Review

COMP90041 Programming and software development

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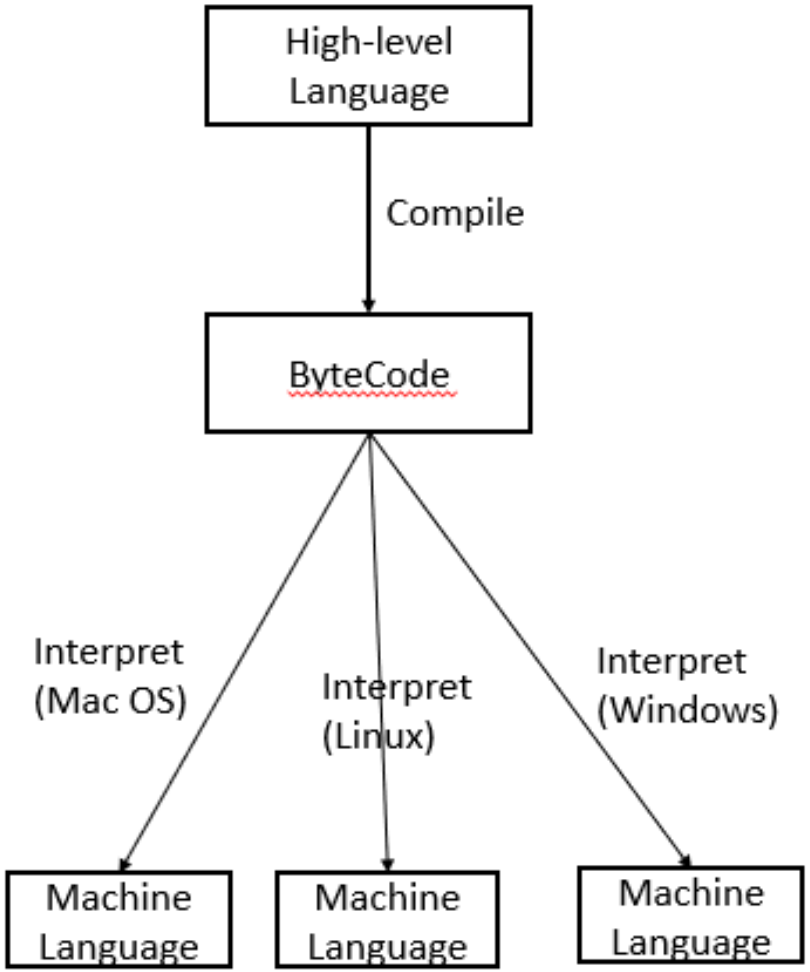
Computer Language Level

- High Level Language
- Machine Language
- Low level Language

Convert between high-level language and Machine Language (Java)



