

An abstract graphic featuring a large, irregular blue splash or ink blot centered on a light blue background. The splash has various shades of blue, from light to dark, and several bright blue starburst or lens flare effects. In the center of the splash is a large, solid white circle.

Session 1

The background is a light blue gradient. In the center, there is a large, irregular blue splash or ink blot. Overlaid on this splash is a large, solid white circle. Inside the white circle, the word "Introduction" is written in a dark blue, serif font. To the right of the white circle, within the blue splash area, there are several bright blue lens flare effects, each consisting of a small, glowing blue circle with radiating lines. The overall composition is centered and balanced.

Introduction

Exercise Rules

- Students should submit their exercises on the LMS by the deadline.
- Exercises submitted after the deadline will have a 20% penalty and can't be submitted after class is started. Everyone should present their code in class.
- Grades will be submitted to this repository one week after the class and will be visible to the entire class. All answers including my own version will be available in this repo after submission of grades.

Grading System

2 point for class attendance

2 point for in-class quizzes

4 point for project

6 point for exercises

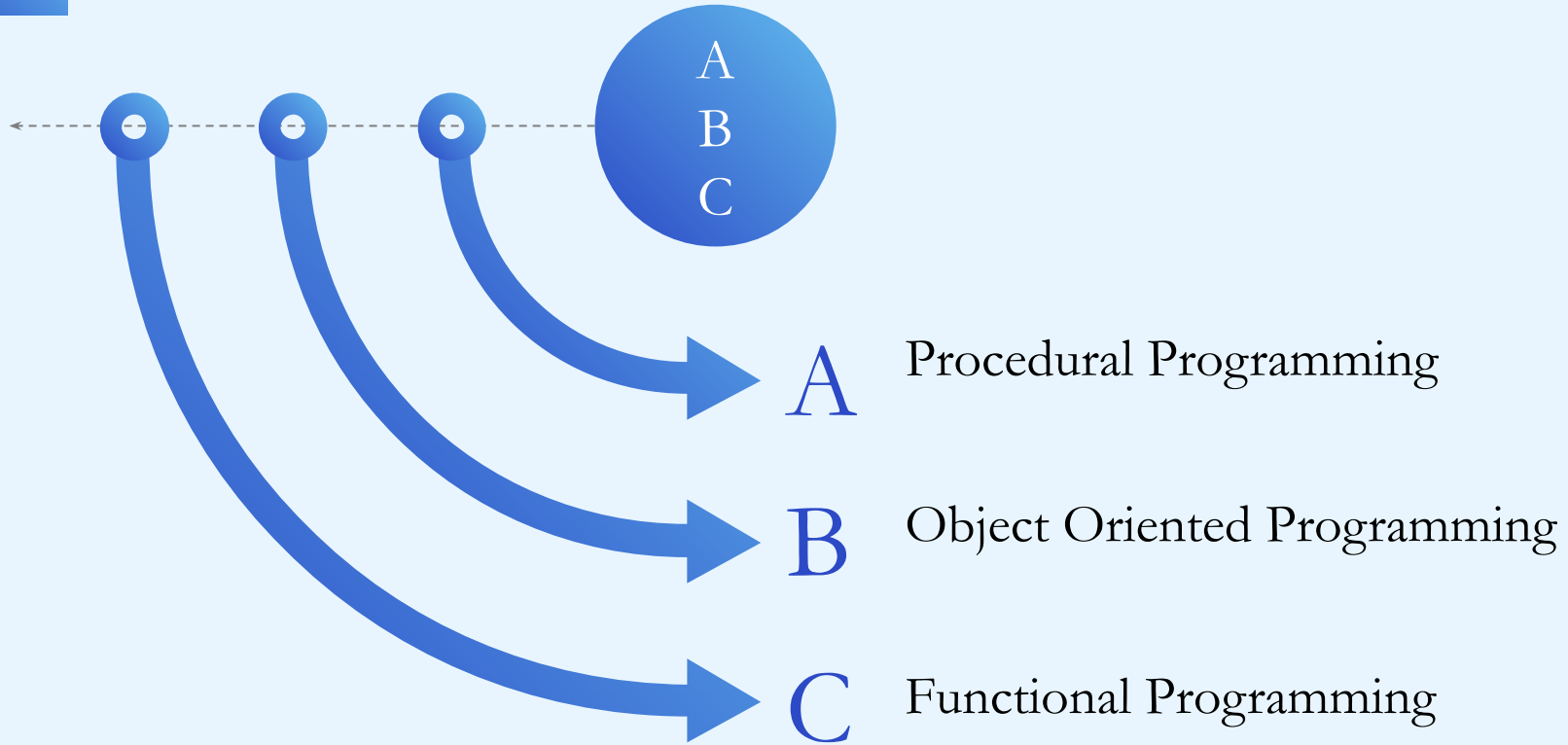
6 point for final exam

2 extra points will be given for in-class activities and collectable extra points are also introduced with optional activities during semester.

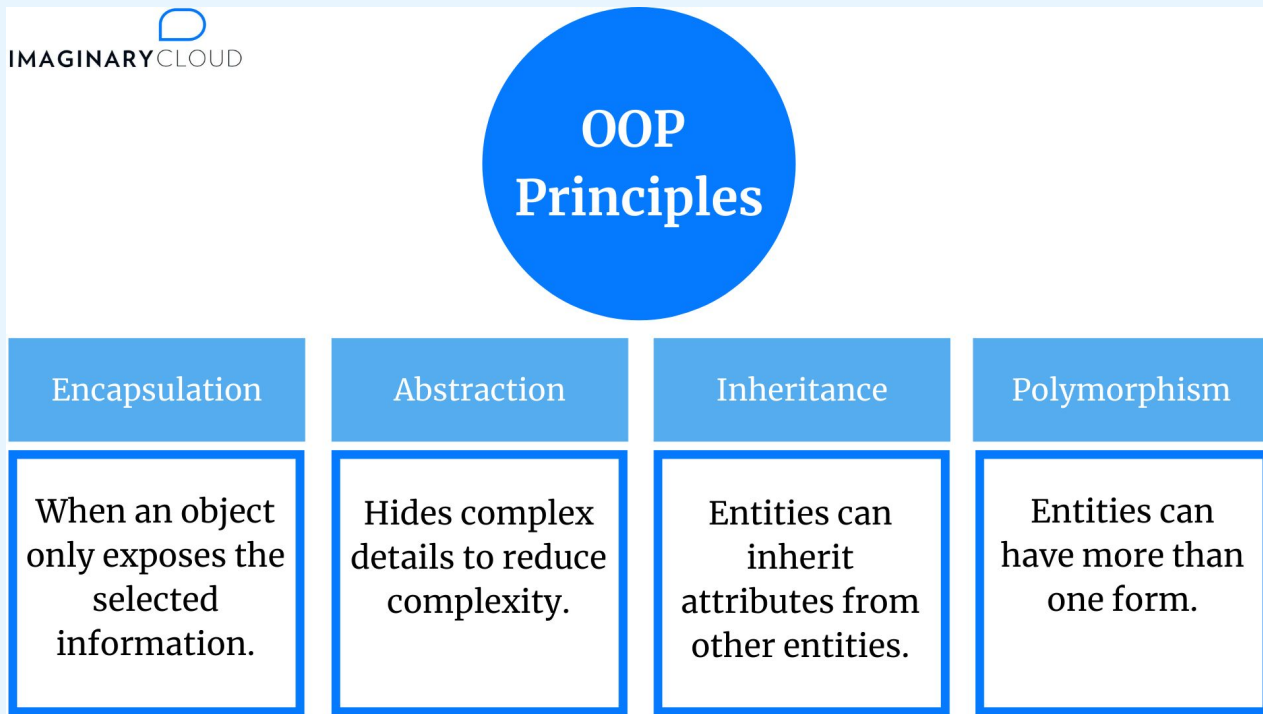


Programming Paradigms

Different Paradigms



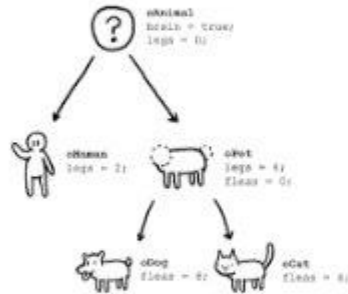
Why OOP?



