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Object Oriented Programming JAVA

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Object Oriented Programming

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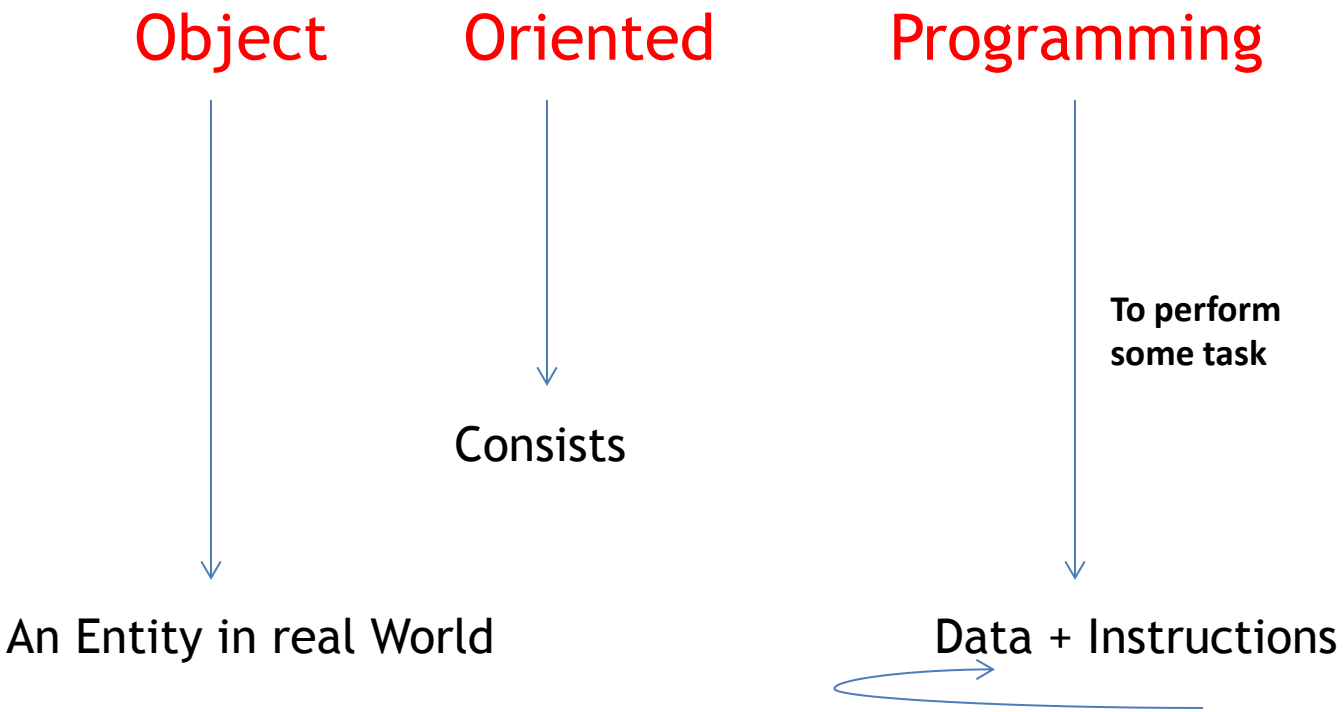

What an Object Consists?

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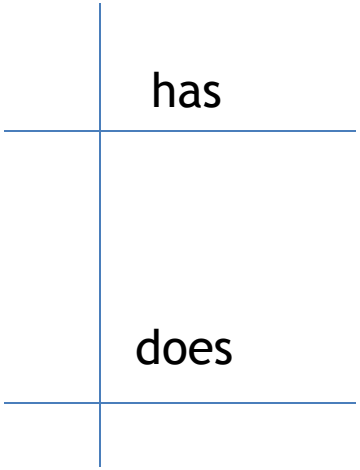

Properties

Behaviour / Operations

Languages with object oriented properties

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Few of them are…

- C++
- JAVA
- Small Talk
- C#

What are object oriented properties?

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There are 4 properties

1. Encapsulation
2. Abstraction
3. Polymorphism
4. Inheritance

If any language satisfies these 4 properties, then we can call it as object oriented programming language.

Single line definition for each of above properties

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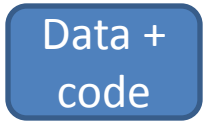
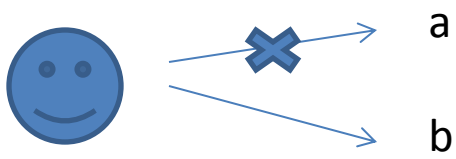
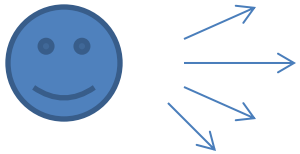
1. Encapsulation : Combining data and code together at one place.



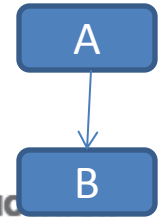
2. Abstraction : hiding essential details and unhiding the non-essential details.



