

Java & Object Oriented Programming

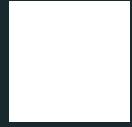


Who's he?

I am Kacper Warda

More than 10 years Java pays my bills.

kacper.warda@logintegra.com



So let's
introduce
ourselves



JUST KIDDING



HOW TO PASS?

LABS

1. SET OF TASKS ON THE LAST LAB
2. ONE BIGGER TASK - LET'S CALL IT "PROJECT"

LECTURE

1. PRESENCE (4 POINTS)
2. TEST (16 POINTS)

A scenic landscape featuring a large, rugged mountain range in the background under a sky transitioning from pink to blue. In the foreground, there's a steep hillside covered in dense, golden-brown vegetation. A winding path or stream bed is visible on the left side of the hill. The overall atmosphere is serene and natural.

What's the
name of that
island?

1

Wtf is Java?

Language

Platform

Ecosystem

2

Why should I care?

Popularity

Universality

Mature

Lot of jobs

Pays good money

66

**But it's just a tool
Like a wrench
It's not the best tool for every task**



IT'S REALLY GOOD FOR



Business



Mobile

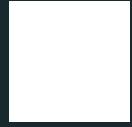


IoT

BAD FOR GAMES



AND FOR DATA MINING



History of Java



JUST KIDDING

#JudgeJudy

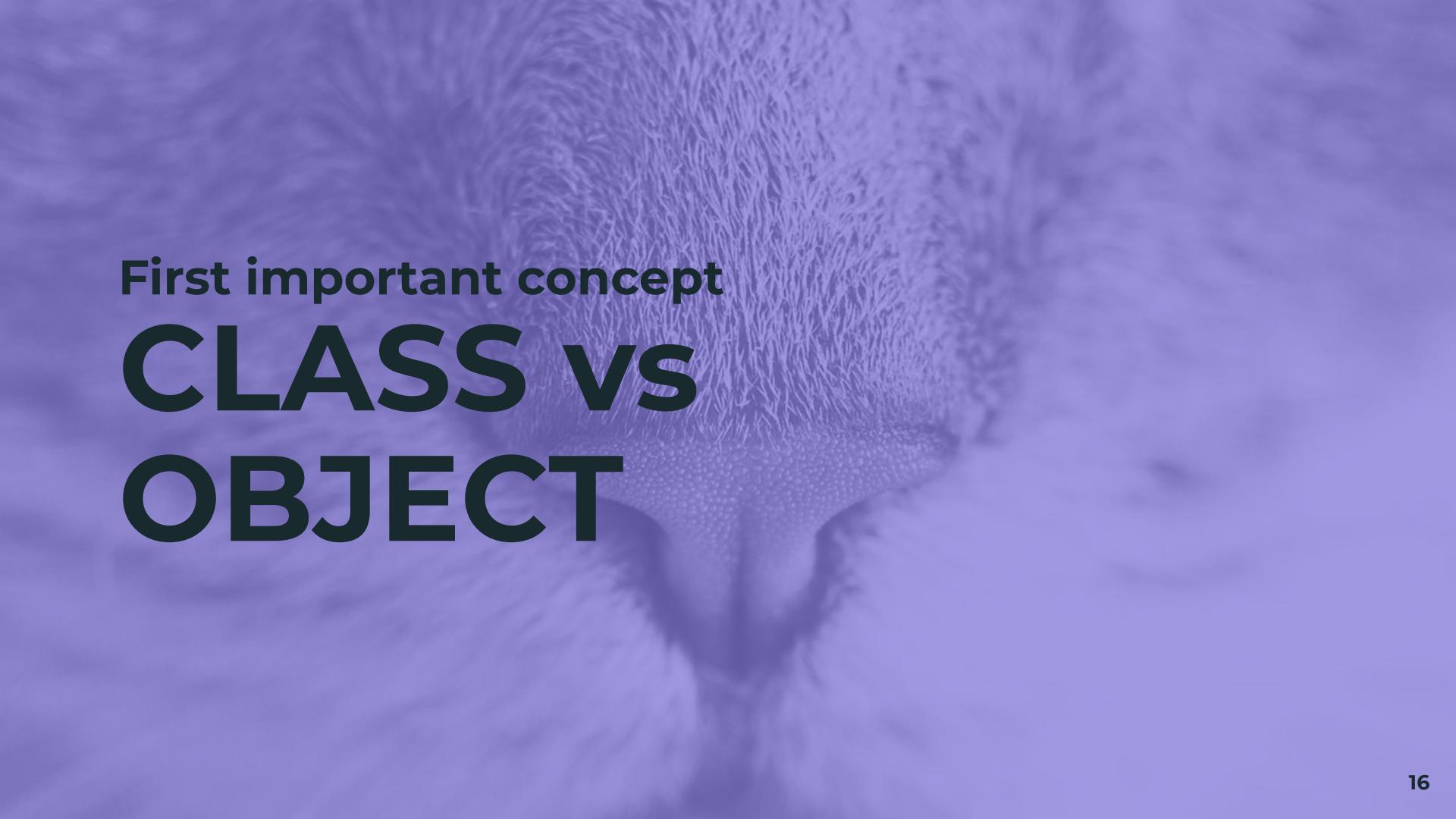


Who cares?!



Let's dive into this object sht





First important concept

CLASS vs OBJECT



Class is a blank template

**PHONE
producer:
model:
screenSize:
Android/iOS:**



**Object is
completed
template**

PHONE #1

producer: Apple

model: iPhone 6s

screen size: 4,7

android/iOS: iOS

PHONE #2

producer: ...

model: ...

screenSize: ...

android/iOS: ...



Again: Class is a blank template

**ANIMAL
species:
weight:
name:
pic:**



**Object is
completed
template**

ANIMAL #1
species: Lion
weight: 183 kg

name: Leo

pic:



ANIMAL #2

species: Dog

weight: 41 kg

name: Hachikō

pic:





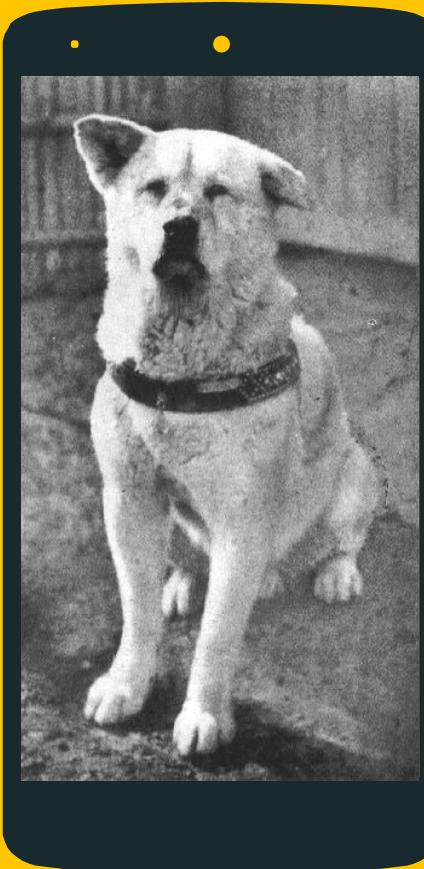
CODE TIME

Sixth day of
creation



GOT IT?

