1.Programming Language

A programming language consists of vocabulary containing a set of grammatical rules intended to convey instructions to a computer or computing device to perform specific tasks.

Each programming language has a unique set of keywords along with a special syntax to organize the software's instructions.

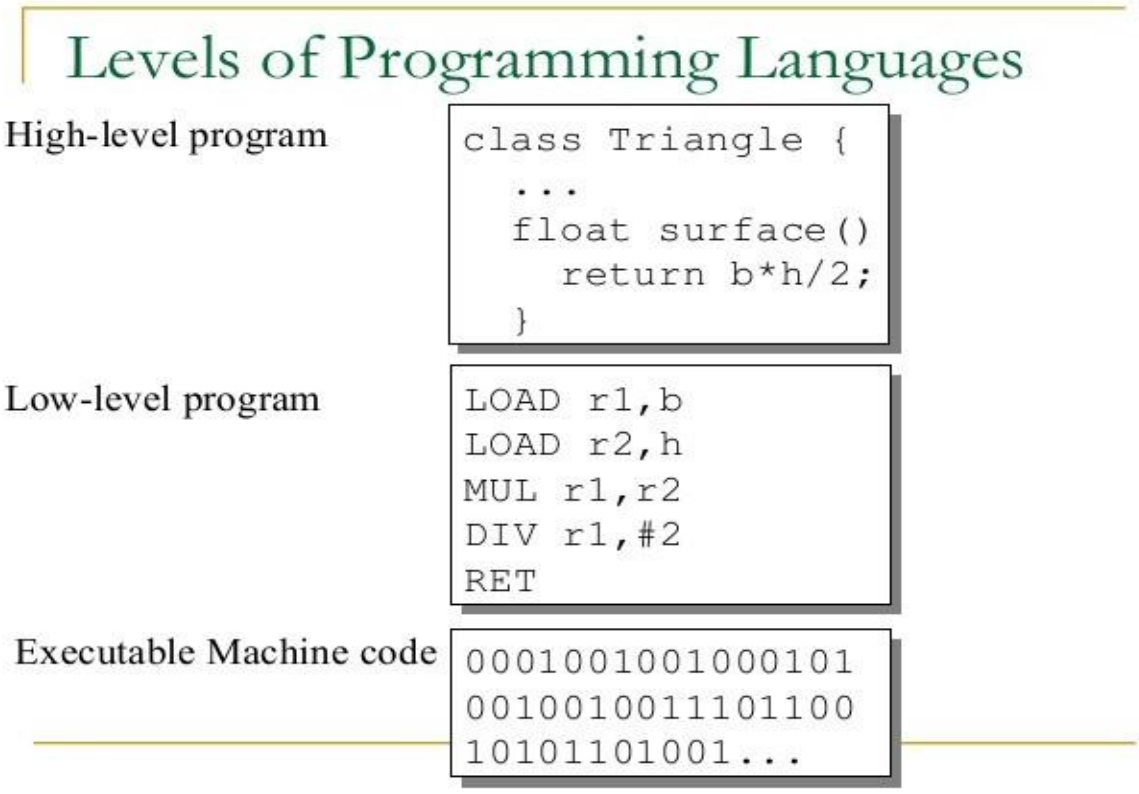
There are low-level and high-level programming languages which, although simple compared to human languages, are more complex than machine languages.

Low-level languages : Low-level languages include assembly and machine languages. An assembly language contains a list of basic instructions and is much harder to read than a high-level language.

High-level languages : High-level languages, on the other hand, are designed to be easy to read and understand, allowing programmers to write source codes naturally, using logical words and symbols.

