# SYNTAX
## TECHNOLOGIES

JAVA

Class 1

# Agenda

Intro into Programming?

What is Java?
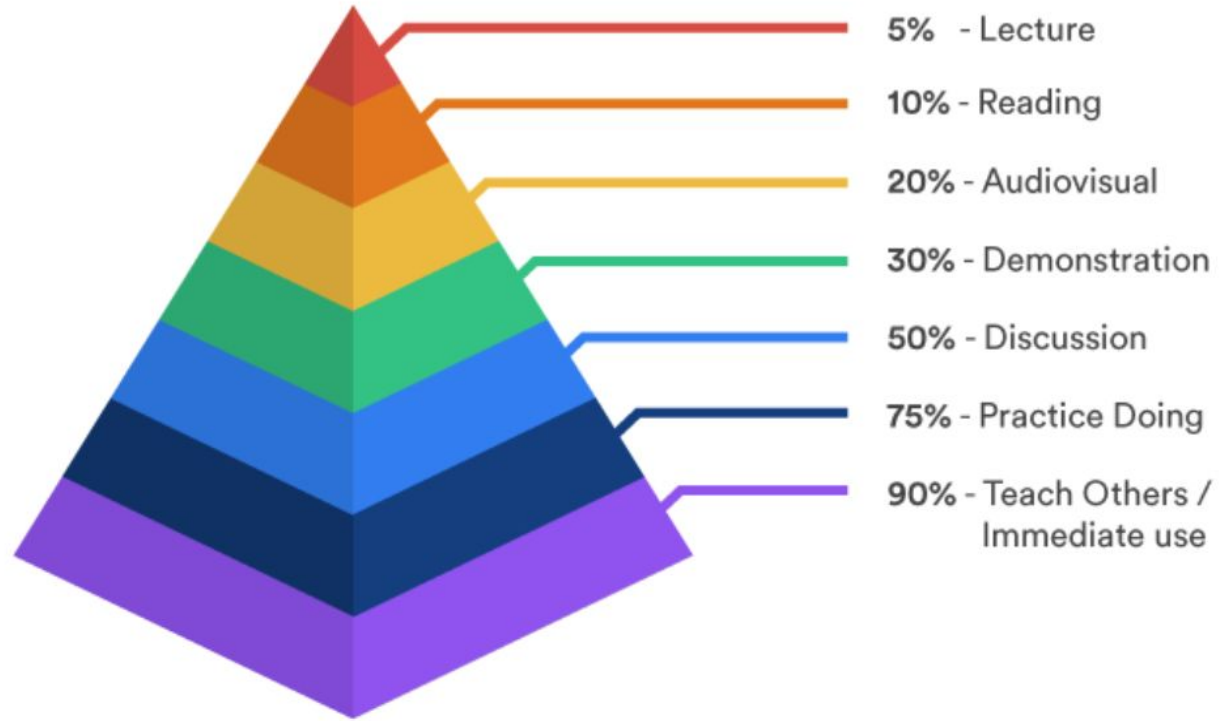
Why do we learn Java?

What is IntelliJ?

Data Types in Java

Hello World (First Program)

# How to succeed in the course?



| | |
|---|---|
| 5% | - Lecture |
| 10% | - Reading |
| 20% | - Audiovisual |
| 30% | - Demonstration |
| 50% | - Discussion |
| 75% | - Practice Doing |
| 90% | - Teach Others / Immediate use |

