Faculty of engineering - Shoubra
Benha University

Research Article / Research Project / Literature Review

in fulfillment of the requirements of

Department	Engineering Mathematics and Physics
Division	--------------
Academic Year	2019-2020 Preparatory
Course name	Computer
Course code	ECE001

Title: -

Build a website on recent computer engineering topics

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Project link : https://github.com/ganaatezzat/html-project

Website link : https://ganaatezzat.github.io/html-project/

Abstract

A programming language is a vocabulary and set of grammatical rules for instructing a computer or computing device to perform specific tasks. The term programming language usually refers to high-level languages, such as BASIC, C, C++, COBOL, Java, FORTRAN, Ada, and Pascal. Each programming language has a unique set of keywords (words that it understands) and a special syntax for organizing program instructions.

Table of contents

Introduction

Programming is the art and science of translating a set of ideas into a program - a list of instructions a computer can follow. The person writing a program is known as a programmer (also a coder).

The exact form the instructions take depend on the Programming Language used. Languages run the spectrum from very low level like Machine Language or Assembly, to a very high level like Java. Lower level languages are more closely tied to the platform they are targeted for, while Higher-level languages abstract an increasing amount of the platform from the programmer.

In other words, low-level programming languages represent the instructions in a manner that resembles more closely the way the computer actually works. High-level languages do resemble more the way the human mind works. Each type is a good fit depending on the particular case. Whenever speed and resource consumption are important, low-level languages can provide an advantage since they cause much less "translation" and are less generic, thus causing less load on the computer. High-level languages have much more abstraction and thus are better suited for tasks where maintenance and complex design is required.

After a programmer has finished writing the program, it must be executed. Traditionally, some languages (like Basic) are interpreted, while others (like C) are compiled prior to execution. Interpreted languages are executed "on the fly" at run time, while compiled languages have a separate compilation step that must be completed prior to running. Compilers are able to make certain optimizations that are unavailable to interpreters.

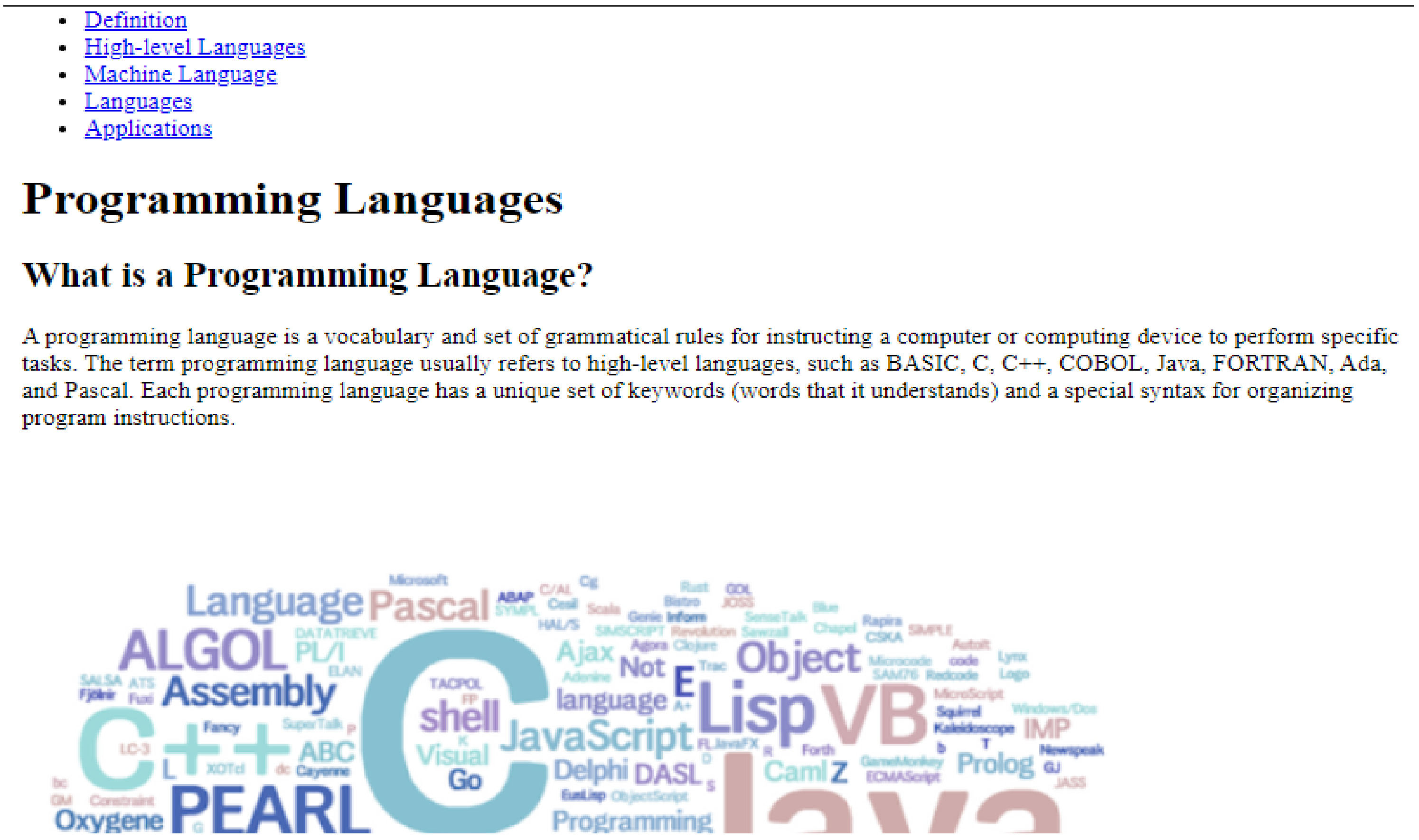
The program may fail to compile or execute due to syntax errors. These are errors caused by doing something that is unknown, or illegal according to the language they have used. These errors have to be corrected before the program will execute.