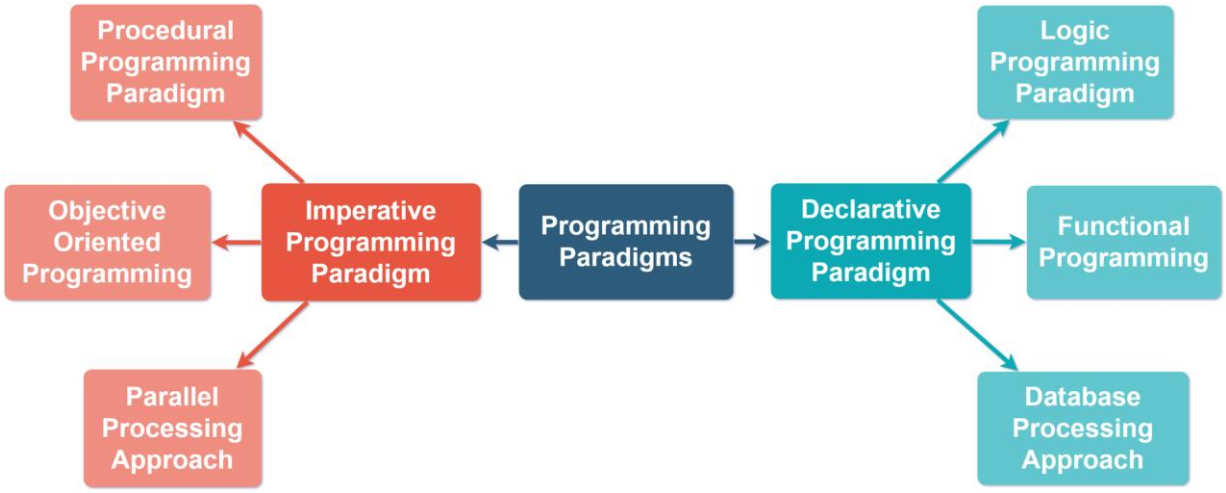
The following activities can be performed:

- Programs and applications development.
- Artificial intelligence development.
- Database development.
- Development of drivers and hardware interface.
- Internet and web pages development.
- Script development.



2.Programming Paradigms

Paradigm can also be termed as method to solve some problem or do some task. Programming paradigm is an approach to solve problem using some programming language or also we can say it is a method to solve a problem.



1.Imperative programming paradigm

Programming with an explicit sequence of commands that update state.

- Procedural programming paradigm
- Object oriented programming
- Parallel processing approach

2.Declarative programming paradigm

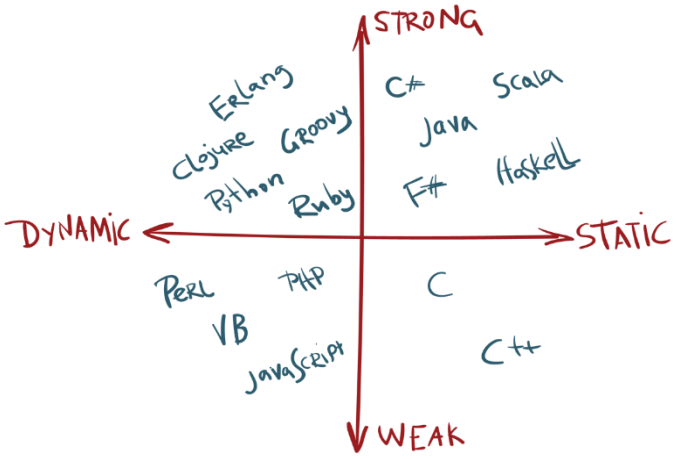
Programming by specifying the result you want, not how to get it.

- Logic programming paradigms
- Functional programming paradigms
- Database/Data driven programming approach