**95% of Syntax students have no coding background**

# Difference between Hardware and software
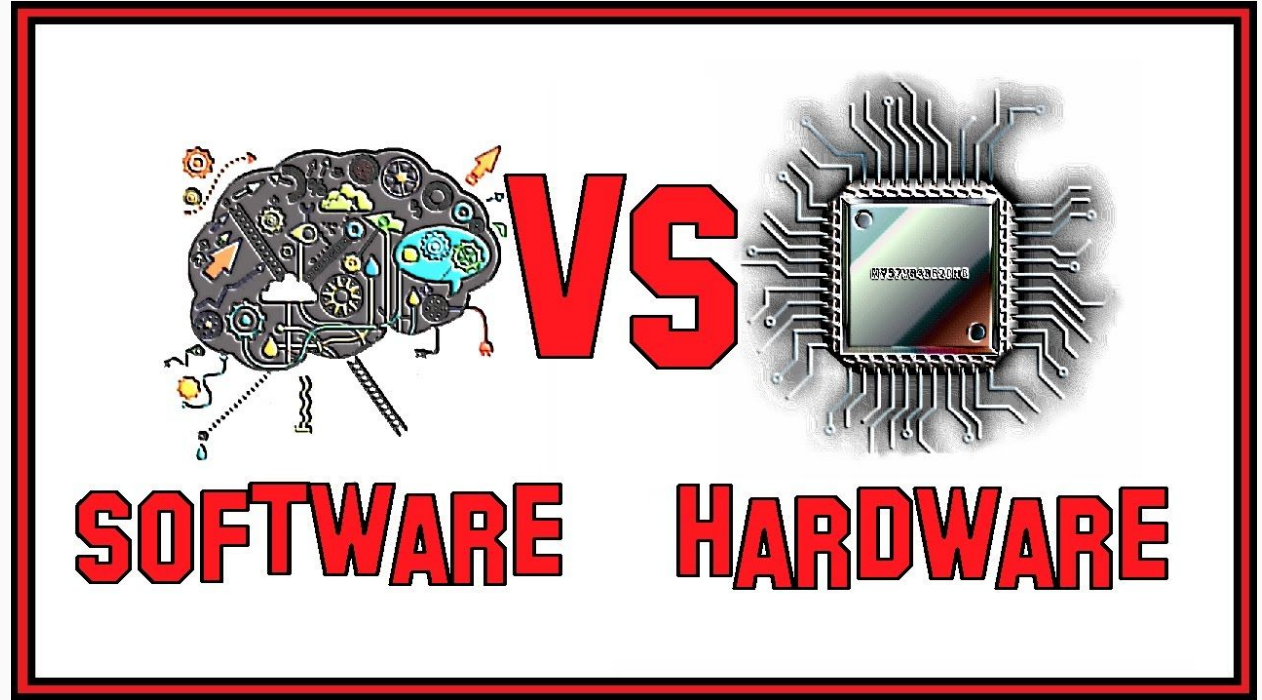
## Examples of hardware

# Difference between Hardware and software
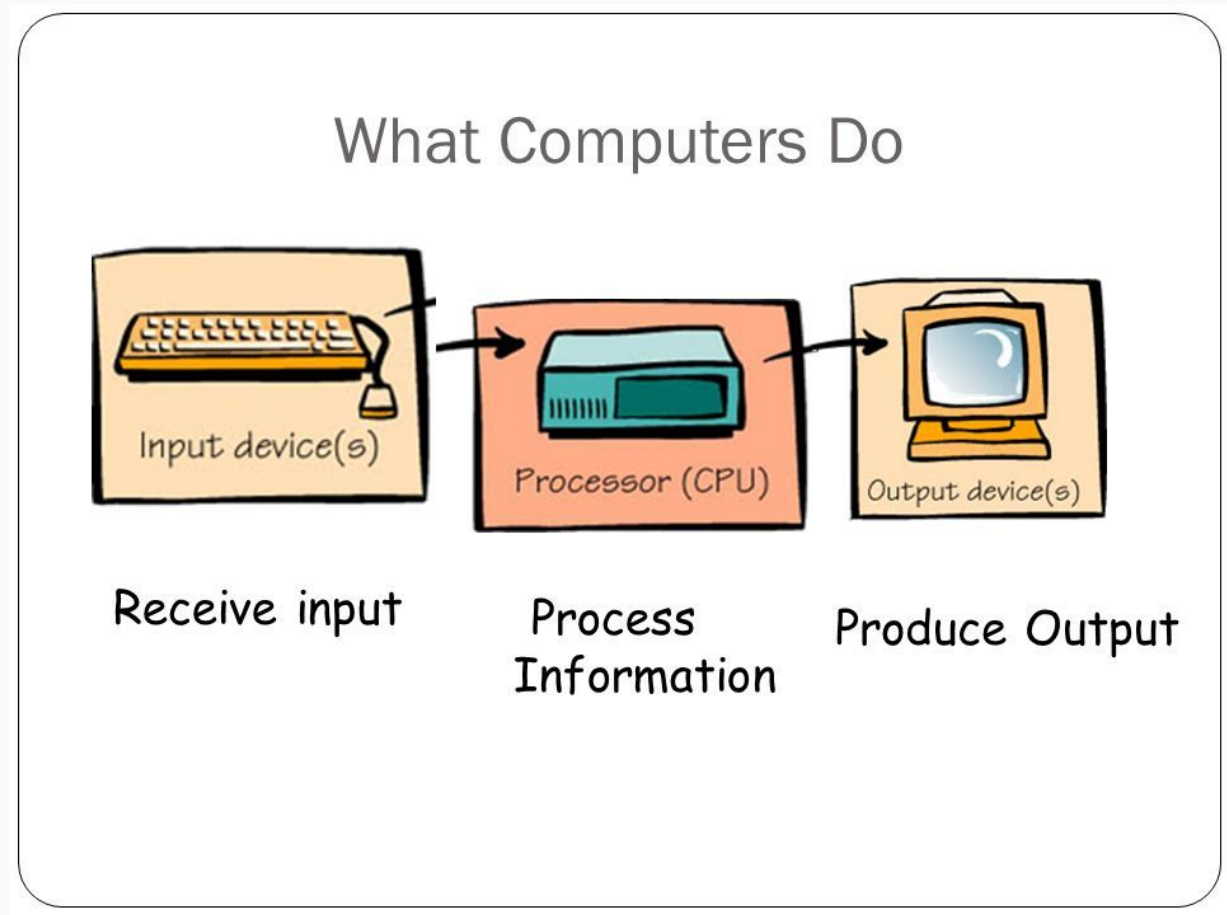
## Examples of Software

# Relationship between Hardware and Software

## Software controls the hardware

# How Computers works



What Computers Do

Input device(s) — Receive input

Processor (CPU) — Process Information

Output device(s) — Produce Output

# Intro into Programming



Examples and types of computers

Desktop computer    Laptop    Netbook    Hybrid    Tablet    Smartphone