If the program runs, the programmer must then verify that the program is working as they intended it to. When things don't go as the programmer intended, the error is said to be a bug. To eliminate bugs, the programmer goes through a process called debugging, where he tries to isolate and fix the source of the problem.

Literature Review

I have been searching about programming languages and I have learnt HTML, so I have created this website to show some knowledge about programming.

1- Home page :



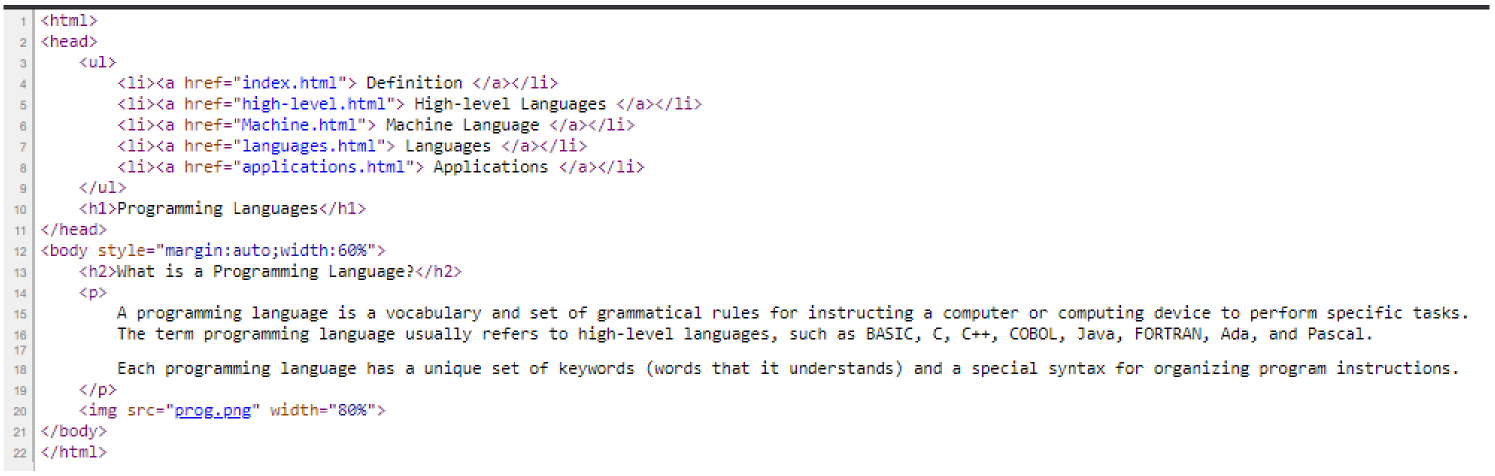
- Definition
- High-level Languages
- Machine Language
- Languages
- Applications

Programming Languages

What is a Programming Language?