3.Other paradigm

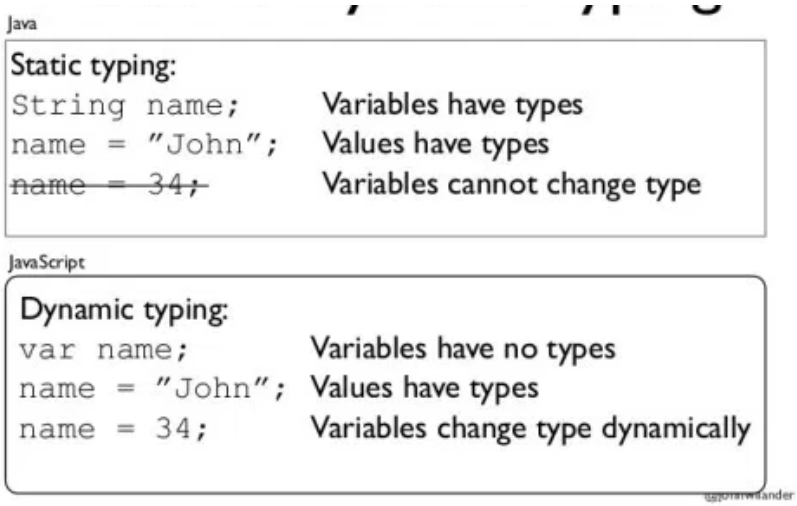
- Structured paradigms
- Reflective paradigms
- Constraint paradigms
- etc….

3.Typed Language (Static - Dynamic - Strong - Weak)



Statically Typed : Types checked before run-time.

Dynamically Typed : Types checked on the fly, during execution.



Strongly Typed : Strongly typed languages once a type is assigned to a variable say at run time or compile time, it can't be intermingled in expressions with other types easily.

data = "string1" //Type assigned as str at runtime
data = 5 //Type assigned as int at runtime
data = data + "string2" //Type-error str and int can't be concatenated

Weakly Typed : Weakly typed languages, once a type is assigned to a variable say at run-time or compile-time, it can be intermingled in expressions with other types easily.

$data = "string1" //Type assigned as str at runtime
$data = 5 //Type assigned as int at runtime
$data = $data+"string2" //str and int get concatenated

4.Program and Software

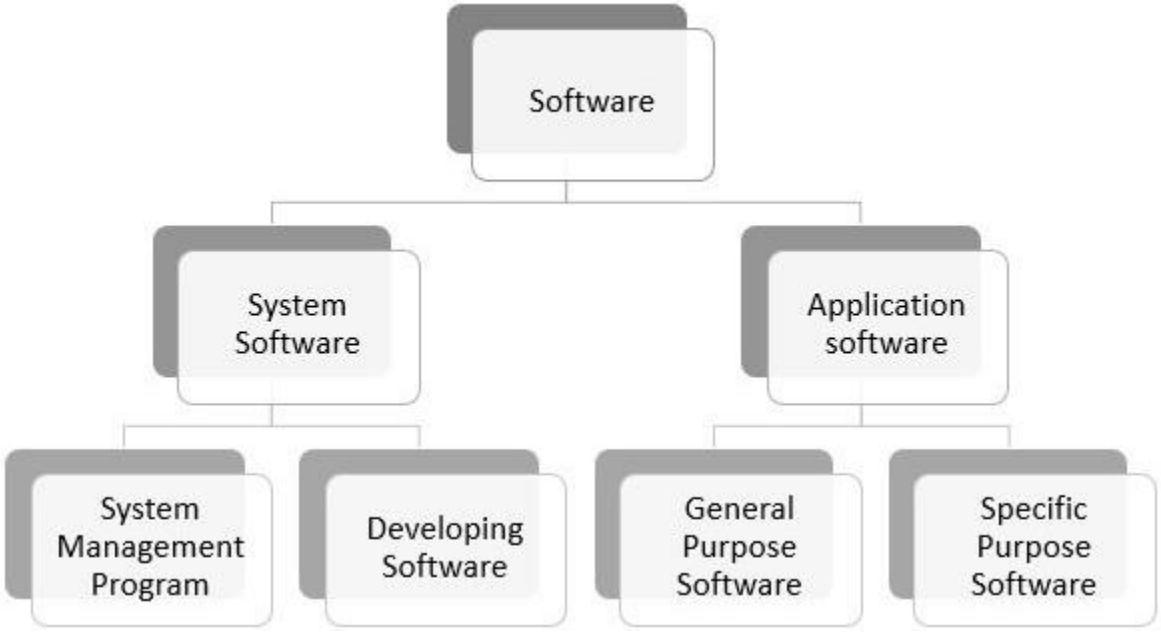
Program

- Program is a set of Instructions written in a programming language used to execute for a specific task or particular function.
- Application is used only by end users.

