



JAVA

Class 1

# Agenda

Intro into Programming?

What is Java?

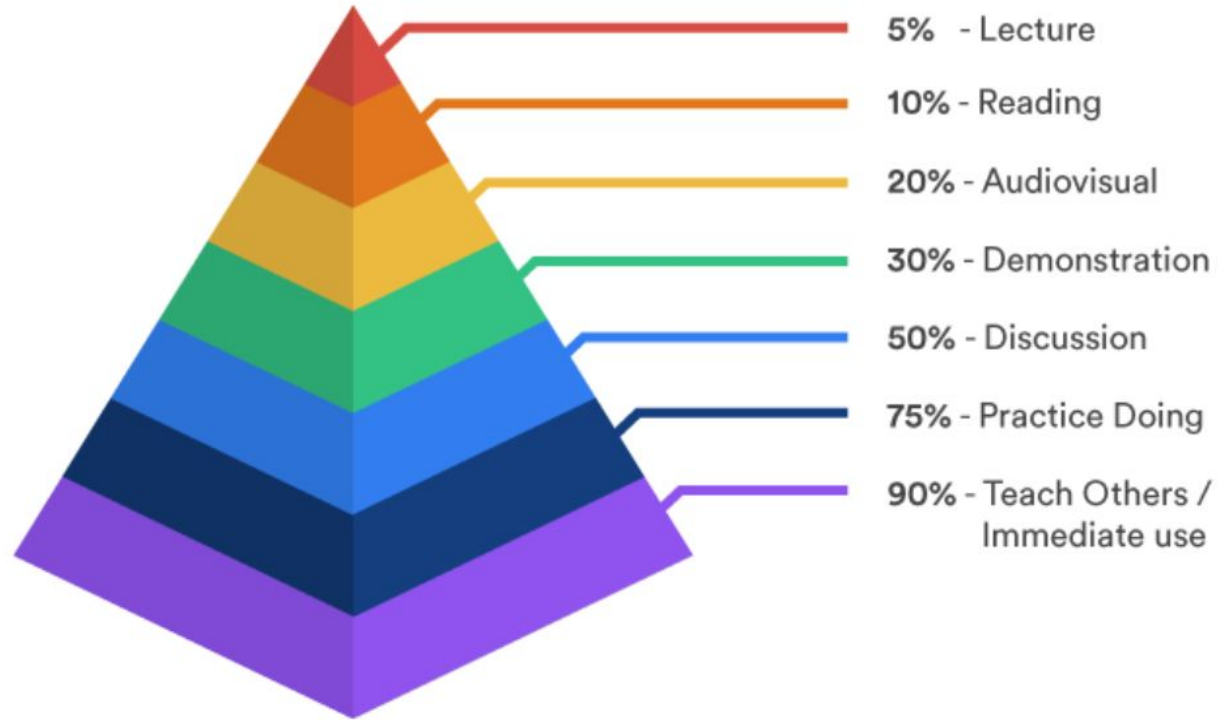
Why do we learn Java?

What is Eclipse?

Hello World (First Program)