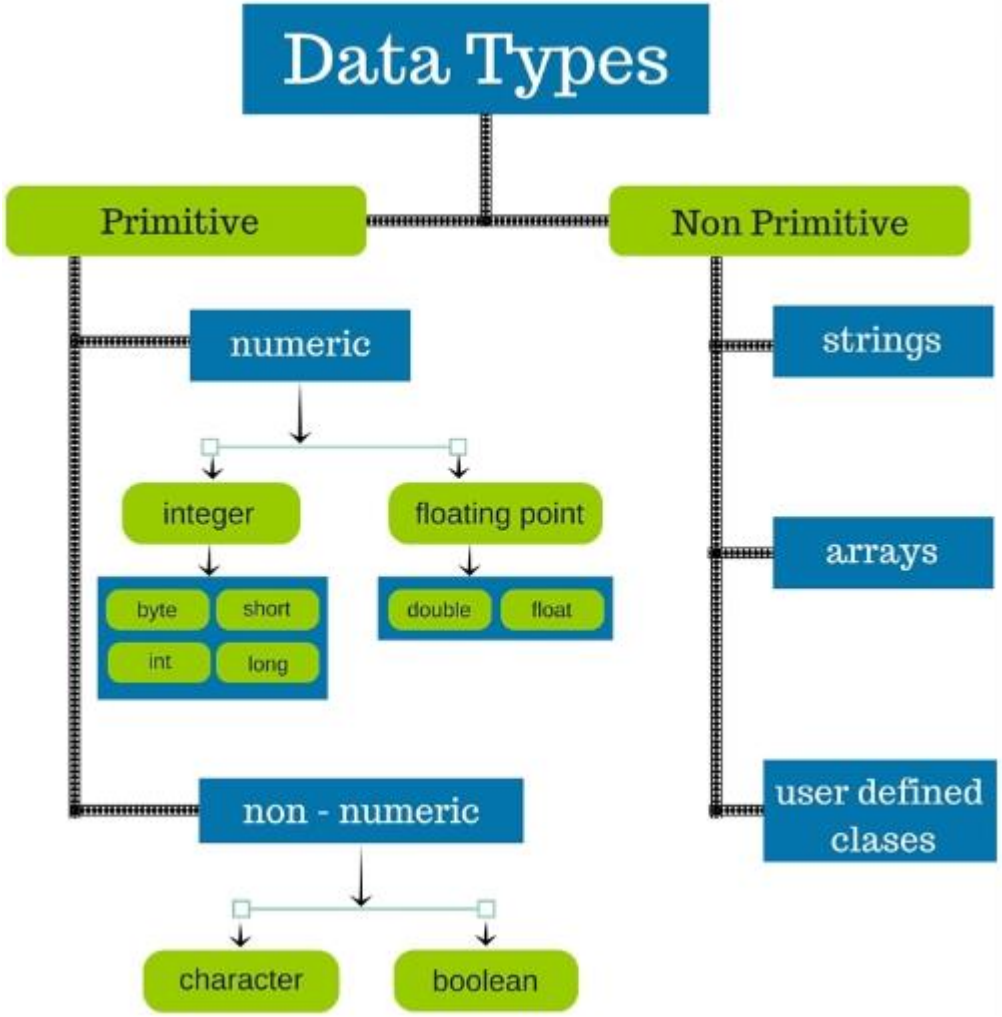
1. Step one: from high-level language to byte-code

Javac FirstProgram.java =》 FirstProgram.class

2. Step two: from bytecode to machine Language

Java FirstProgram

Data types



Byte -→ short → int → long → float→ double.

Java important packages

- lang
- Java.util

In your exam, when writing code, you need to import packages if needed

Some academic term

- Class
- variables
- Instances
- Instance variables

Wrapper class

Primitive Data types and their Corresponding Wrapper class

Primitive Data Type	Wrapper Class
char	Character
byte	Byte
short	Short
long	Integer
float	Float
double	Double
boolean	Boolean

- Boxing: Covert primitive type to class type
- Unboxing: convert class type to primitive type

Wrapper class

- Now, java support automatic boxing and unboxing:

```
Integer intergerObject = 40; // boxing
int i = intergerObject; // unboxing
```

Constructor

- A constructor is a **special method** that is used to **initialize objects.**

  The constructor is **called when an object of a class is created**. It can be used to **set initial values** for object attributes:

- The name of the constructor must be same as the class name

Override and overload

- **Overrideing:** *Overriding* means having two methods with the same method name and parameters (i.e., *method signature*). One of the methods is in the parent class and the other is in the child class.
- **Overloading:** *Overloading* occurs when two or more methods in one class have the same method name but different parameters.

```
type[] var-name;
```

Array

- Basic syntax:

  DataType[] varName = new DataType[size];

  Example:

  Int[] intArray = new int[10];

  Student[] StudentList = new Student[10];

```
type[] var-name;
```

ArrayList

- Basic syntax:

  ArrayList<datatype> arraylist = new ArrayList<datatype> ();

  Example:

  arrayList.get(i)

  arrayList.size(I)

  arrayList.set(I,x)

