Computer Languages

The different kinds of languages have been developed to perform various types of work on the computer. The two major types of programming languages are Low-Level Languages and High-Level Languages.

- **Assembler:** This language processor converts the program written in assembly language into machine language.
- **Interpreter:** This language processor converts a HLL(High Level Language) program into machine language by converting and executing it line by line.
- **Compiler:-**It also converts the HLL program into machine language but the conversion manner is different. It converts the entire HLL program in one go, and reports all the errors of the program along with the line numbers. C

Low-Level languages

It is a programming language that deals with a computer's hardware and its configuration. It is very close to the computer's native language. It is further divided into Machine and Assemblylanguages.

Machine Language – It consists of binary digits or bits. It can directly understand by the computer and does not need a translator program. It is also called the machine code. It is efficient but difficult to learn.

Advantages

- Programs run fast.
- No translation program is required.

Disadvantages

- Difficult to program
- Debugging is also an issue

Assembly Language – A combination of letters and numbers forms the Assembly Language and a translator program is required to translate to the machine language. The operation codes and operands are given in the form of alphanumeric symbols which are known as mnemonic codes and can combine in a maximum of five-letter combinations e.g. ADD for addition, SUB for subtraction etc. This is also known as Symbolic Programming Language.

Advantages

- Easier to understand and minimizes effort.
- Finding and correcting the errors are easy.

Disadvantages

- It is machine dependent (program written for one computer might not run in othercomputers with different hardware configuration)
- Writing of code is time-consuming.

High-Level languages

A high-level language (HLL) is a programming language that enables a programmer to write programs independently. Such languages are closer to human languages. Higher level languages are simple languages that use English and mathematical symbols like +, -, %, / for its program construction.

Example – BASIC, C, C++, COBOL, FORTRAN, ALGOL, PASCAL, PROLOG.

BASIC - Beginner's All-purpose Symbolic Instruction Code (BASIC) was developed for students to write simple computer programs. It was designed by John Kemeney and Thomas Kurtz in 1963.

ALGOL - ALGOL is a short form of Algorithmic Language. It is a family of portable programming languages for scientific computations.

PROLOG - Prolog is used widely for artificial intelligence applications, particularly expert systems.

PASCAL - It is used to teach programming techniques. It was developed by Niklaus Wirth.

FORTRAN - It is a programming language designed for numeric computation and scientific computing. formula Translation is an acronym of FORTRAN.

COBOL - Common Business Oriented Language is the full form of COBOL. It is used for business and administrative purposes. It can be read like regular English.

C – It is a general-purpose language which is used in many scientific programming situations.

C++ - C++ is an object-oriented programming language and incorporates all the features offered by C.

Advantages

- Independent of machines and can run on any computer
- Problem-oriented rather than machine oriented
- User-friendly

Disadvantages

- Need time for translating.

Object-Oriented Programming

Object-oriented programming (OOP) is a software programming model built around objects. This model classifies data into objects and describes object contents and performance through the declaration of classes.

Simula is the first object-oriented programming language. The examples of object-oriented programming languages are Java, Python, JavaScript, C++, C#, PHP, Perl, .NET, Ruby Curl, Visual Basic, Smalltalk, Delphi, and Eiffel.

Java - Java is used for developing Mobile, Desktop, web, server-side and dynamic web applications.

JavaScript – JavaScript is designed for styling HTML Pages, interactivity to HTML Pages, Server-Side Scripting Operation, executing query related to DB on Serve.

Python - Python is a general-purpose programming language. It is used for developing complex scientific, numeric applications, data analysis, and visualization.

C# - C# is a general-purpose language was designed by Microsoft to be used for developing apps on the Microsoft platform.

PHP - PHP stands for Hypertext Pre-processor. It is a scripting language used for the development of web applications.

.Net-.Net is a programming framework developed by Microsoft, which can be used to build different types of applications such as Windows, Web application and Mobile based applications etc.

Visual Basic - Visual Basic is an approachable language with a simple syntax for building type-safe, object-oriented apps.

Computer Languages	Father/Inventor/Designed by
C/C++	Dennis Ritchie
Java	James Gosling
JavaScript	Brendan Eich
PHP	Rasmus Lerdorf
Python	Guido van Rossum
HTML	Tim Berners-Lee
.NET (Framework)	Microsoft Corporation
C#	Microsoft Corporation
Perl	Larry Wall
Ruby	Yukihiro Matsumoto

Other related terms

Language Processor – Language Processor is a software designed to perform tasks such as processing program code to machine code. Language processors are found in languages such as Fortran and COBOL.

Debugger - A debugger is a software utility that is designed to locate errors within a program's source code.

Linker - Linker is a program that combines object modules to form an executable program.

Loader – Loader brings all program objects into the memory which is essential to run a program.

Spooling - Spooling is a process in which data is temporarily held to be used and executed by a device, program or the system. Data is saved in storage until the program requests it for execution.

Memory Storage Units

S.No	Unit	Description
1	Bit (Binary Digit)	A binary digit is the smallest unit. It has the logical representation of 0 and 1.
2	Nibble	A group of 4 bits is called nibble.
3	Byte	A group of 8 bits is called byte. (1 byte = B bits)
4	Word	A computer word is a group with a fixed number of bits processed as a unit. The length of a computer word is called word-size or word length and it may be either 8 bits or 96 bits. A computer stores the information in the form of computer words.

Memory Capacity Conversion Chart

Term	Approximate Size
Byte (B)	8 bits
Kilobyte (KB)	1024 bytes / 10^3 bytes
Megabyte (MB)	1024 KB / 10^6 bytes
Gigabyte (GB)	1024 MB / 10^9 bytes
Terabyte (TB)	1024 GB / 10^{12} bytes
Petabyte (PB)	1024 TB / 10^{15} bytes
Exabyte (EB)	1024 PB / 10^{18} bytes
Zettabyte (ZB)	1024 ES/ 10^{21} bytes
Yottabyte (YB)	1024 ZB/ 10^{24} bytes
	Bit – Binary Digit has the logical representation of 0 and 1.
	Nibble — 4 Bits
	Byte — 8 Bits
	KB (Kilobyte) — 1024 Bits
	MB (Megabyte) — 1024 KB
	GB (Gigabyte) — 1024 MB
	TB (Terabyte) — 1024 GB
	PB (Petabyte) — 1024 TB
	EB (Exabyte) — 1024 PB