THAT'S GOOD MOMENT FOR QUESTIONS

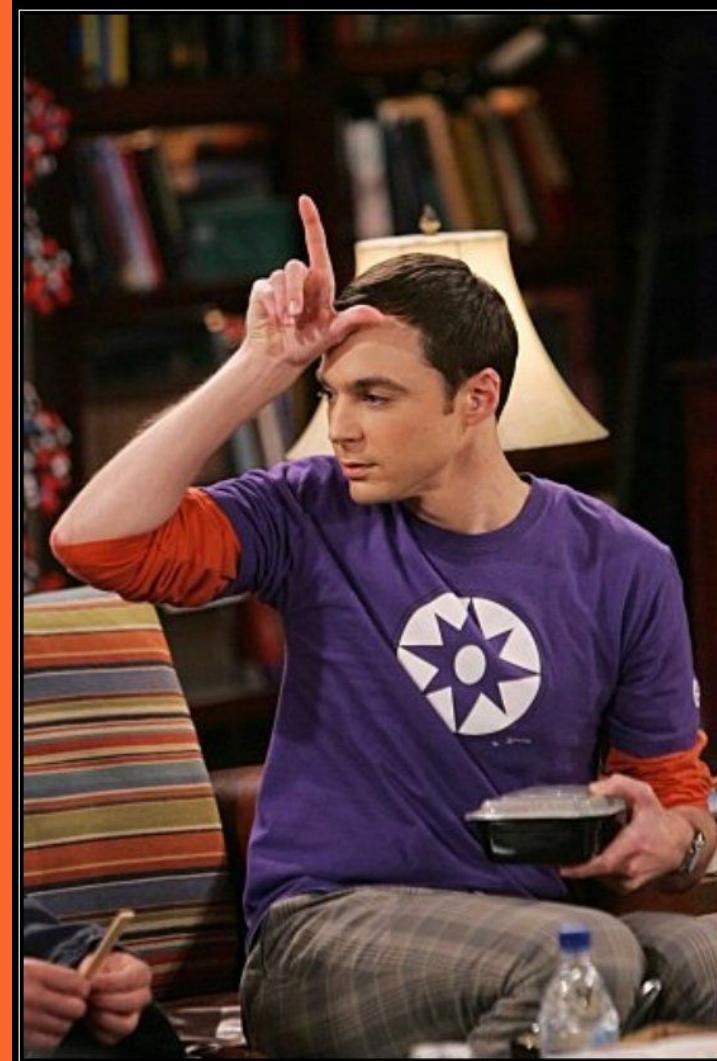


L

Don't be a

Use english

In the code





**So we could store
some data in objects**

**And what we can DO
with that data?**

Second important concept

FIELDS and METHODS



FIELDS stores data

PHONE
producer:
model:
screenSize:
Android/iOS:



METHODS operates on data

PHONE

producer:

model:

screenSize:

Android/iOS:

turnOn

mute

installAnApp



**Again:
FIELDS stores
data**

ANIMAL
species:
weight:
name:
pic:



METHODS operates on data

ANIMAL

species:
weight:
name:
pic:

feed
takeForAWalk
playWith



CODE TIME

Let's talk about
methods



GOT IT?

THAT'S GOOD MOMENT FOR QUESTIONS



Third important concept

CLASSES

Could be
fields in

other

CLASSES

HUMAN

firstName:

lastName:

phone:

pet:



Actually (almost) every
FIELD have a
CLASS

ANIMAL

String species:
Double weight:
String name:
File pic:



CODE TIME

Let's give the
dog some
human



GOT IT?

THAT'S GOOD MOMENT FOR QUESTIONS



A close-up photograph of a sunflower head, showing the dense packing of seeds in a spiral pattern. The background is a soft-focus view of other sunflowers.

Fourth important concept

**FIELDS
are not
created
equal**



PUBLIC vs PRIVATE

ANIMAL

String species:

File pic:

**Private Double weight:
Public String name:**



FINAL vs Not FINAL

Animal

```
final public String species:
private Double weight:
public String name:
```

File pic:



PUBLIC vs PRIVATE (again)

HUMAN

Public String firstName:

Public String lastName:

Public Animal pet:

Private Double salary:

Protected String phone:

THATS MY HOMIE



Rollin' with the homies





FINAL vs Not FINAL

Yeah, again

PHONE
final public producer:
final public model:
final public screenSize:
final public Android/iOS:



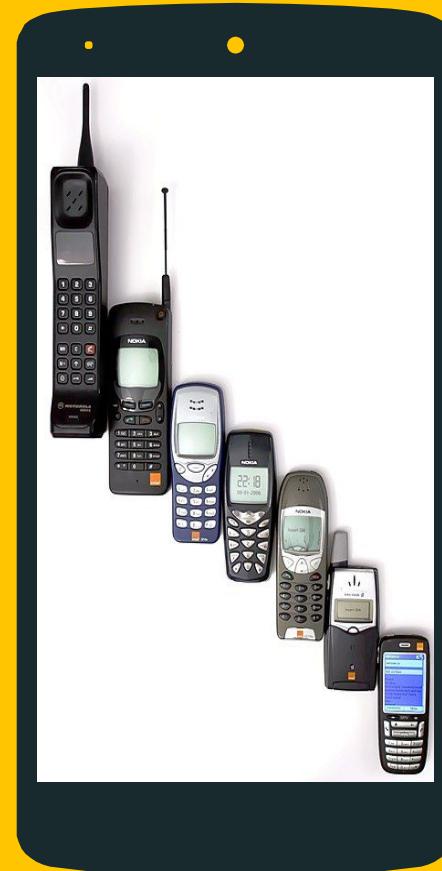
**CODE
TIME**

**Batman final
forever**



GOT IT?

THAT'S GOOD MOMENT FOR QUESTIONS





**So if it's final how
could we set it?**



CONSTRUCTOR

(It's another important concept)



**So if it's privat
how could we
change it?**

METHOD





METHOD MAN



METHOD got it?





CODE TIME

Let's feed the
dog



GOT IT?