3. Polymorphism : One name acts as multiple forms based on user interaction.



4. Inheritance : Deriving one from an existing one.



JAVA

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History of JAVA

1. First name was OAK

Because it got registered by other company

Renamed to JAVA

By

Mr. James Gosling Team

2. It was developed for Electronic devices.

Features of JAVA [1]

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1. Simple:

[follows C,C++ syntax rules]

↓

Difficult concepts of C and C++ have been omitted in JAVA

↓

Pointers ⟶ Why eliminated from Java

- Pointers break security
- Memory allocation and deallocation problem
- So, pointers leads to confusion to a programmer

Features of JAVA [2]

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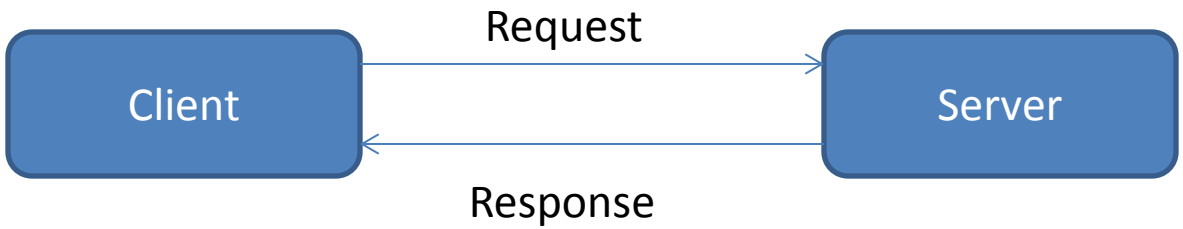
2. Distributed:

Using JAVA, we can write program to send/receive information from one system to other in the network

Eg: Client- Server program



Features of JAVA [3]

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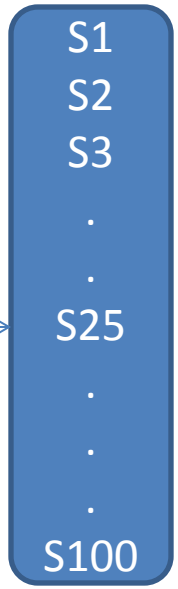
3. Robust: → Strong

There are 2 reasons to say it Robust

- Exception Handling
- Memory Management by JVM



If Memory management [allocation & deallocation] not there, program may crash at runtime [lack of memory]

Exception (An error at runtime)

In JAVA, JVM will take care of that

Abnormal Termination from program [loss of data, user does not know what happened]

Features of JAVA [4]

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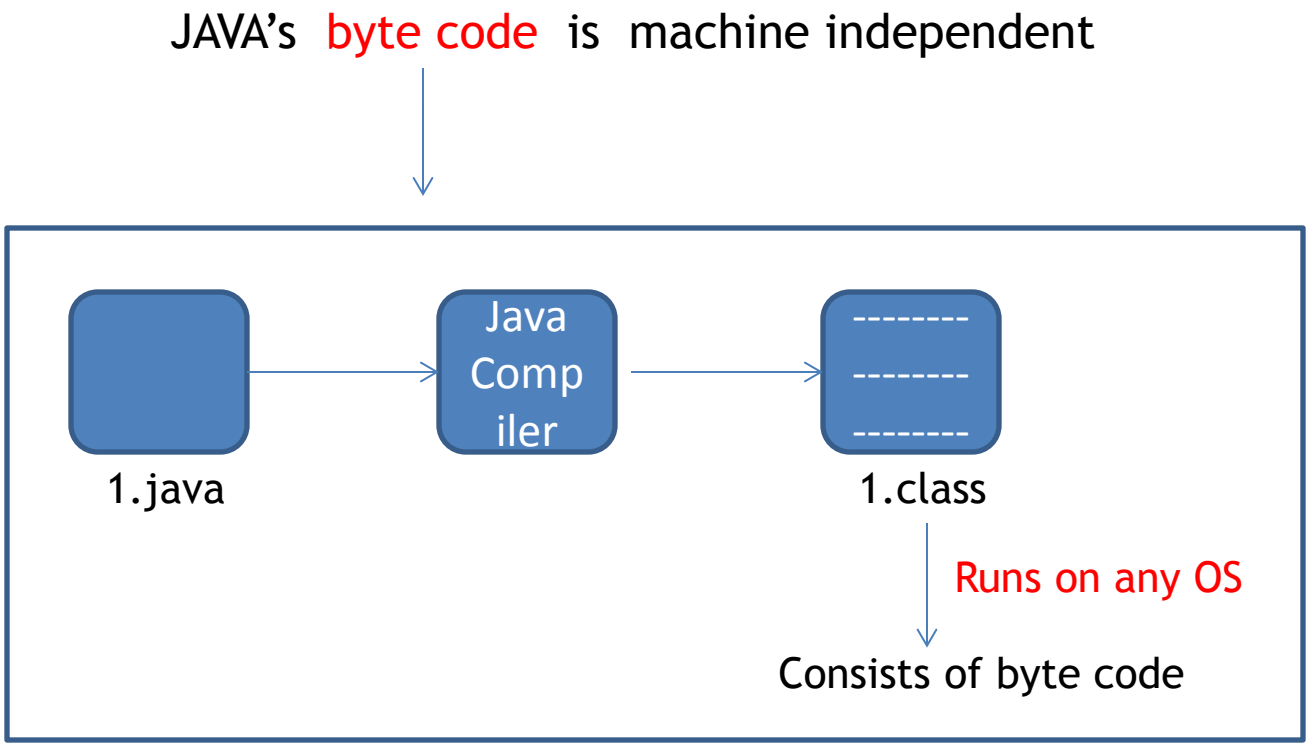
4. System Independence:



Features of JAVA [5]

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5. Portability:

If a program yields the same results on every machine , then that program is called portable.

- JAVA programs are portable

Features of JAVA [6]

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6. Interpreted:

JAVA uses both compiler and interpreter for the execution

A program that transforms source code into machine code in total.

A program that can analyze and execute a program line by line

Features of JAVA [7]

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7. High Performance:

Because of the use of interpreter, java programs execution is slow. To overcome this problem, along with interpreter, they have introduced JIT Compiler [JUST IN TIME]

8. Multi-Threading:

Thread → Represents individual process, to execute group of statements simultaneously

Multi threading → Multiple processes running at a time.