Software

- Software is a set of Programs used to execute for an entire application. There are Many programs combine together to form software. it is also used to perform a task.
- Software is used as mediator between user and hardware.

5.Types Of Software

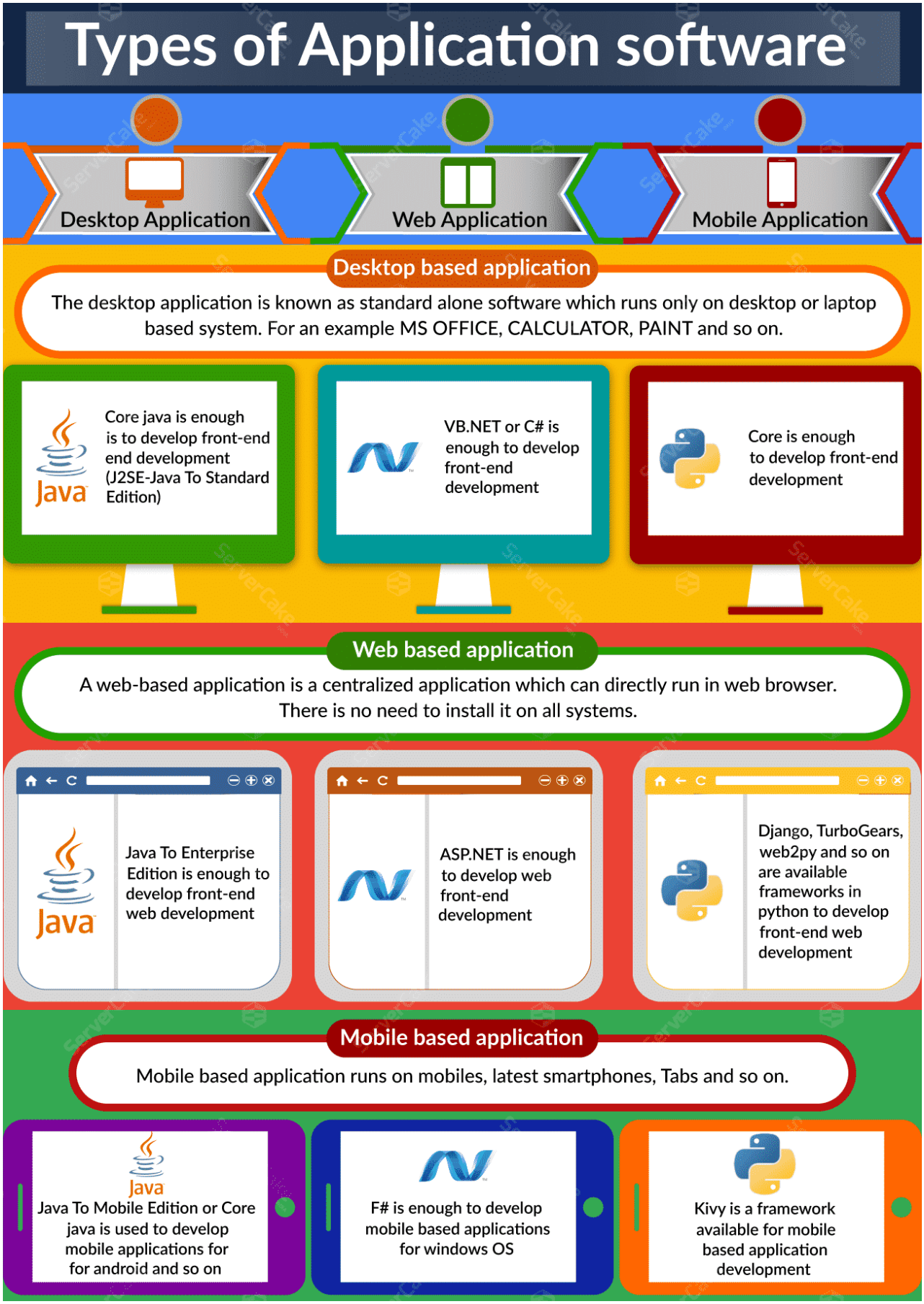


System Software or Software

Software is a collection of programs that co-ordinates with the hardware to run the machine. It is set of instructions or data that operates the computer how to work.