THAT'S GOOD MOMENT FOR QUESTIONS





**GARBAGE
COLLECTOR**
(the hero we don't deserve)

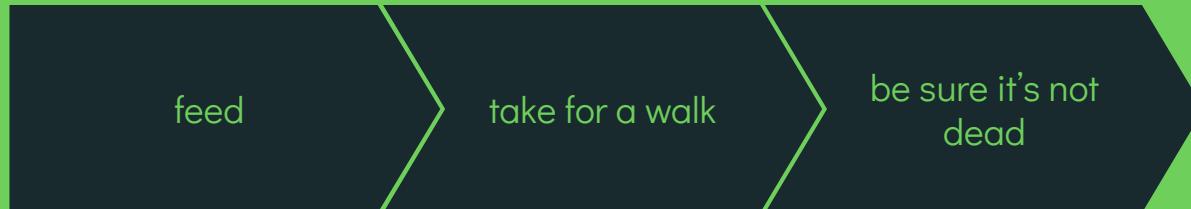


The important concept

STATIC
and why
you
should not
use it



Task 1. Pets feeding process





Task 2: get yourself a Car



The important concept

**Getter and
his bro
Setter**

How much
do you
earn?

A photograph of a young man with dark hair and a beard, wearing a white hoodie and black headphones, standing behind a DJ turntable in a dimly lit club. The background is filled with colorful stage lights.

DJ GET(t)ER

(I have no idea who he is)



Task 3: get your salary

A photograph of a red Irish Setter dog standing in a field of tall, dry grass under a blue sky with scattered clouds. The dog is facing left, with its head turned slightly towards the camera. Its long, wavy reddish-brown coat is prominent.

SET(t)ER



Task 4: give yourself a rise

Isn't it too
expensive?



Task 5 : check if you could buy it



Don't
put
that
sht
everyware,
please



Task 6: Share the car with your wife

Stalking

On human

Stalking

On pets

Stalking

Everywhere

Packages



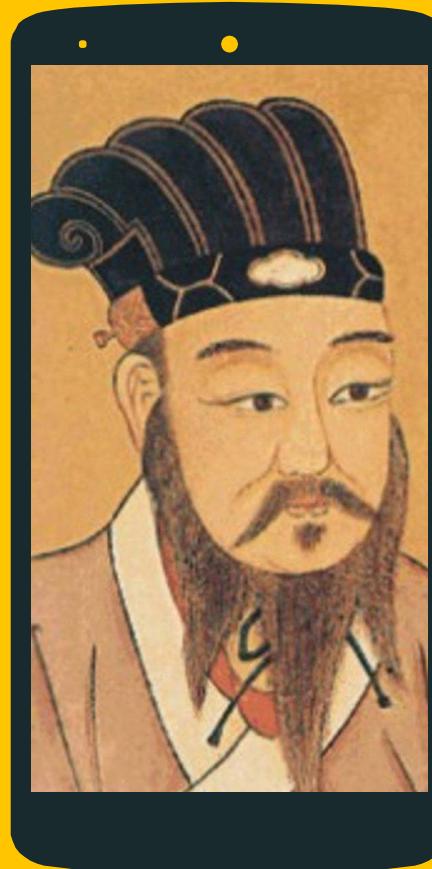


**That's not my homie
(anymore)**



GOT IT?