- Programming is a list of instructions that is executed by a computer to accomplish a particular task.
- Computer programming, also known as coding.
- Computer takes input from a user process it and provides output.
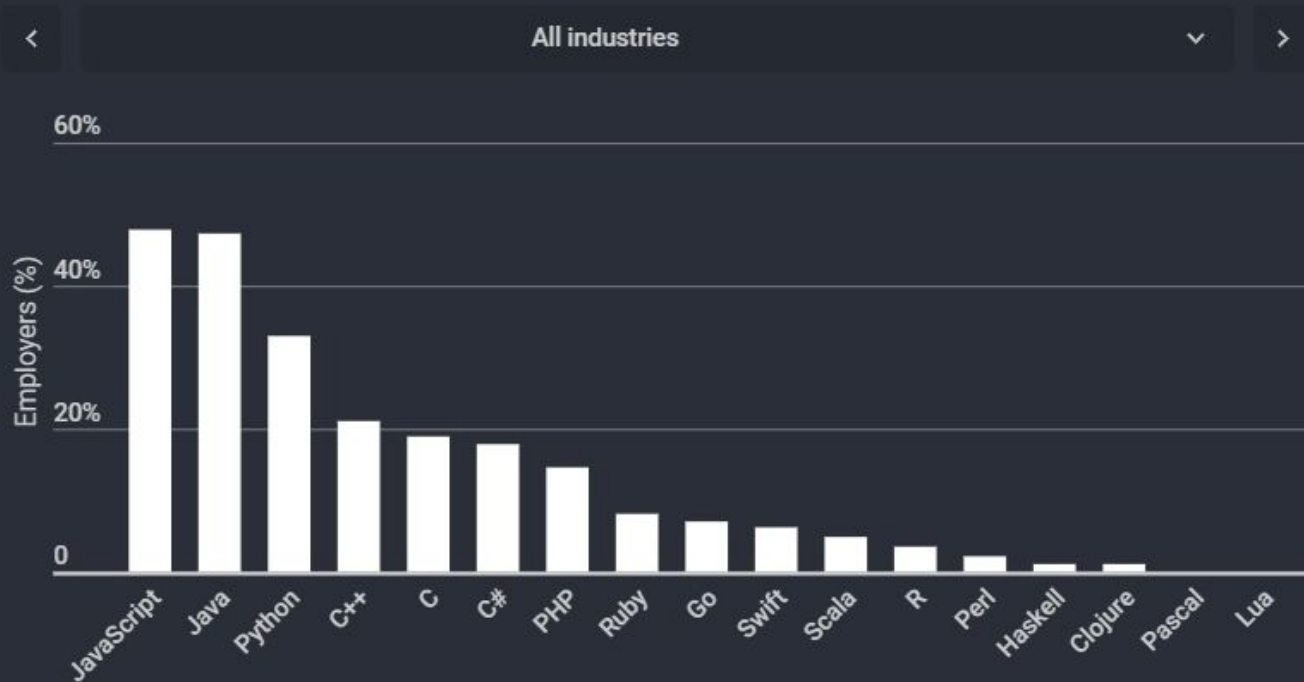- Computer understands only binary language (0,1)

# Intro into Programming

- A computer programming is a list of instructions we write using programming language.
- Each programming language has a unique set of keywords (words that it understands) and a special syntax for organizing program instructions. Java is once such programming language
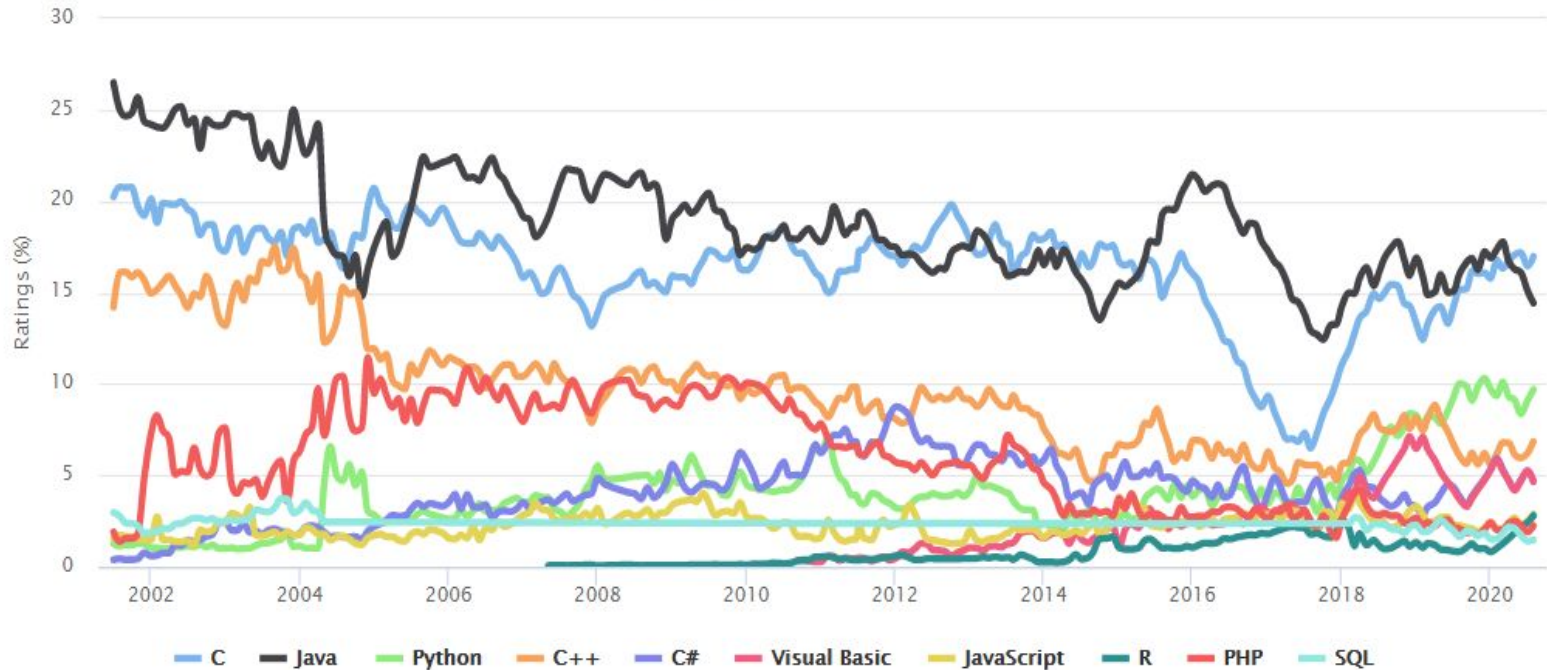
# Why Java?