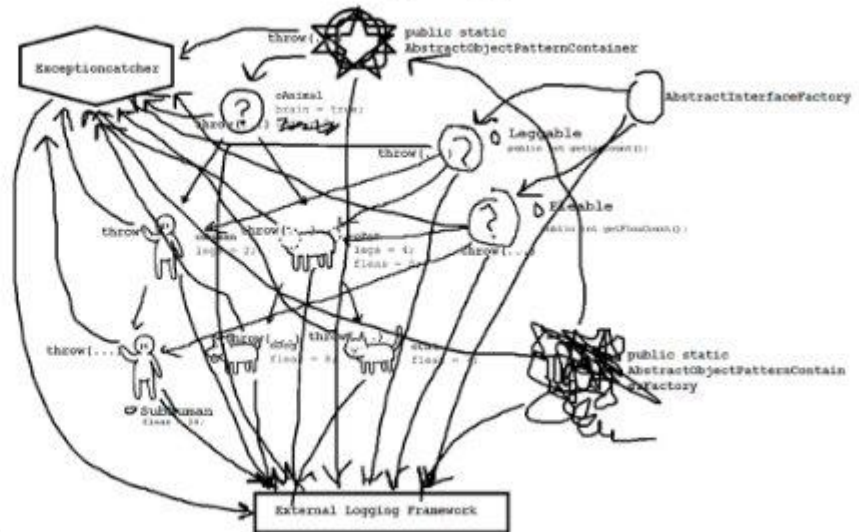
Why not OOP?

“You wanted a banana but what you got was a gorilla holding the banana and the entire jungle.” -Joe Armstrong