THAT'S GOOD MOMENT FOR QUESTIONS





**Now you're
ready to
COLONIZE**

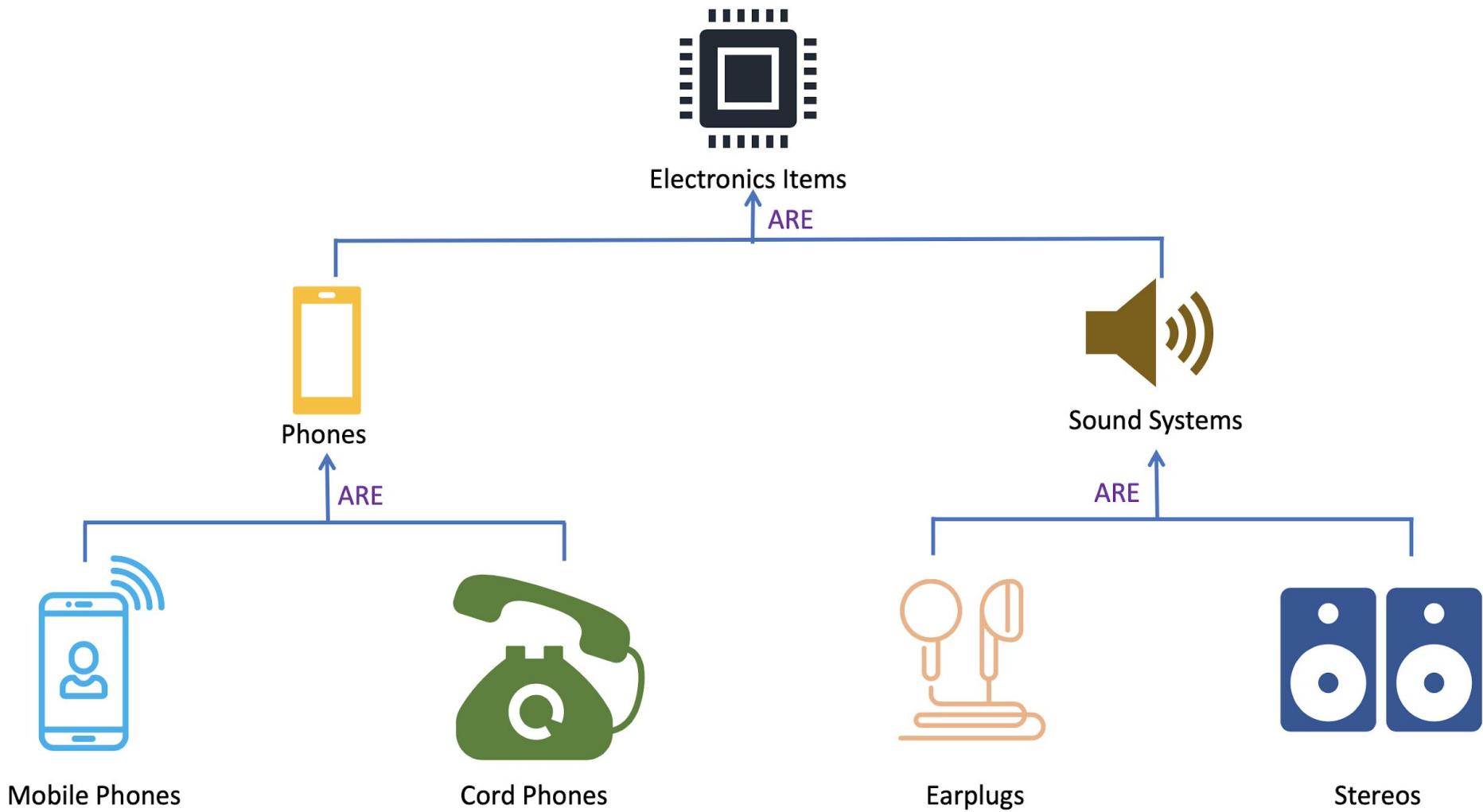




important concept again

HERITAGE

matters



Is human
an animal?



CONSTRUCTORs 2.0









HUMAN extends Animal

public String firstName:

public String lastName:

public Animal pet:

private Double salary:

protected String phone:

final public String species

private Double weight

HUMAN extends Animal

public String firstName:

public String lastName:

public Animal pet:

private Double salary:

protected String phone:

final public String species:

private Double weight:

public void feed()

Is human
an animal?

Is animal
an object?



**the stupidest
name of class**



CODE TIME

To be or not to
be

an animal



GOT IT?

THAT'S GOOD MOMENT FOR QUESTIONS



Is phone
an object?



Task: create Device class

Which fields should go there?
Which methods should go there?

important concept again

I WANT
SOMETHING
but I don't know
how to get it



ABSTRACT vs INTERFACE

The background of the image is a vibrant, abstract composition. It features several overlapping, translucent shapes in various colors, including shades of red, orange, yellow, green, blue, and purple. These shapes have a slightly textured, painterly appearance and overlap each other in a dynamic, non-linear fashion, creating a sense of depth and movement.

***abstract**

Device

String producer:

String model:

abstract void turnOn()



*interface

**Animal implements
Soldable, Edible**

**Device implements
Soldable**



ABSTRACT CLASS

**when you need to store
data or to have some
implementation**



INTERFACE

When you have no
idea what do you need,
but there's a lot of it



**CODE
TIME**

Go abstract



GOT IT?