Which languages do employers look for by industry?

All industries

60%

40%

20%

0

Employers (%)

JavaScript · Java · Python · C++ · C · C# · PHP · Ruby · Go · Swift · Scala · R · Perl · Haskell · Clojure · Pascal · Lua

# Programming community index



TIOBE Programming Community Index

Source: www.tiobe.com

Legend: C — Java — Python — C++ — C# — Visual Basic — JavaScript — R — PHP — SQL

# What is Java?

- Java is one of the most popular programming language.
- Java is a high level computer programming language.
- Java enables programmers to write computer instructions using English-based commands.
- Java is free to access and can run on all platforms.
- Java is a case-sensitive language.
- Java is an independent programming language that follows the logic of "Write once, Run anywhere" i.e. the compiled code can run on all platforms which supports java.

# Different Types of Operating System

The three most common operating systems for personal computers are Microsoft Windows, Apple Mac OS X, and Linux.



Mobile devices such as phones and tablet computers are very different from desktop and laptop computers, so they run operating systems that are designed specifically for mobile devices. Examples of mobile operating systems include Apple iOS, Windows Phone 7, and Google Android.

# History of Java

Java language developed by company Sun Microsystems and father is James Gosling (which is now a subsidiary of Oracle Corporation) and released in 1995.

Sun Microsystems Started by group of the students who were studying in Stanford University that found the problem in their room with electronic consumable remote. That means one electronic consumable control is not worked on another electronics consumable.

James Gosling and his team given the project name as Green started in the year 1990 and later team developed a new language called as OAK. But this name was taken by some other company, so they renamed it as Java.

Java is an Island in Indonesia; the unofficial abbreviation of java is Just Another Virtual Analyzer (JAVA).

# What is IDE?

An integrated development environment (IDE) is a software application that provides comprehensive facilities to computer programmers for software development.

An IDE normally consists of a source code editor, build automation tools and a debugger.
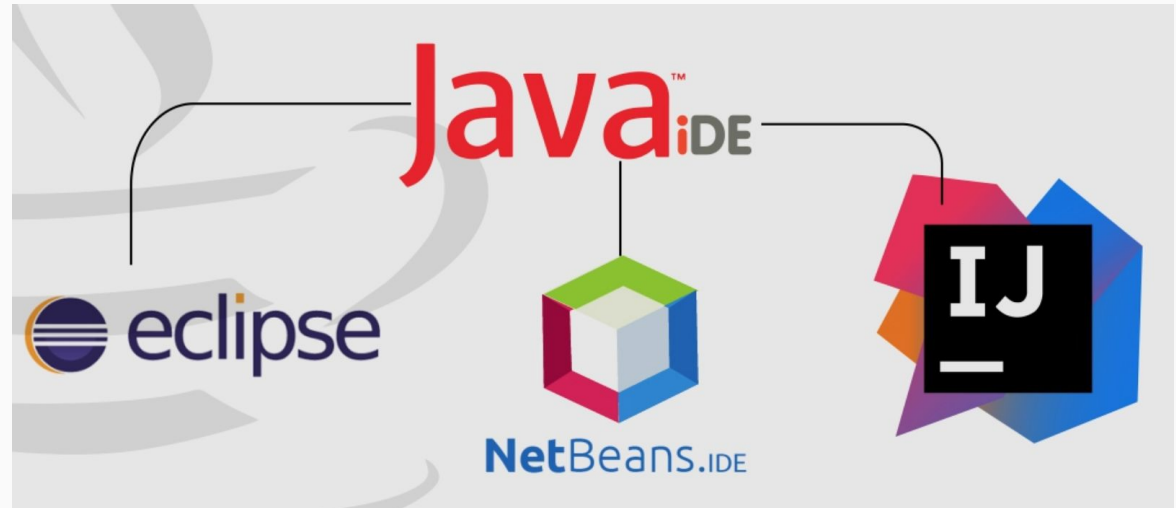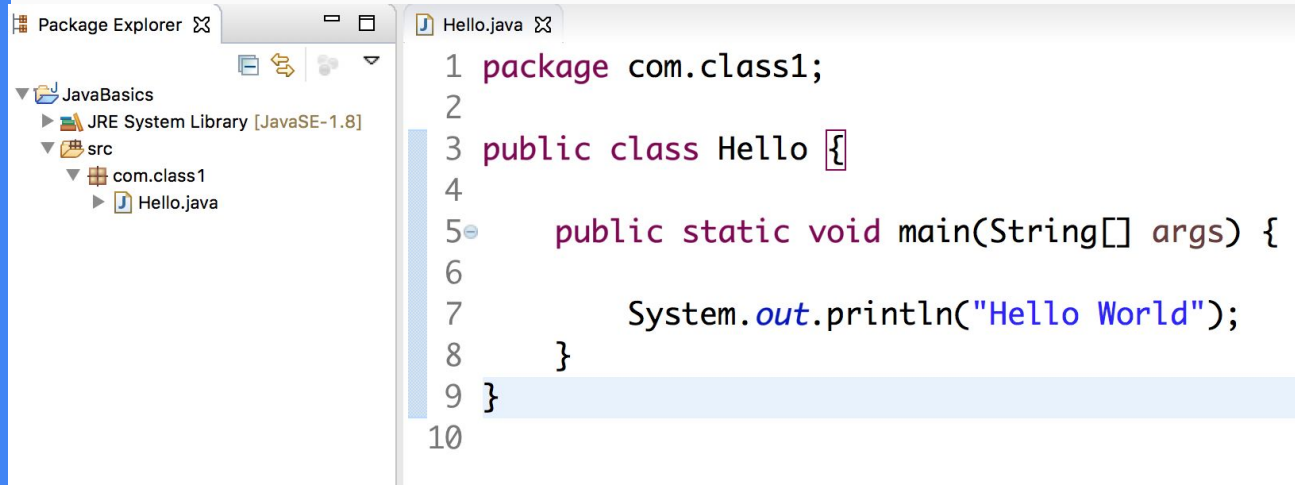
# What IntelliJ?