A programming language is a vocabulary and set of grammatical rules for instructing a computer or computing device to perform specific tasks. The term programming language usually refers to high-level languages, such as BASIC, C, C++, COBOL, Java, FORTRAN, Ada, and Pascal. Each programming language has a unique set of keywords (words that it understands) and a special syntax for organizing program instructions.

Source code :



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<head>
    <ul>
        <li><a href="index.html"> Definition </a></li>
        <li><a href="high-level.html"> High-level Languages </a></li>
        <li><a href="Machine.html"> Machine Language </a></li>
        <li><a href="languages.html"> Languages </a></li>
        <li><a href="applications.html"> Applications </a></li>
    </ul>
    <h1>Programming Languages</h1>
</head>
<body style="margin:auto;width:60%">
    <h2>What is a Programming Language?</h2>
    <p>
        A programming language is a vocabulary and set of grammatical rules for instructing a computer or computing device to perform specific tasks.
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        Each programming language has a unique set of keywords (words that it understands) and a special syntax for organizing program instructions.
    </p>
    <img src="prog.png" width="80%">
</body>
</html>
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2- High level languages page :

- Definition
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- Machine Language
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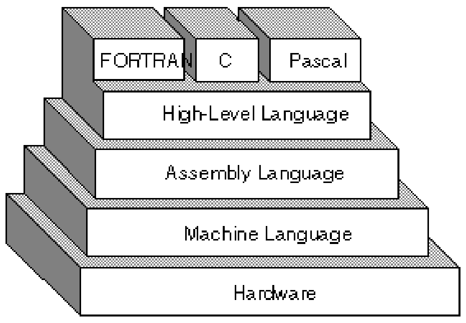
Programming Languages

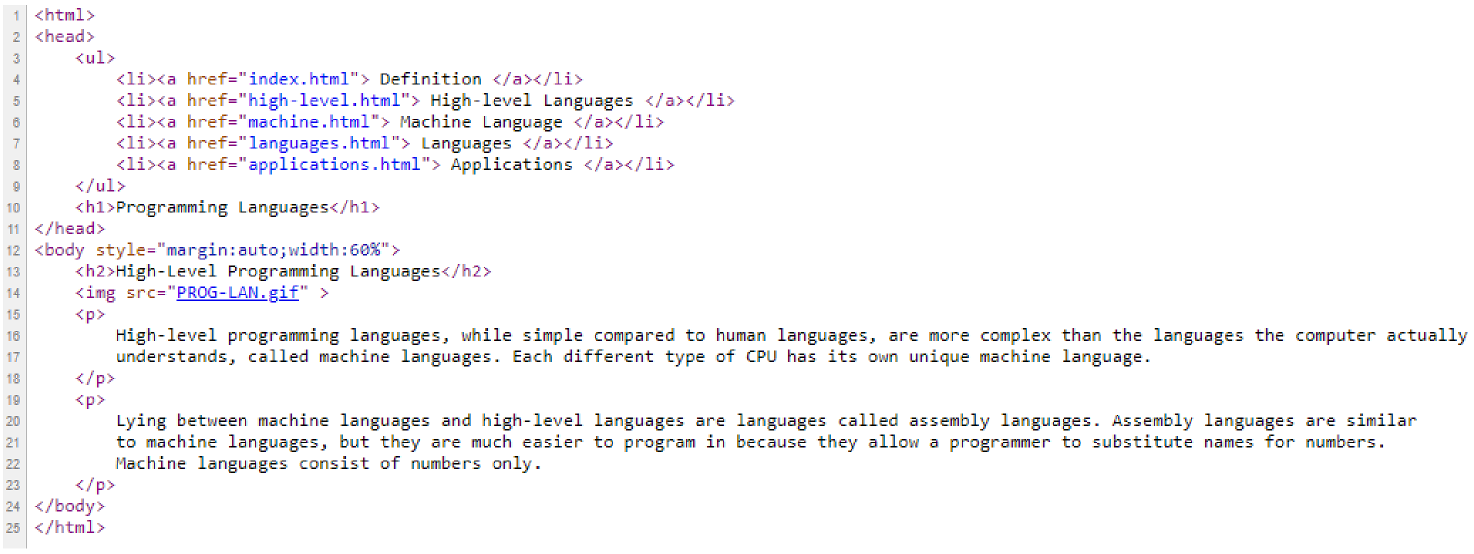
High-Level Programming Languages



High-level programming languages, while simple compared to human languages, are more complex than the languages the computer actually understands, called machine languages. Each different type of CPU has its own unique machine language.