Application Software or Application

Application is package that performs a specific task for end users. It is a product or a program that is designed only for end users requirements. All the applications may be in category of software but vice-versa is not possible.


Types of Application software
Desktop Application
Web Application
Mobile Application
Desktop based application
The desktop application is known as standard alone software which runs only on desktop or laptop based system. For an example MS OFFICE, CALCULATOR, PAINT and so on.
Java
Core java is enough is to develop front-end end development (J2SE-Java To Standard Edition)
VB.NET or C# is enough to develop front-end development
Core is enough to develop front-end development
Web based application
A web-based application is a centralized application which can directly run in web browser. There is no need to install it on all systems.
Java
Java To Enterprise Edition is enough to develop front-end web development
ASP.NET is enough to develop web front-end development
Django, TurboGears, web2py and so on are available frameworks in python to develop front-end web development
Mobile based application
Mobile based application runs on mobiles, latest smartphones, Tabs and so on.
Java
Java To Mobile Edition or Core java is used to develop mobile applications for for android and so on
F# is enough to develop mobile based applications for windows OS
Kivy is a framework available for mobile based application development

6.List of Programming Languages

Lists Of Programming Languages

1.Python : Web and Internet Development, Scientific and Numeric applications, Desktop GUIs, Business applications. It is widely used in AI and Machine Learning space.

2.Java : Mostly used for developing Android apps, web apps, and Big data.

3.Javascript : JavaScript usage include web/mobile app development, game development, and desktop app development.

4.R : Data Science projects, Statistical computing, Machine learning

5.C++ widely used in Game Development, Advance Computations and Graphics Compilers

6.C# : Widely used in Enterprise Cross-Applications Development, Web Applications

7.Swift : Swift is a specially designed language which works with Apple's Cocoa and Cocoa Touch frameworks to create all types of iOS apps.