IntelliJ is an integrated development environments (IDE) for developing applications using different type of programming languages (Java, C/C++, Python, Ruby)

Open Eclipse or intelliJ:

1. Specify Workspace/Project. All your data will be stored in that workspace/Project folder
2. Create Project
3. Create Package
4. Create Class

# First Program



```java
package com.class1;

public class Hello {

    public static void main(String[] args) {

        System.out.println("Hello World");
    }
}
```

Package Explorer
- JavaBasics
  - JRE System Library [JavaSE-1.8]
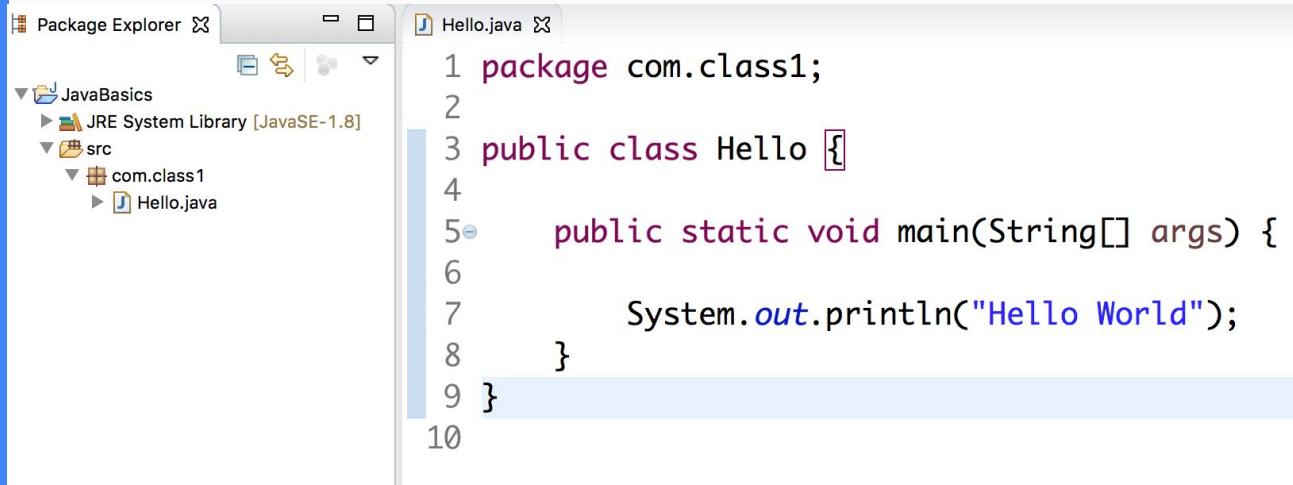  - src
    - com.class1
      - Hello.java

**public static void main(String[] args)**
Main method used to execute our code, when we click on run button whatever the code is available in main method, that code will be executed

**System.out.println("Hello World...")**
Used to print values in console

# Do not get Confused



Types of brackets:

**( )** parentheses or "round brackets"
**[ ]** "square brackets" or "box brackets"
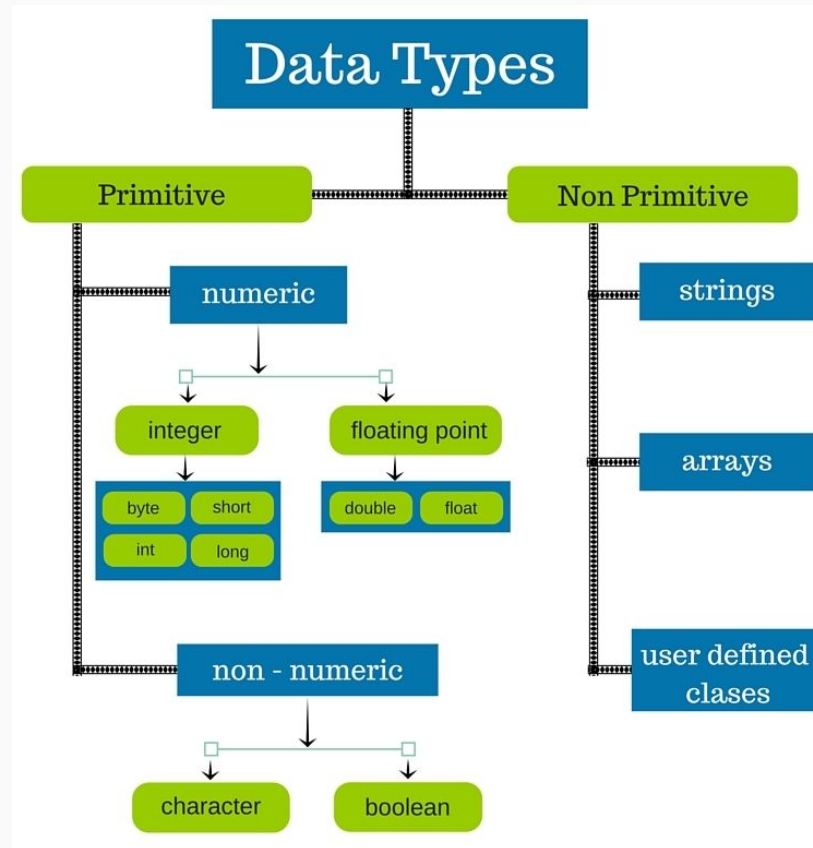**{ }** braces or "curly brackets"
**< >** "angle brackets"

# Data types

We need different data types to hold different types of information
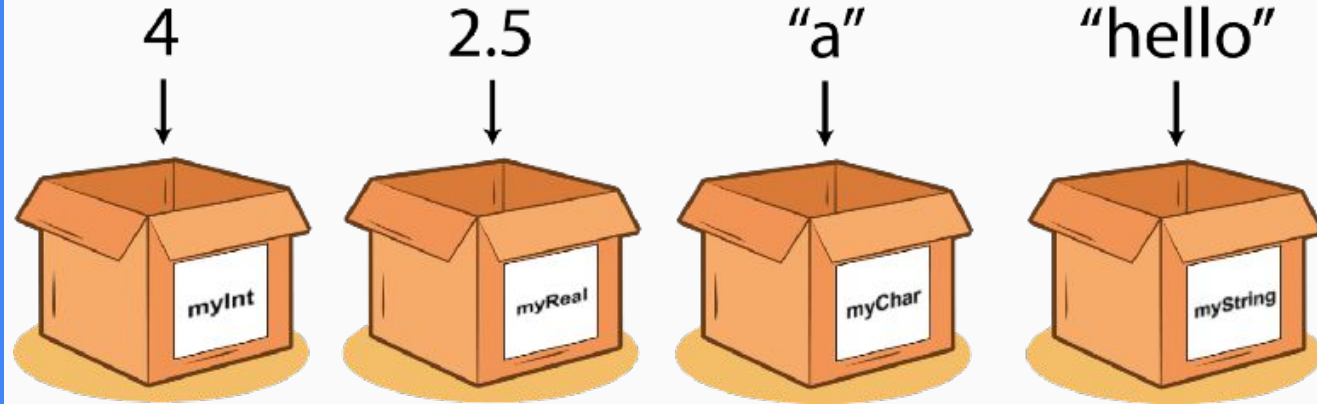
# Data Types in java

Java has 2 main types of Data Types:

# Data Types

- To represent numeric values (10,20,30...etc) use **byte,short,int,long.**

- To represent decimal values (floating point values 10.5,30.6...etc) use **float,double.**

- To represent character use **char** and take the character within single quotes.

- To represent true ,false use **boolean.**

**Float vs double:**
Float will give 5 to 6 decimal places of accuracy but double gives 14 to 15 places of accuracy

# Primitive Data Types Summary

| Data Type | | Min / Max |
|---|---|---|
| byte | number | -128 to 127 |
| short | number | -32768 to 32767 |
| int | number | -2147483648 to 2147483647 |
| long | number | -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807 |
| float | float number | 5 to 6 decimal places of accuracy |
| double | double number | 14 to 15 decimal places of accuracy |
| char | Single character | |
| boolean | true or false | |