Lying between machine languages and high-level languages are languages called assembly languages. Assembly languages are similar to machine languages, but they are much easier to program in because they allow a programmer to substitute names for numbers. Machine languages consist of numbers only.

Source code :



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</head>
<body style="margin:auto;width:60%">
    <h2>High-Level Programming Languages</h2>
    <img src="PROG-LAN.gif" >
    <p>
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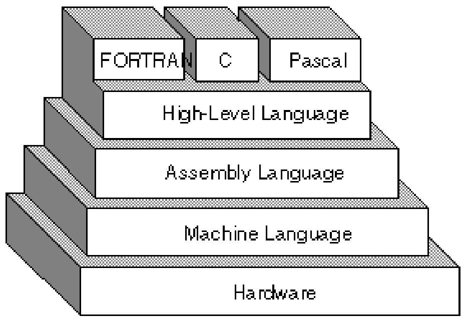
Programming Languages

High-Level Programming Languages



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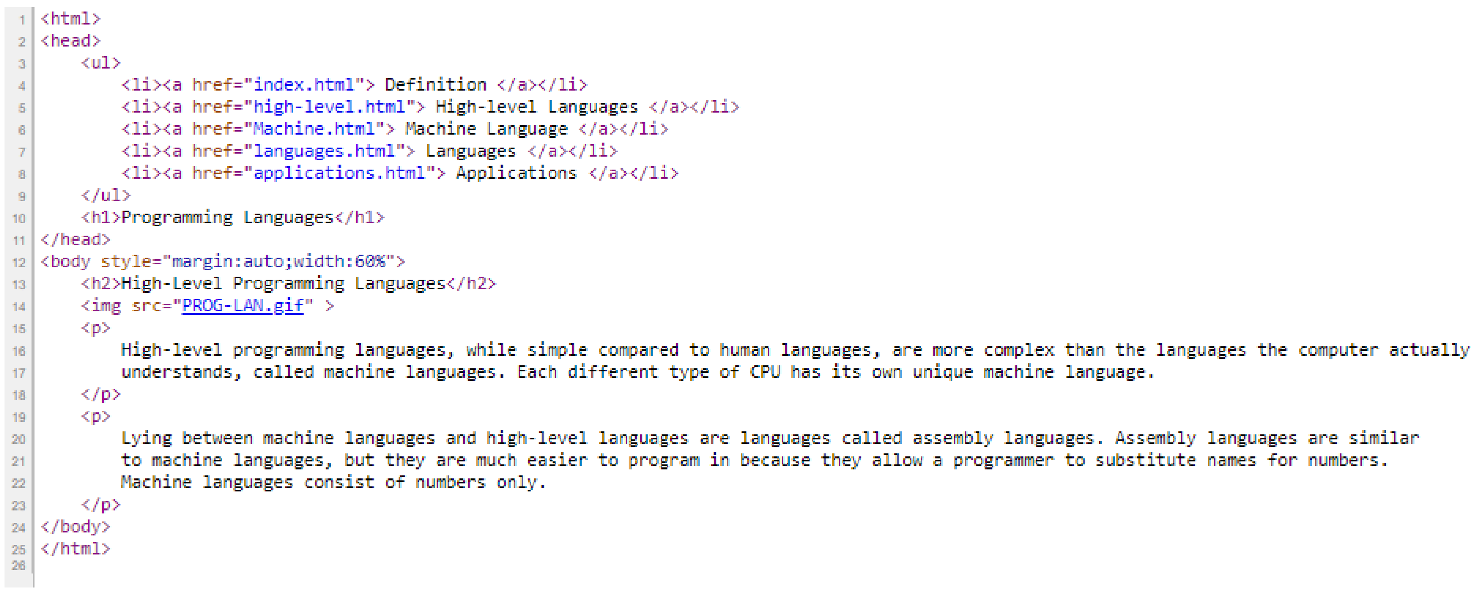