8.PHP : Web Development, Content Management Systems, eCommerce Applications

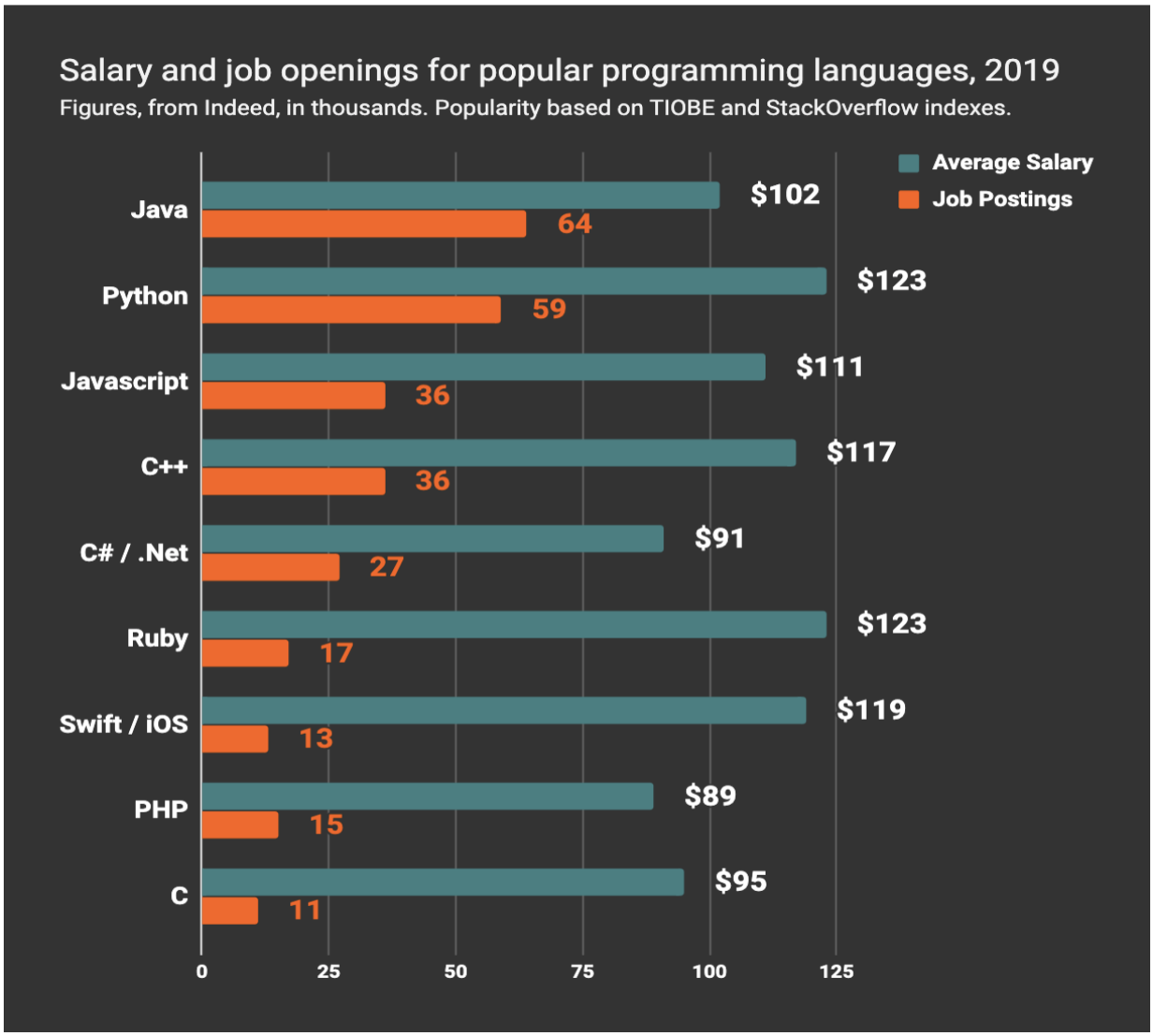
9.Go : Console utilities, GUI applications, and web applications

10.SQL : Used in Any Database.

Aspects

- Open Source and Closed Source
- Platform Independent

7.Job Openings, Demand & Salary



Reasons to Learn Java

- Java is a versatile Programming Language. It is the most popular language for Android Development.
- Java is also heavily used for Web and Desktop application development.
- It is a multi-purpose Programming Language, so it depends on you for which platform you want to use it.
- Java has a great community support as well. There are number of free resources available for you online, if you want to learn Java or Debug your Java code.
- Java is API rich Programming Language. So, there will be abundance of API's available for you, when you program in Java.
- Java is one of the most demanding Programming Language. Java is used on all platforms, whether it is Mobile, Desktop or Web.

8.Java

Java is a high-level programming language originally developed by Sun Microsystems and released in 1995. Java runs on a variety of platforms, such as Windows, Mac OS.

Java Features

- Java works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc.)
- It is one of the most popular programming language in the world
- It is easy to learn and **simple** to use
- It is **open-source** and free
- It is **secure**, fast and powerful
- It has a huge community support (tens of millions of developers)

Java Used For

- **Ide :** (Eclipse, Net Beans, IntelliJ, Android Studio…)
- **Mobile Applications** (Android Studio, kotlin)
- **Desktop Applications** : (JavaFX, JFrame, JPanel)
- **Web Applications** : (Spring, Struts, JSF, Hibernate, EJB, JUnit …)
- **Web Server** : (Java Servlet, Glass Fish, Apache Tomcat, JBoss…)
- **Database** : (JDBC, Mysql, Oracle, Mongo DB, Sql Server…)
- **Data Science** : (Spark, Kafka, Hadoop, Hive, Cassandra…)
- **Programming Languages :** Kotlin, Groovy.

Editions : Standard Edition (Java SE), Enterprise Edition (Java EE), Micro Edition (Java ME)

Versions

- Java SE 10 (2018), Java SE (2018), Java SE 12 (2019), Java SE 13 (2019)
- Java SE 14 (2020), Java SE 15 (2020), Java SE 16 (2021)