THAT'S GOOD MOMENT FOR QUESTIONS





**Task: create and
implement
interface Saleable
(slavery not working any more)**



Task: Real selling

Now, when you would like to sell you have to have buyer, seller and price

1. Add field 'cash' to Human
2. Check if someone have enough cash to buy
3. Change amount of cash after transaction
4. The object should change an owner
5. Log info about transaction on console



Task: Farmin'

1. Extend the Animal to FarmAnimal and Pet
2. You could not eat pets anymore
3. Use super() in constructor
4. Create new package for all creatures
5. Change Animal into abstract class



METHODs 2.0



important concept again

OVERLOADING

Parameters

More, parameters

Lot, more, parameters

PHONE

producer:

model:

screenSize:

Android/iOS:

turnOn()

mute()

mute(minutes)

installAnApp(appName)

installAnApp(appName, version)

Other Parameters

PHONE

producer:

model:

screenSize:

Android/iOS:

turnOn()

mute()

mute(minutes)

installAnApp(appName)

installAnApp(appName, version)

installAnApp(url)

installAnApp(listOfApps)



CODE TIME

Let's install that
app finally



GOT IT?

THAT'S GOOD MOMENT FOR QUESTIONS



Rules for Java Method Overriding



Method must have same name as in the parent class

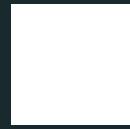
**STEP
01**

**STEP
02**

Method must have same parameter as in the parent class.

**STEP
03**

There must be IS-A relationship (inheritance).



So let's
introduce
ourselves



GOT IT?

THAT'S GOOD MOMENT FOR QUESTIONS





Task: Feedable

1. Create Interface Feedable
2. It should have feed() and feed(foodWeight)
3. Implement it in Animal and subclasses
4. Use static final for default foodWeight
5. Create different defaults for different classes



Task: Electric cars

1. Extend Car to ElectricCar and DieselCar
2. Create abstract method refuel on Car
3. Implement it in subclasses
4. Implement different toString's
5. Human should have a Car or ElectricCar?

Get some data





**Do you need
second car for
your wife?**

ARRAYS



HUMAN extends Animal

```
public String firstName:  
public String lastName:  
public Animal pet:  
private Double salary:  
protected String phone:  
final public String species:  
private Double weight:  
  
public FarmAnimal[] farm
```



ITERATING and SORTING

```
public class FarmAnimal  
extends Animal  
implements  
Edible, Comparable
```



Task: Car[] garage

1. Decide how many cars you could have
2. Create method that sum value of cars
3. Sort cars by yearOfProduction
4. Change method that sell cars