How we use variables? We store data inside a container. This container we call a VARIABLE.
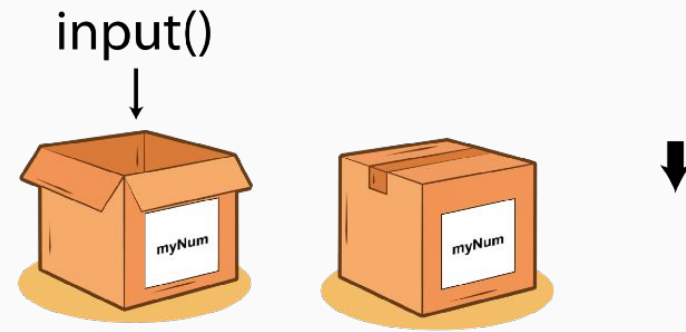
4
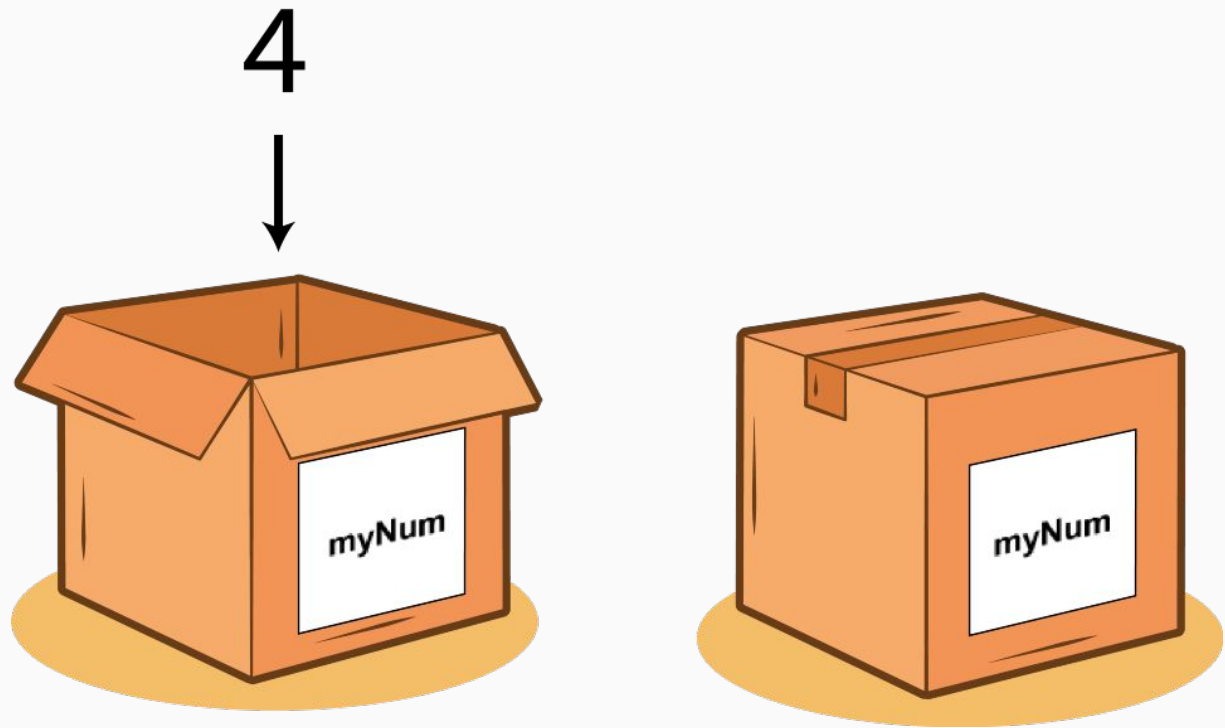
myNum

myNum

Putting an Integer (4) into a box myNum

Changing the values of variables after initialisation (reassignment)

Int myNum = 4;
myNum =5;
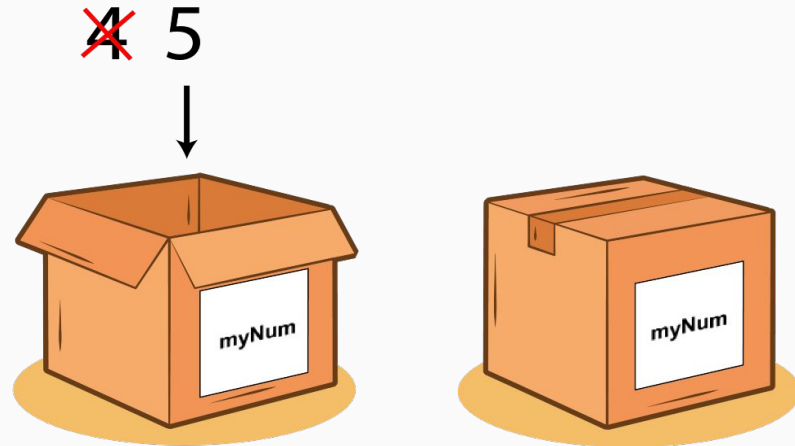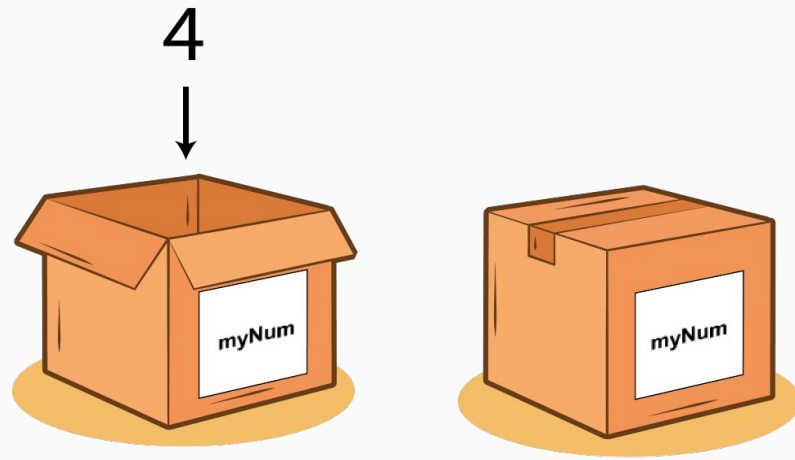
**Taking the input**
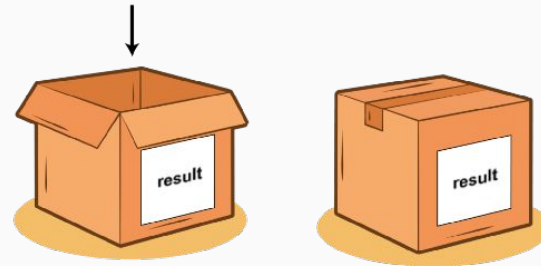**Storing it**
performing some operations and displaying the results