Data Types in Java

# How to succeed in the course?



**90% of Syntax students have no coding background**

# Intro into Programming

## Examples and types of computers



Desktop computer

Laptop

Netbook

Hybrid

Tablet

Smartphone

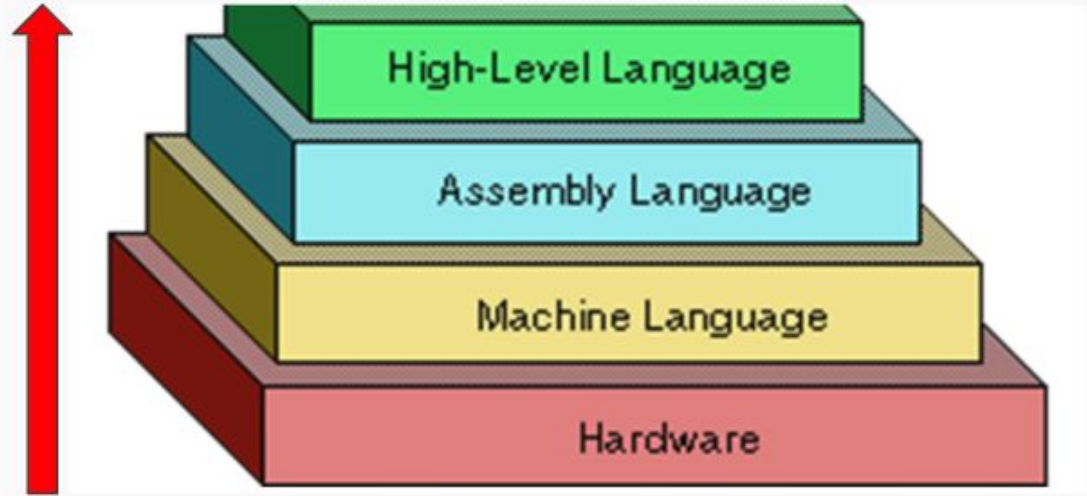
- Programming is a list of instructions that is executed by a computer to accomplish a particular task.
- Computer programming, also known as coding.
- Computer takes input from a user process it and provides output.
- Computer understands only binary language (0,1)

# 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.



# Levels of Programming Languages

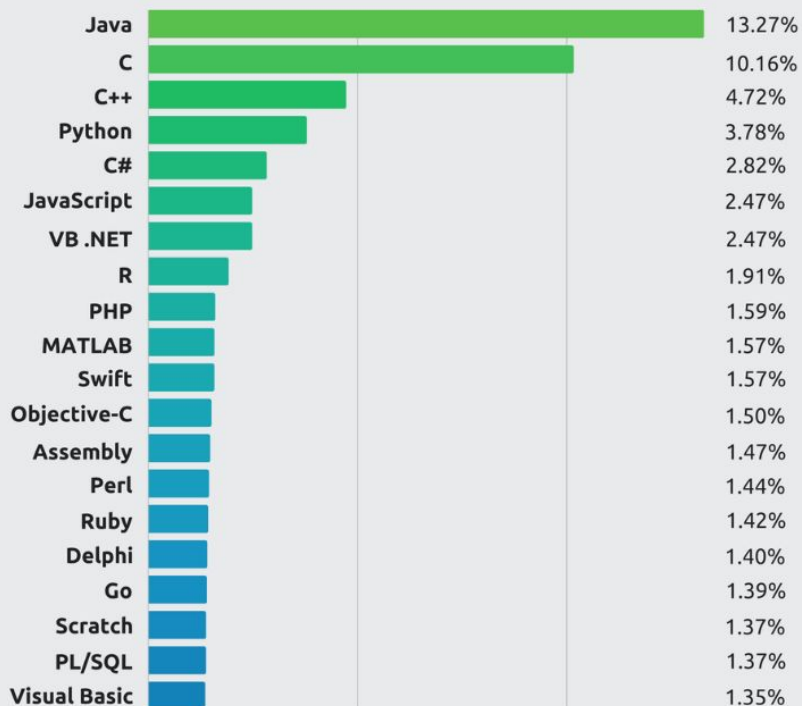


The term programming language usually refers to high-level languages, such as Java, C#, Ruby, C++, Python etc