What OOP users claim



What actually happens

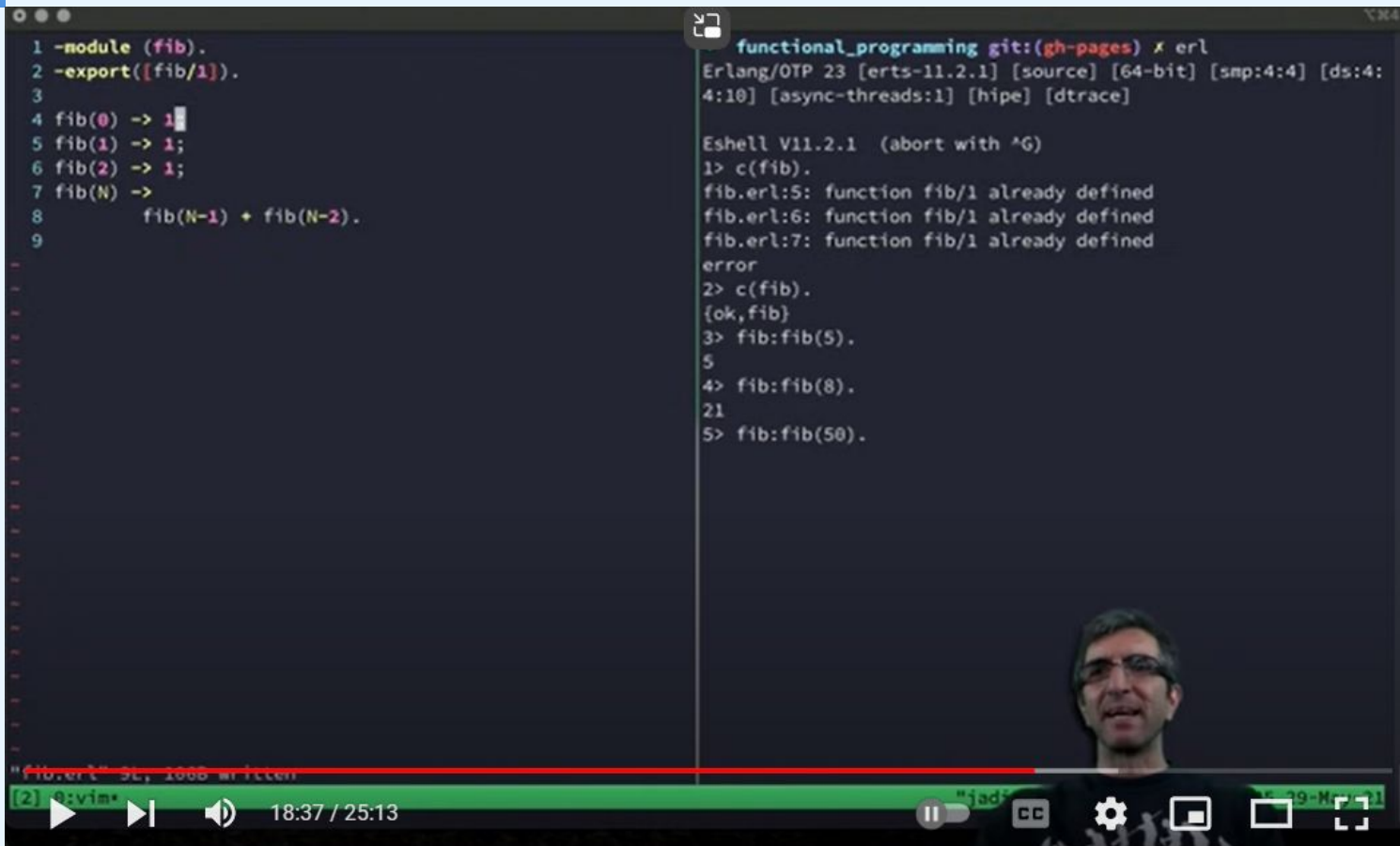




Why Java?

- Java is “almost” Pure Object Oriented.
- Java has a C/C++ like syntax and eliminates low level design decisions(mostly memory management)
- Java has all object oriented designs implemented

What is functional then?



```
1 -module (fib).
2 -export([fib/1]).
3
4 fib(0) -> 1
5 fib(1) -> 1;
6 fib(2) -> 1;
7 fib(N) ->
8     fib(N-1) + fib(N-2).
9
```

```
functional_programming git:(gh-pages) x erl
Erlang/OTP 23 [erts-11.2.1] [source] [64-bit] [smp:4:4] [ds:4:
4:10] [async-threads:1] [hipe] [dtrace]

Eshell V11.2.1 (abort with ^G)
1> c(fib).
fib.erl:5: function fib/1 already defined
fib.erl:6: function fib/1 already defined
fib.erl:7: function fib/1 already defined
error
2> c(fib).
{ok,fib}
3> fib:fib(5).
5
4> fib:fib(8).
21
5> fib:fib(50).
```

"fib.erl" 9L, 100B written

[2] 0:vim*

18:37 / 25:13

"jad"

39-May-21

What is functional then?

```
1 -module (fib).
2 -export([fib/1]).
3
4 fib(N) -> fib_internal(N, 0, 1).
5
6 fib_internal(0, Result, _) -> Result;
7 fib_internal(Iter, Result, Next) when Iter > 0 ->
8     fib_internal(Iter-1, Next, Next+Result).
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```

Shell V11.2.1 (abort with ^G)

```
1> c(fib).
{ok,fib}
2> fib:fib(5).
5
3> fib:fib(8).
21
4> fib:fib(50).
12586269025
5> fib:fib(500).
13942322456169788013972438287040728395007025658769730726410896
2948325571622863290691557658876222521294125
6> fib:fib(5000).
38789684543883256337019163083259053120821277146462451061605972
14895550139044037097010822916462210669479293452858882973813483
10200895498294036143015691147893836421656394410691021450563413
37065586562382546567007125259299038549338139288363783475189087
62970712033337052923107693008518093849801803847813996748881765
55465378829164426891298038461377896902150229308247566634622492
30718833248032803750391303529033045058427011476352422702109346
37699104006714174883298422891491273104054328753298044273676822
97724498774987455569190770388063704683279481135897373999311010
62193081490185708153978543791953056175107610530756887837660330
67355445258844886241619210553457493675897849027988234351023599
8446639348532564119522218595630604757076033090242080630
25849291564528762915757591423438091910889841552098544
3248659407979357131684169286803954698114665082066862
89742063932343848846524098874239587382031717420893226
5468879364002630797780058759129671302525791168727556003
60311370547754724604639987588046985174382863125
```

"fib.erl" 8L, 130B written

[2] 9:beam.smp 20:48 / 25:13



Coding!

The image features a central white circle containing the text "The End" in a dark blue, serif font. This circle is surrounded by a dynamic, abstract splash of blue ink or paint. The splash consists of various shades of blue, from light sky blue to deep navy blue, with some areas appearing as bright, glowing points of light. The overall composition is centered on a light blue background.

The End