input()

myNum · myNum

↓

myNum * 2

result · result

myNum * 2

↓

print · result

# Writing a Program similar to following a recipe

**Whenever we write a program sequence is very important.**



Steps

1. Preheat oven to 450° F.
2. Add yeast and sugar to bowl.
3. Add warm water.
4. Let stand 10 minutes.
5. Stir in flour.
6. Add salt and olive oil.
7. Mix until smooth then let rest for 5 minutes.
8. Pour dough onto floured surface.
9. Roll dough into a circle or fun shape.
10. Add sauce, cheese and your favorite toppings.
11. Bake for 15 to 20 minutes or until crisp.
12. Taste & Share!

Programs are getting executed from:
Top → Bottom
Left → Right

# Variable declaration



Java Variable Declaration & its Memory Allocation
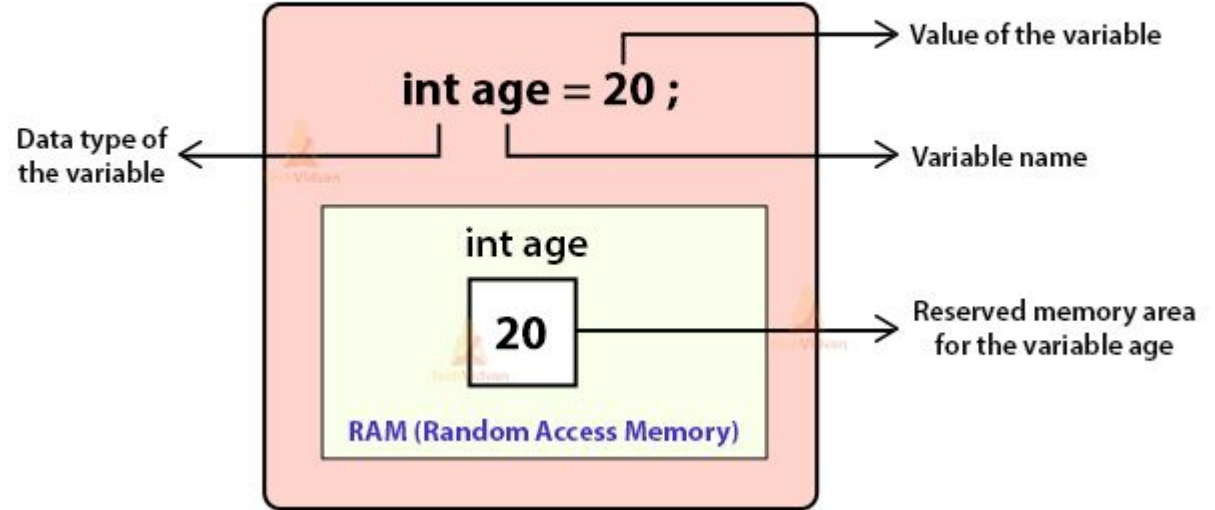
# Store Data

Characteristics of variable:
1. Type (dataType)
2. Name
3. Value

Declaration of variable:
- **int num;** - declaring single variable
- **int num1, num2;** - declaring multiple variable of same type
- **int num3=10;** - declaring variable and assigning value

Using variable:
**System.out.println(num);**

# Variables

Variables are used to store information to be referenced and manipulated in a computer program.

Variable is name of reserved area allocated in memory. In other words, it is a name of memory location.

Value of the variable can change, depending on conditions or on information passed to the program.

variable="vary + able" that means its value can be changed.

# Variables

**syntax:**

**type identifier  = value;**

The type is one of Java's primitive types or the name of a class or interface.

The identifier is the name of the variable. You can initialize the variable by specifying an equal sign and a value.

You can initialize the variable by specifying an equal sign and a value.

The initialization expression must result in a value of the same (or compatible) type as that specified for the variable.

To declare more than one variable of the specified type, use a comma-separated list.

# Naming Conventions

**Classes start with an uppercase character**

public class Hello

**Packages, methods and variables start with a lowercase character**

public static void main(String[] args)

In our programming we will follow **camelCasing**

**Note:**
none of these rules are implemented in the compiler , we can break them and your program will still work, but it is good idea to follow these conventions.

# Follow the convention

# Identifiers and Keywords



Java Keywords

| | | | | |
|---|---|---|---|---|
| abstract | double | instanceof | static | while |
| assert | else | int | strictfp | |
| boolean | enum | interface | super | |
| break | extends | long | switch | |
| byte | false | native | synchronized | |
| case | final | new | this | |
| catch | finally | null | throw | |
| char | float | package | throws | |
| class | for | private | transient | |
| const | goto | protected | true | |
| continue | if | public | try | |
| default | implements | return | void | |
| do | import | short | volatile | |

- Class, method, variables and other names are identifiers
- Identifiers must start with an alpha character or underscore
- Keywords can't be used as class or other identifiers
- Identifiers CANNOT contain space