```
#include <iostream>

int main()
{

    using namespace std;

    cout << "Hello World!" ;
    cout << endl ;

    return 0;

}
```

The compiler is your friend!!

“Hello World”

- C style compatible!

```
#include <stdio.h>

void main()
{
    printf("Hello world!\n");
}
```

PBM/PGM/PPM formats

- Starts with a two-byte [magic number](#) (in ASCII)
 - Identifies the type of file it is (PBM, PGM, and PPM) and its encoding ([ASCII](#) or binary).
 - The magic number is a capital P followed by a single-digit number.

Type	Magic number		Magic number		Extension	Colors
Portable BitMap	P1	ASCII	P4	binary	.pbm	0...1 (black & white)
Portable GrayMap	P2	ASCII	P5	binary	.pgm	0...255 (gray scale)
Portable PixMap	P3	ASCII	P6	binary	.ppm	0...255 (RGB)

What is this file?

```
P1
# This is a comment
6 10
000010
000010
000010
000010
000010
000010
000010
100010
011100
000000
000000
```



What is this file?

P1

This is an example bitmap of the letter "J"

6 10

```
000010
000010
000010
000010
000010
000010
000010
100010
011100
000000
000000
```



END