# Why Java?

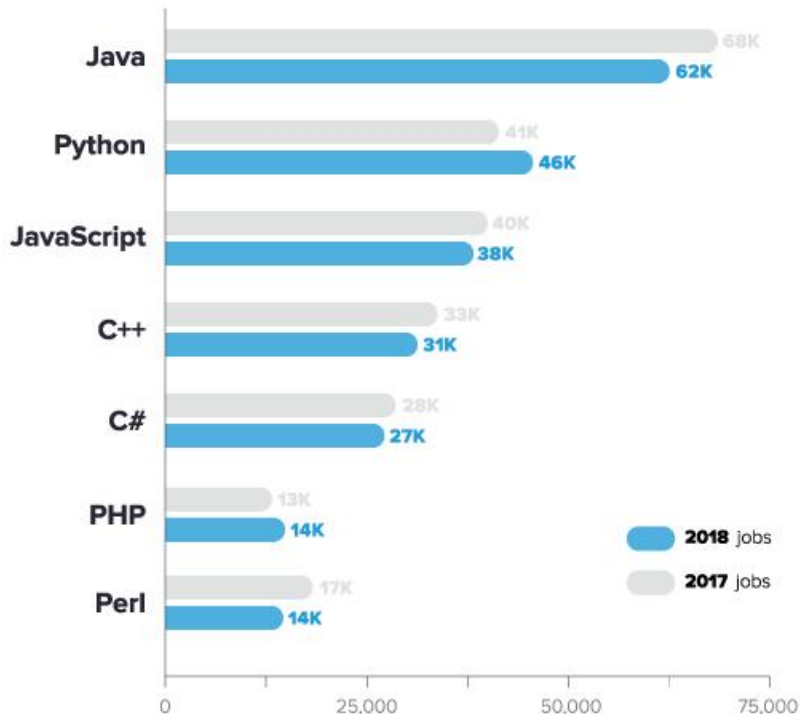
## Top Programming Languages

Tiobe Index - December 2017



## Job postings containing top languages

Indeed.com - November, 17th 2017



# What is Java?

- Java is 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.

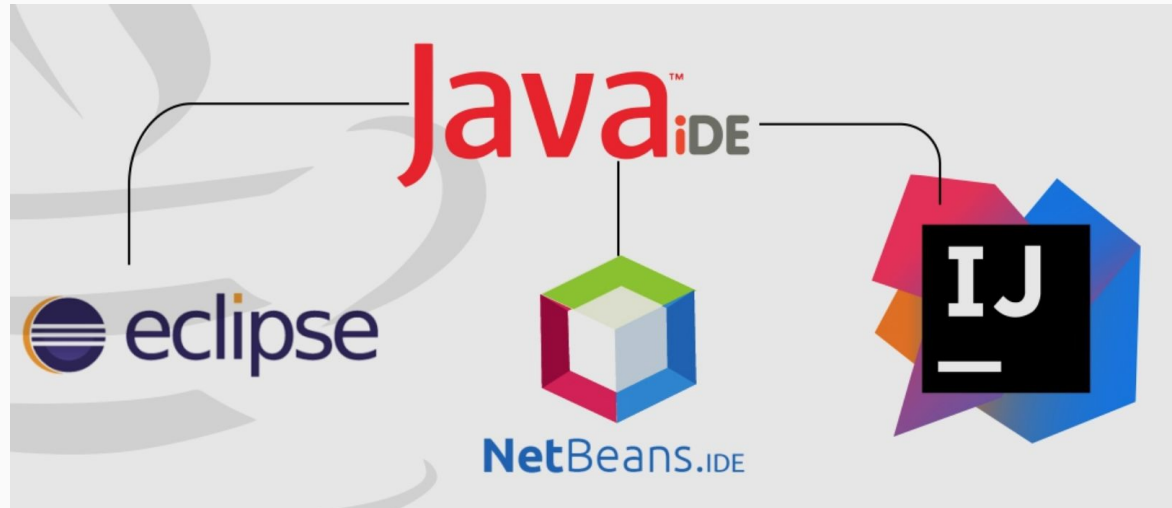
James Gosling and his team given the project name as Green started in the year 1990 and later team developed a new language called as OAK. But this name was taken by some other company, so they renamed it as Java.

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 is Eclipse?

Eclipse is an integrated development environment (IDE) for developing applications using different type of programming language (Java, C/C++, Python, Ruby)