COLLECTIONS

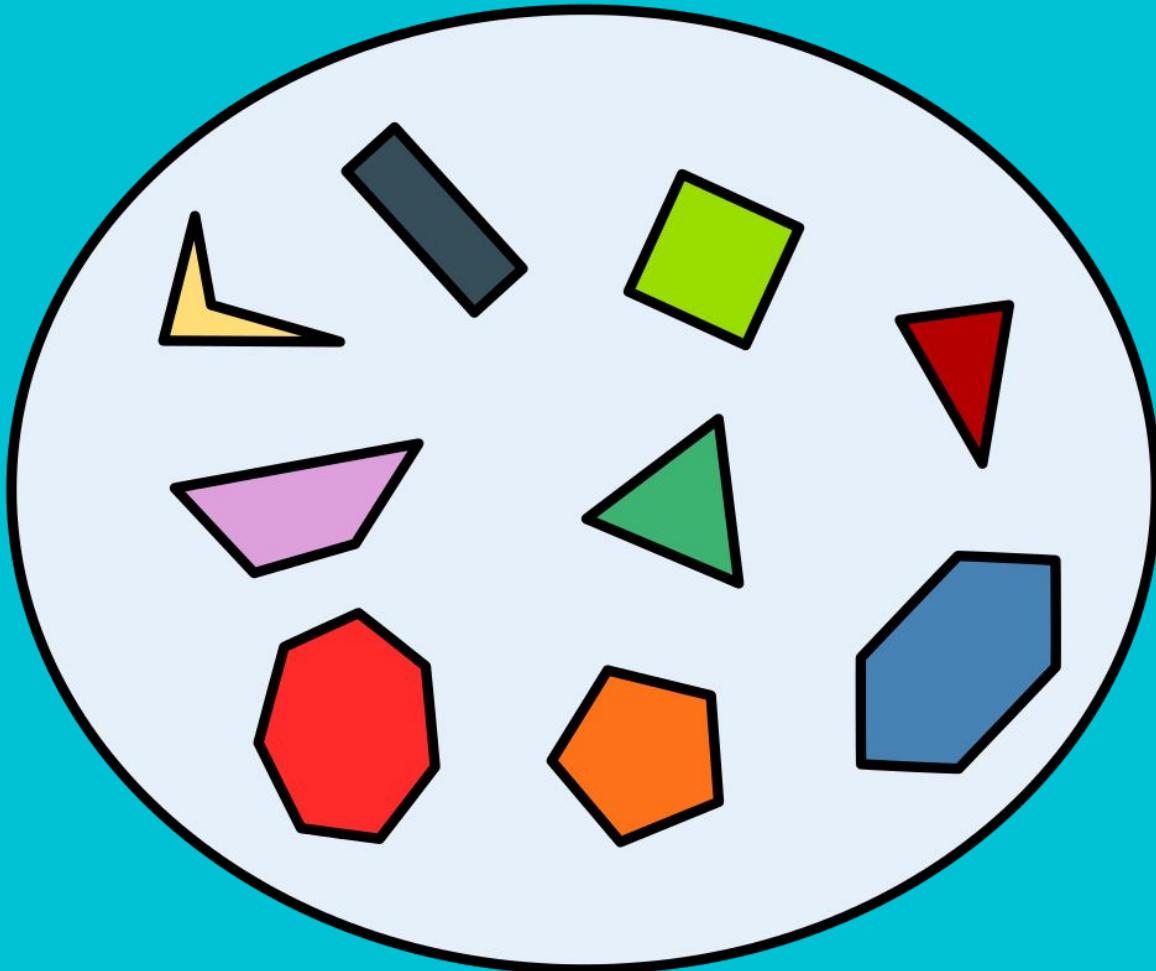




Task: Niemiec płakał jak sprzedawał

1. Add a full history of owners to the Car as a list
2. Every transactions should add an element to that list
3. Current owner should be last element
4. Add method that check if someone was an owner of a car
5. Add a method that check if person A sold a car do person B
6. Add a method that returns number of transactions

You could create specific Transaction class if you want.





Task: My apps

1. Create new class App with name, version and price of an app
2. Add a set of apps to the Phone
3. Add installAnApp method where
 - a. You check if owner has enough money
 - b. Add an app into the set
 - c. Pay for it (decrease cash amount)
4. Add a method that check if you have an app already installed by app object
5. Add a method that check if you have an app already installed by name
6. Add a method that will list all installed apps to console
7. Add a method that will list all installed apps to console sorted by price
8. Add a method that will list all installed apps to console sorted by name

Power of collections



ITERABLE

You could do some for
every unit in collection



SORTABLE
I don't have to explain it
I hope



**Task: Sort a set of
your dreamed cars
by engineSize**



**Task: Sort a set of
your dreamed cars
by value**



MAPS

It's a simple key-value datastore





**CODE
TIME**

mapify



GOT IT?

THAT'S GOOD MOMENT FOR QUESTIONS





PROJECT1: APPSTORE

Register users and apps, check if they have enough money to buy your apps, pay to dev studios and become rich.





PROJECT2: CAR DEALER

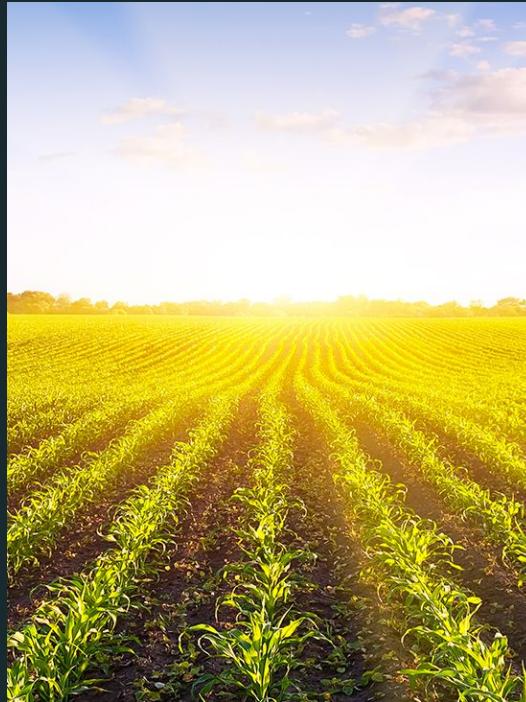
Buy, repair and sell cars, register transactions, check your margin, become rich.





PROJECT3: FARM

Buy land, grow crops and animals, sell it, build barns, store crops and feed animals, become happy.



THANKS!

Any questions?