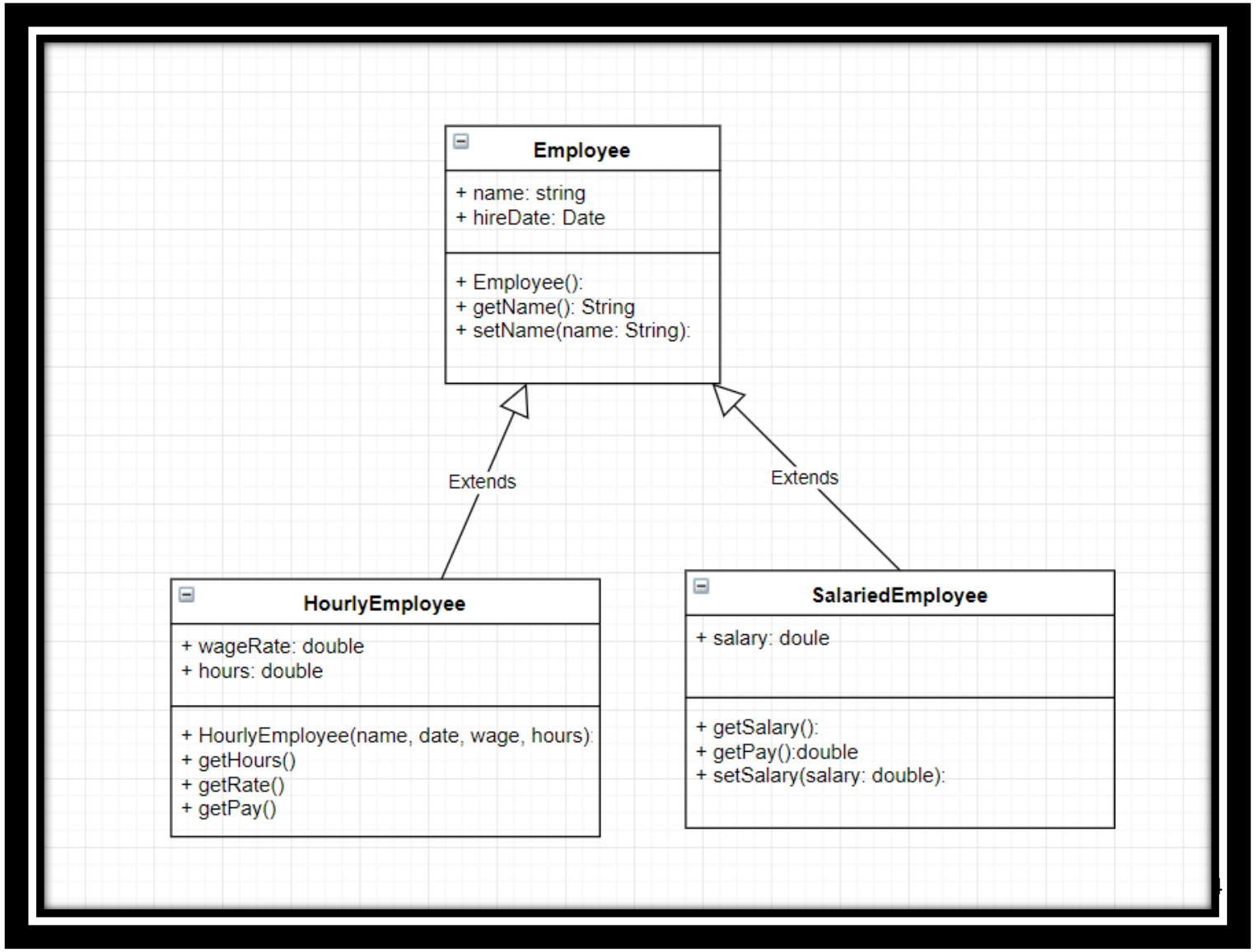
  Do some practice on Array or Arraylist!

Modifiers

Modifier	Class	Package	Subclass	World
public	Y	Y	Y	Y
protected	Y	Y	Y	N
no modifier	Y	Y	N	N
private	Y	N	N	N

Rules of Inheritance

1. The Derived class inherits:
   - all the methods
   - all the instance variables
2. The Derived class can have additional variables and methods



The Object Class

Every class is a decendent of the class Object

- equals()
- toString()

Review suggestions

- Practice writing code on hand
- Practice Array iteration (For loop, while loop)
- Do some practice on LeetCode (Array, sorting, etc.), practice easiest questions!
- Understand all the basic concepts – deep copy, shallow copy, privacy leaking etc….
- Do all the workshop and past exams
- Good luck!

Java never ends

- Distributed system （Java socket, multi-tread, concurrency）
- Android Development
- Spring Framework
- More….