## Open Eclipse:

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

# Naming Conventions

**Classes start with an uppercase character**

```
public class Hello
```

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

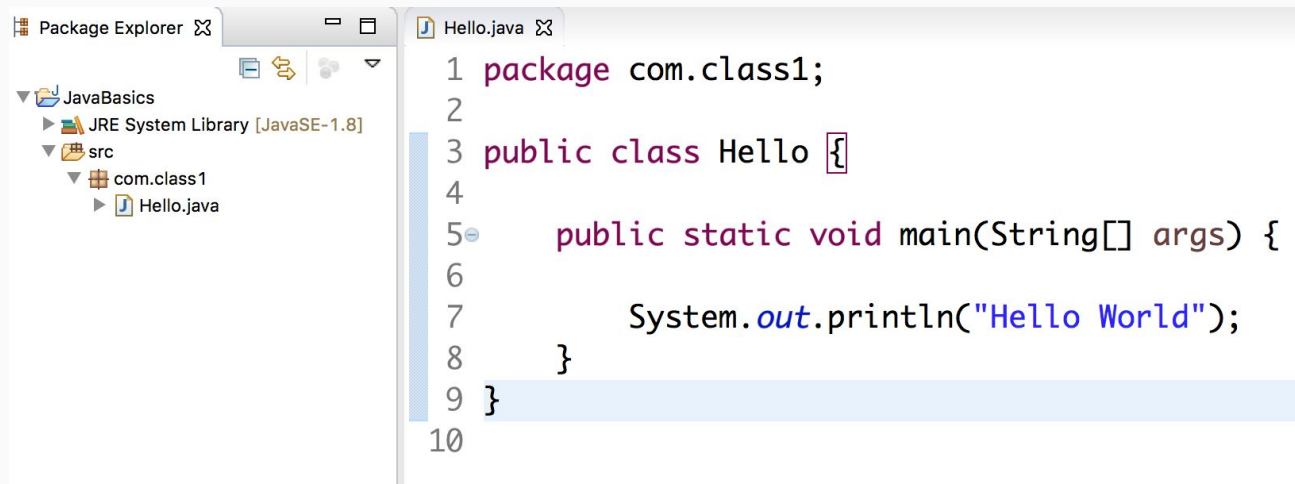
```
public static void main(String[] args)
```

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.

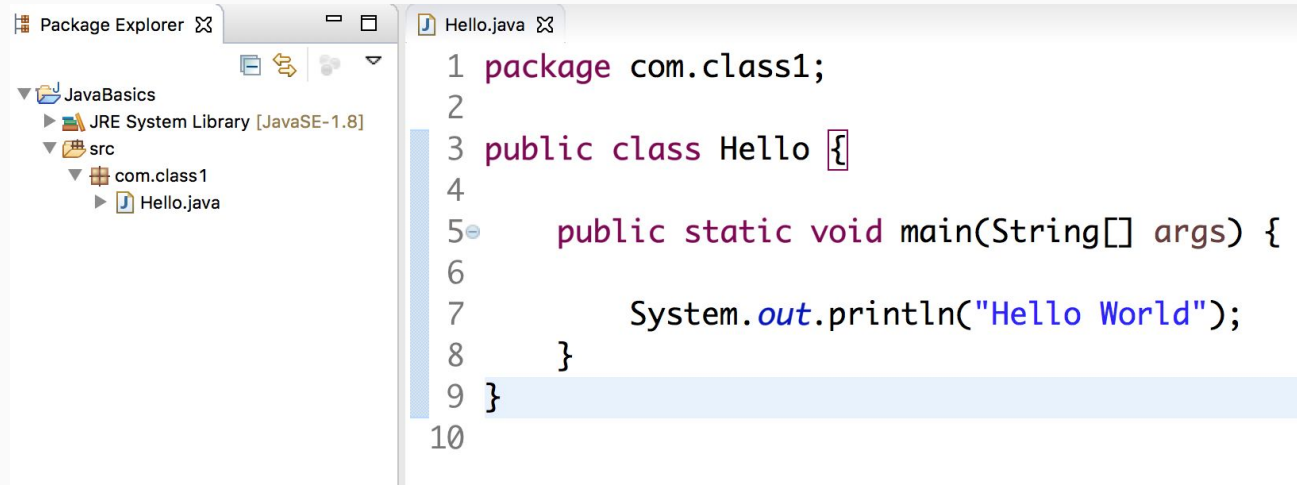
# Do not get Confused



Types of brackets:

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

# First Program



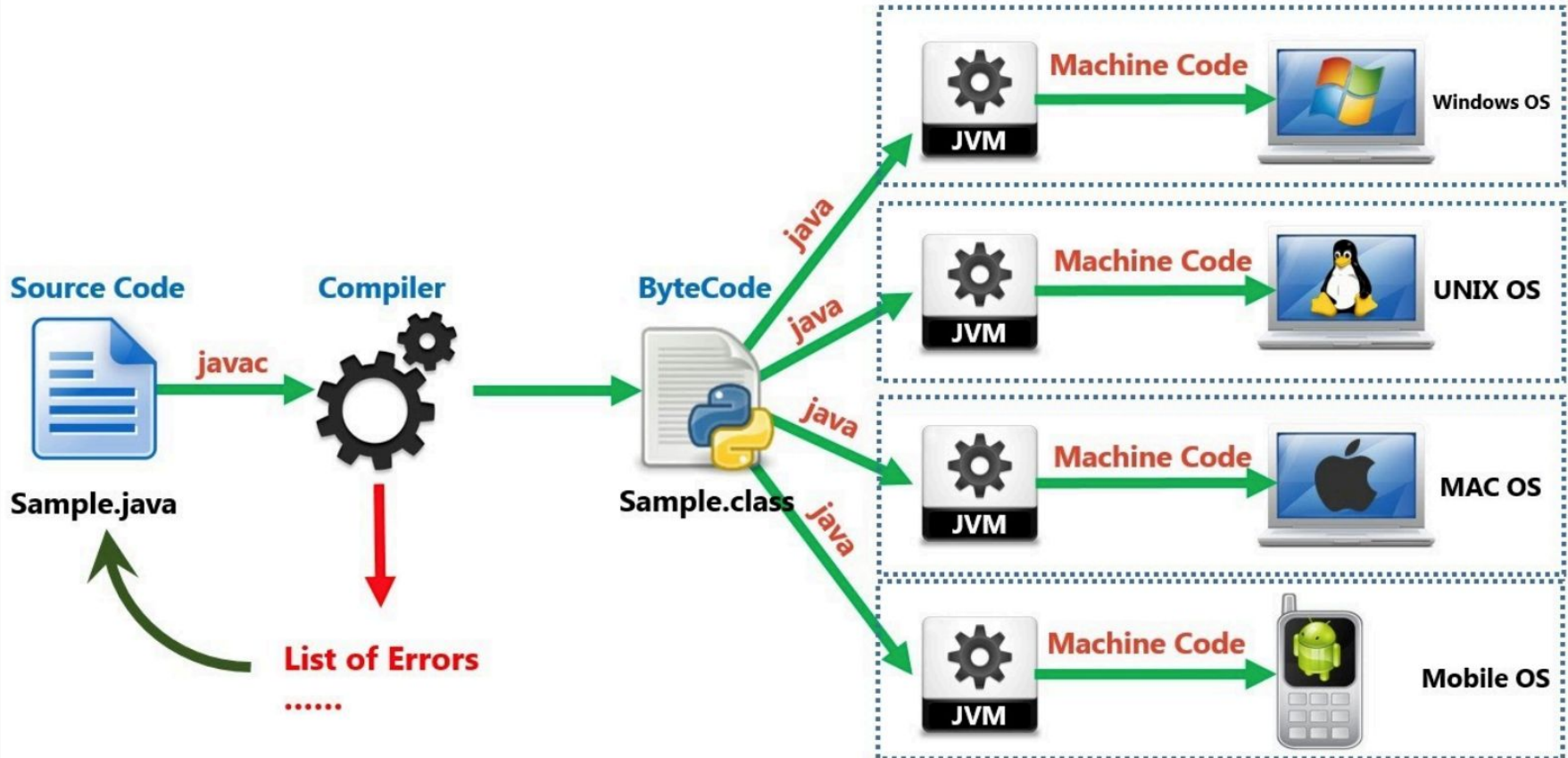
**public static void main(String[] args)**