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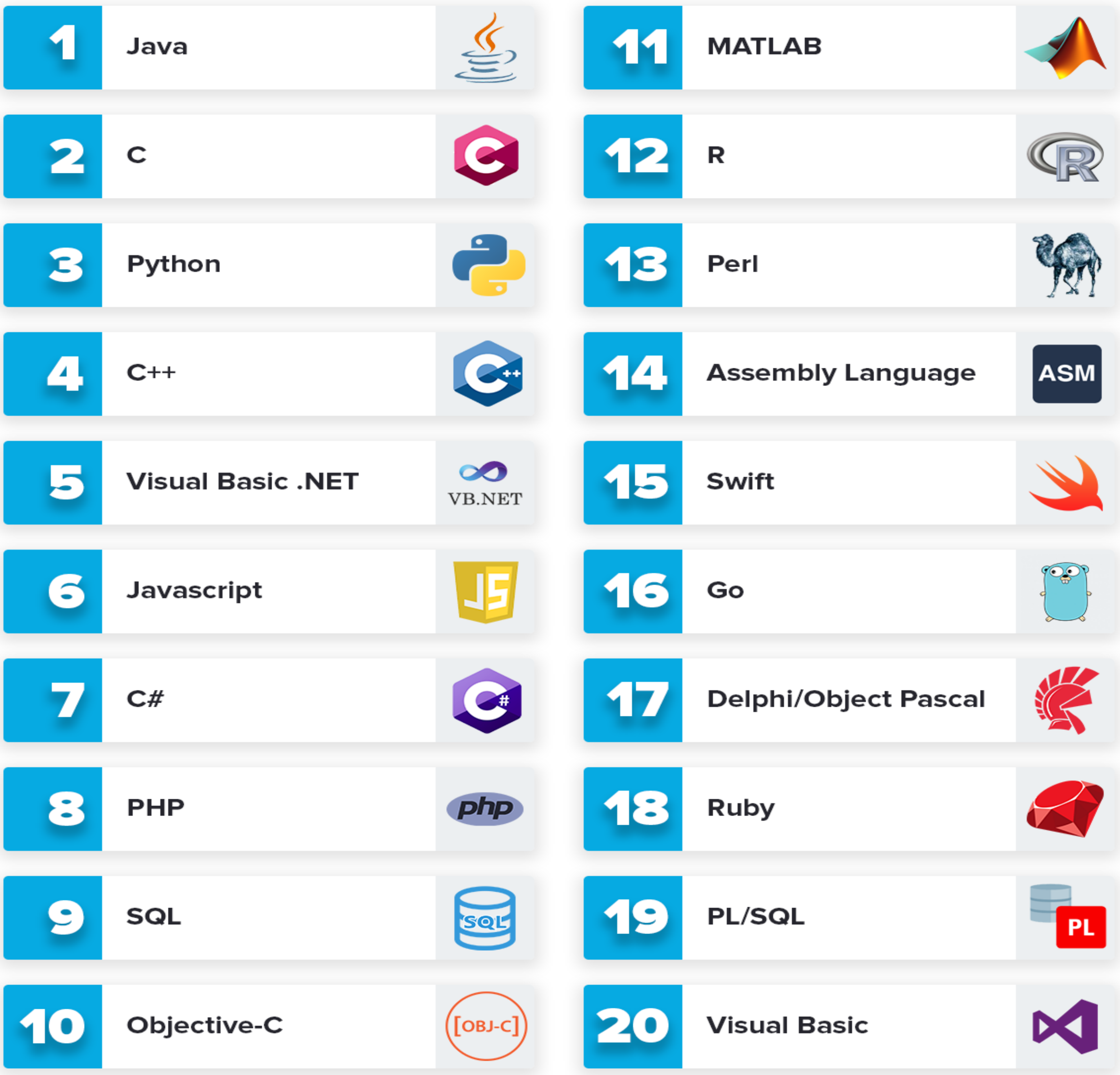
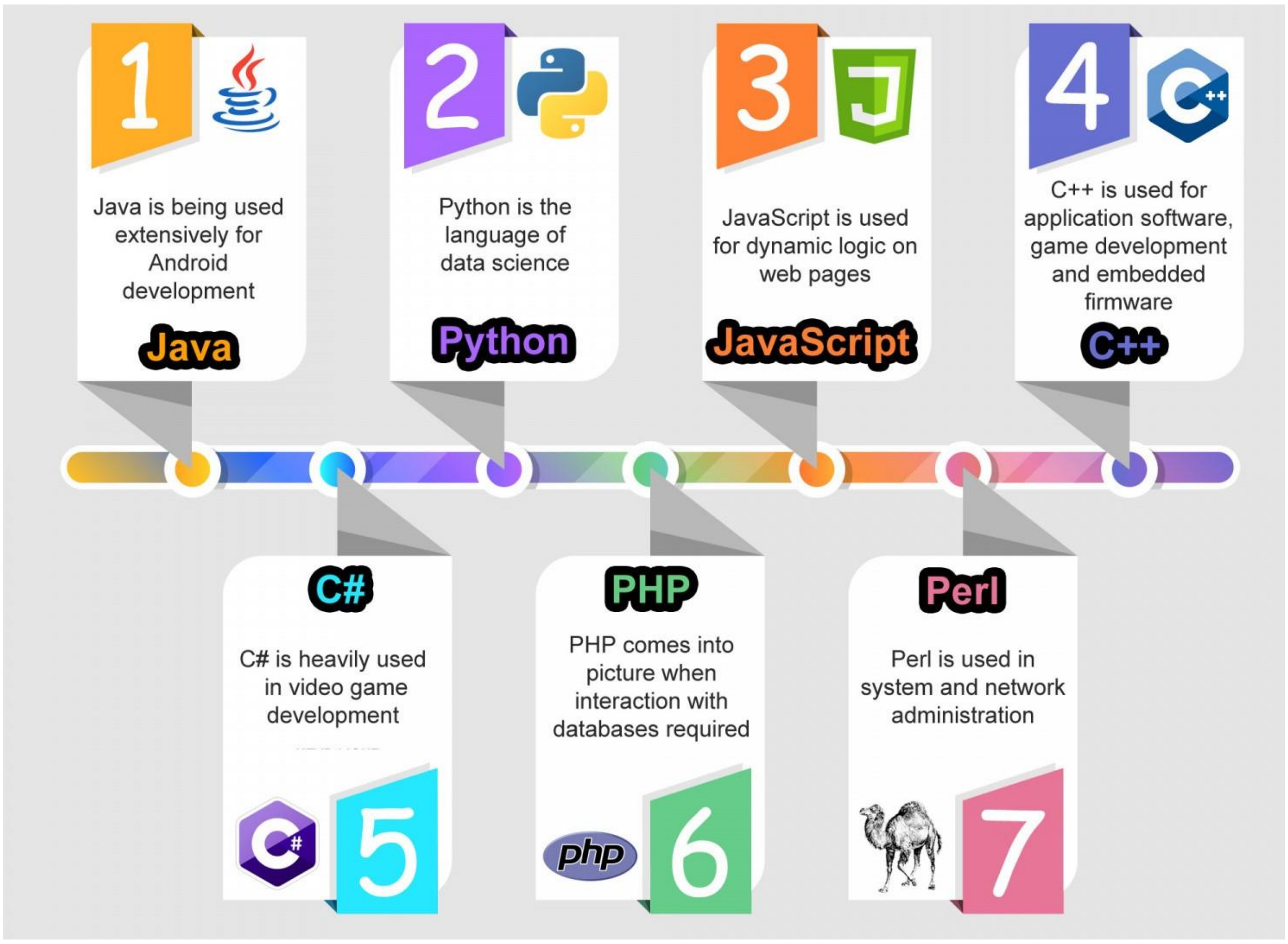
Results and discussion

There are 256 known programming languages in the world. Below are the top 20 most popular programming languages as of February 2019.



1	Java	11	MATLAB
2	C	12	R
3	Python	13	Perl
4	C++	14	Assembly Language
5	Visual Basic .NET	15	Swift
6	Javascript	16	Go
7	C#	17	Delphi/Object Pascal
8	PHP	18	Ruby
9	SQL	19	PL/SQL
10	Objective-C	20	Visual Basic

Top Applications of Programming Languages:


1
Java is being used extensively for Android development
Java
2
Python is the language of data science
Python
3
JavaScript is used for dynamic logic on web pages
JavaScript
4
C++ is used for application software, game development and embedded firmware
C++
C#
C# is heavily used in video game development
5
PHP
PHP comes into picture when interaction with databases required
php
6
Perl
Perl is used in system and network administration
7

Conclusions

A computer itself is not smart. Yes, they're powerful and have the potential to carry out tasks much faster than a human. However, computers need a human to write instructions and tell them what to do. Therefore, programming is the process of writing those instructions. We use a programming language to do this. These instructions are translated to a readable format, which a computer can understand. The computer then carries out the instructions.