You can find me at kacper.warda@logintegra.com

CREDITS

Special thanks to all the people who made and released these awesome resources for free:

- | Presentation template by [SlidesCarnival](#)
- | Photographs by [Unsplash](#)

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This presentation uses the following typographies:

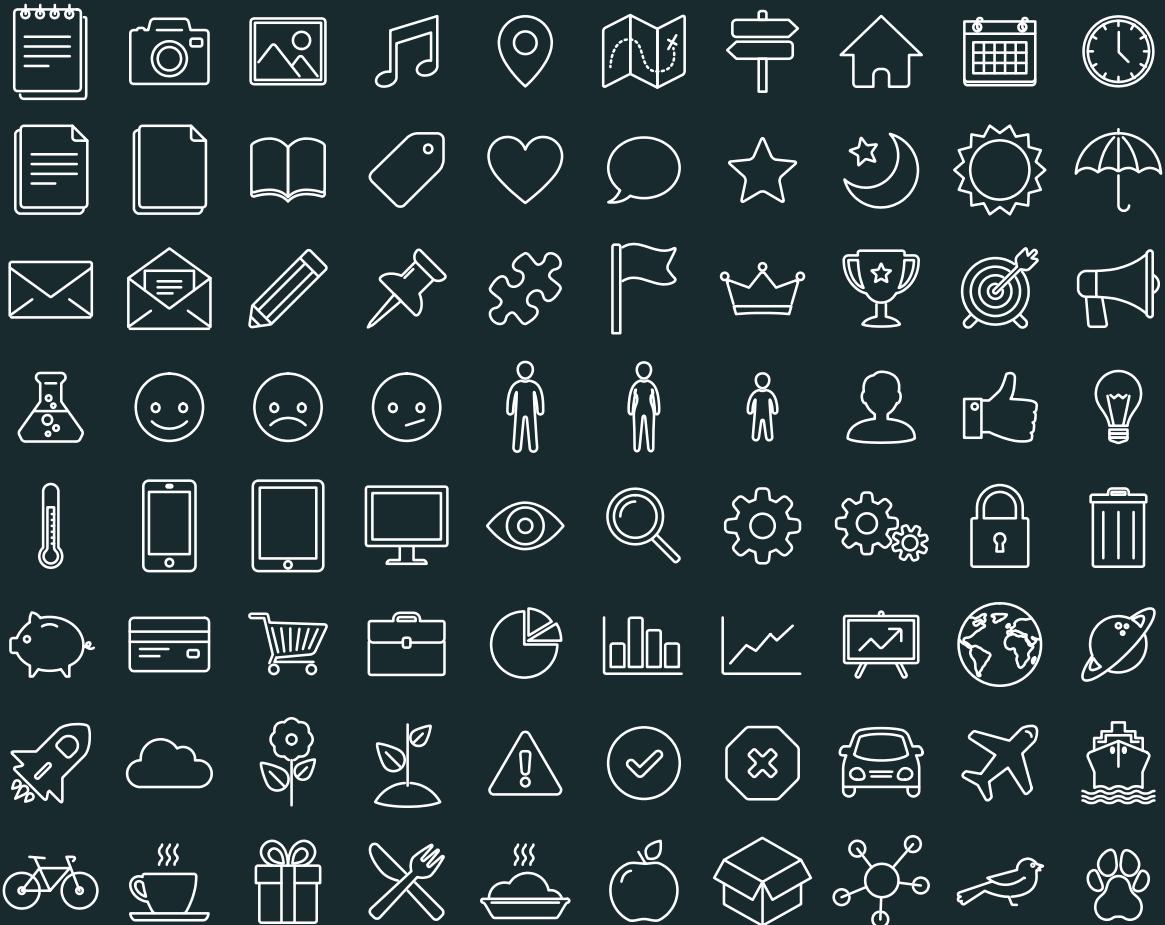
- | Titles: Montserrat
- | Body copy: Didact Gothic

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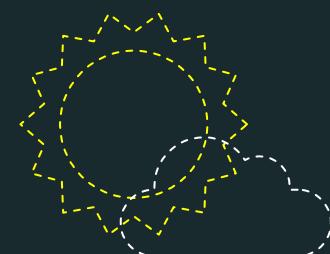
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This means that you can:

- Resize them without losing quality.
- Change line color, width and style.

Isn't that nice? :)

Examples:



Now you can use any emoji as an icon!

And of course it resizes without losing quality and you can change the color.

How? Follow Google instructions

<https://twitter.com/googledocs/status/730087240156643328>



and many more...