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...")**

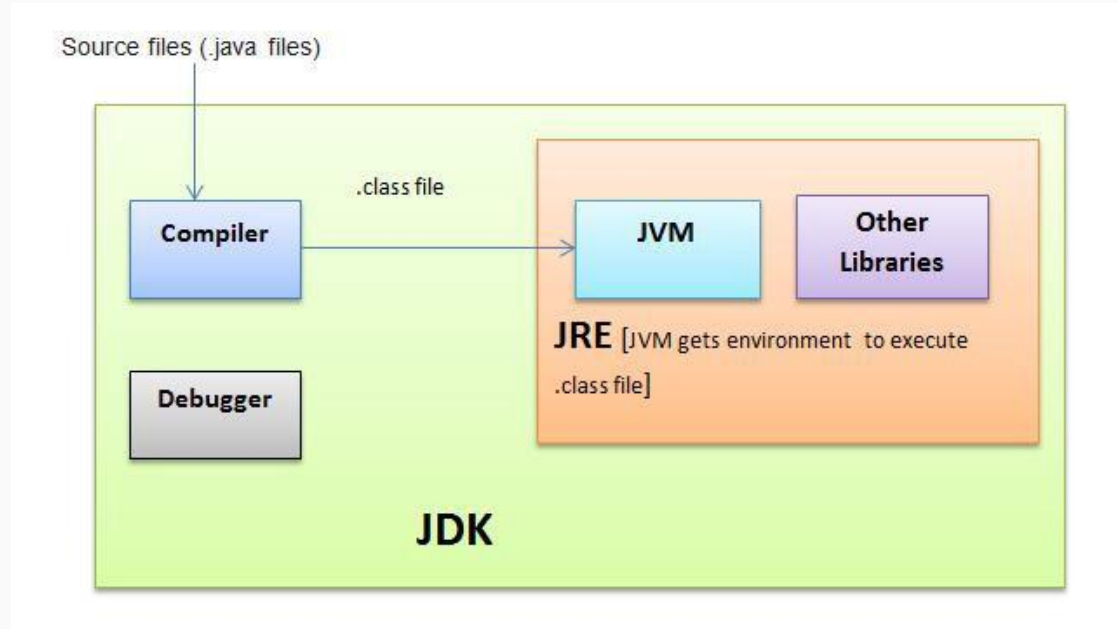
Used to print values in console

# How Java Works?





# JDK



**The Java Development Kit (JDK)** is primary components. It physically exists.

It is collection of programming tools and JRE, JVM. You will need JDK, if at you want to write and compile your own programs.

# JRE

**The Java Runtime Environment (JRE)** is part of the Java Development Kit (JDK). It contains set of libraries and tools for developing java application.

The **JRE** provides the minimum requirements for executing a Java application. It physically exists. It contains set of libraries + other files that JVM uses at runtime.

**JRE** = JVM + Java Packages Classes (like util, math, lang, awt, swing etc) + runtime libraries.

**JRE** does not contain any development tools such as compiler, debugger, etc.

# JVM

**JVM (Java Virtual Machine)** is a software. It is a specification that provides runtime environment in which java bytecode can be executed.

**JVM** does not physically exist. JVMs are not same for all hardware and software, for example for window os JVM is different and for Linux JVM is different.

**JVM** interprets the byte code into the machine code and execute it.

**JVM** is a key element of the write-once run-anywhere value of Java programs.

# Difference between JDK, JVM and JRE

**Jvm, Jre, Jdk** these all the backbone of java language. Each components have separate works. **Jdk and Jre** physically exists but **Jvm** are abstract machine it means it not physically exists.



# Java 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, field and other names are identifiers
- Identifiers must start with an alpha character or underscore
- Keywords can't be used as class or other identifiers

# Writing a Program

Whenever we write a program sequence is very important.



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

# Data Types

Data type is a classification of the type of data that a variable can hold in computer programming.

Java has 2 type of Data Types:

1. Primitive:

- byte
- short
- int
- long
- float
- double
- char
- boolean

2. Non Primitive:

- String

# 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	
double	double number	
char	a character	
Boolean	true or false	

# Store Data

We store data inside a container.  
This container we call a VARIABLE.

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);**

# String

String is not a data type & it is a class present in java.lang package to represent group of characters enclosed with in double quotes.

The default value of the String is null

Example:

```
String schoolName="Syntax";  
System.out.println(schoolName);
```