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| **Programming Language:** JavaScriptDefinition:  Is a *text-based programming language* that is often used both by the client and server that allows to execute different attributes to its web pages and make it interactive. JavaScript also allows its user to control multimedia, animate images, facilitate and present content updates and more.  **Compatible OS**: Linux, SunOS, Mac OS X, and Windows  **Compatible Databases**: MySQL. PostgreSQL. SQLite | |
| **Advantages** 1. JavaScript is the only programming language native to the web browser  2. Since all modern browsers support JavaScript, it is seen almost everywhere. All the famous companies use JavaScript as a tool including Google, Amazon, PayPal, etc.  3. JavaScript is an interpreted language. Therefore, it lessens the time needed by other languages such as Java for arrangement. JavaScript is likewise a client-side script, accelerating the execution of the program reducing the time connecting to server.  4. JavaScript is straightforward. The structure is simple for its users as well as the developers. It is also very attainable to execute.  5. JavaScript is client-side, thereby reducing the need for some servers overall. In smaller scale, servers are not required by the application to perform. | **Disadvantages**  1. The JavaScript code itself is viewable to the user and others. This can be used by others for malicious purposes that compromises the security of the data in web.  2. The browser interprets JavaScript differently in different browsers. Because of this, the program must be checked with different browsers before publishing.  3. Though some HTML editors support debugging, it is not as efficient as other editors like C/C++ editors. Also, as the browser doesn’t show any error, it is difficult for the developer to detect the problem.  4. JavaScript only supports single inheritance and not multiple inheritance.  5. One mistake on coding within the program can stop the rendering of the entire JavaScript code on the website. |
| **Uses** 1. 2D/3D Animation  2. Addition of Interactive behavior to web pages  3. Mobile and Web App Developments  4. Game Developments  5. Server Applications | **Limitation** 1. Ran on browsers only  2. Single Inheritance only  3. Cannot be used for networking apps  4. Does not allow reading or writing of files  5. Can be disabled |
| **Programming Language**: Python Definition:  Is a text-based programming language that is often used both by the client and server that allows to execute different attributes to its web pages and make it interactive. JavaScript also allows its user to control multimedia, animate images, facilitate and present content updates and more.  **Compatible OS**: Linux, Windows Vista and newer for Python 3.7, Windows XP and newer for Python 2.7, FreeBSD 10 and newer, MacOS Snow Leopard (macOS 10.6, 2008) and newer  **Compatible Databases:** MySQL. PostgreSQL. SQLite, Oracle | |
| **Advantages**   1. As a high-level programming language, Python has an English-like format in its syntax. Because of this, it is easier for people to understand the program. 2. Python itself contains vast number of libraries used for various purposes reducing the need to depend on some external libraries. 3. Python is an OSI approved with an open-source license making Python free and accessible to many users and developers and allowing for modification and distribution to others. 4. Python itself is possible to be connected to other languages. Writing codes with the syntax from C++ or C is possible. 5. Reading the programs in Python is like reading a sentence in English, making it easier to read and understand. | **Disadvantages**   1. Python is an interpreted language and is being executed line by line. This often results in a slow runtime of the program. 2. 2 versions are currently being updated for Python but the older version, Python 2.x is now described as legacy while the other, Python 3.x is seen as innovative, thereby presenting incompatibilities between two versions. 3. There is a need to install specific versions of Python interpreter on the operating system to run Python applications on the platform the user currently houses. 4. Python has been proved through studies that is relatively slow compared to other programming languages 5. Python lacks the needed access when interacting with databases compared to other popular technologies. |
| **Uses** 1. Back-End Development  2. Data Science  3. Mobile and Web App Developments  4. Game Developments  5. Server Applications | **Limitation** 1. Slow speed  2. Weak in Mobile Computing  3. Design restrictions  4. Needs additional testing  5. Not capable of web development |

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| **Programming Language**: Java  Definition:  Java is one of the most popular programming languages. It is an object-oriented programming language commonly used for the development of client-server applications. This language is a practical choice when creating mobile apps and has a good amount of security in its program.  **Compatible OS**: Windows, Mac OS X, Linux  **Compatible Databases:** MySQL. PostgreSQL. SQLite, Oracle, MSSQL | |
| **Advantages** 1. Java is an object-oriented programming type of language, making it practical for users. Everything it encapsulates takes care of both its data and behavior.  2. The Java code itself can be run on multiple platforms directly without the need for compiling every time it is ran. As it stands, it is called a Write Once, Run Anywhere type of language.  3. Java uses multithreading in its environment reducing the need to provide memory on every thread.  4. Java is a secured programming language. Removing the need for pointers. Pointers can sometimes access unauthorized memory in the data. This concept is not present in Java  5. Java currently offers many APIs used in development of applications including database connections, networking etc. | **Disadvantages**  1. Java programs require heavy storage in the memory. Compared to other languages, the amount of memory consumed by Java is larger.  2. While Java needs to be interpreted during runtime that allows it to be available on every operating system, it also makes the performance of the program itself very slow.  3. Java requires many words in its syntax when creating codes. Some of these are difficult to read and understand, reducing the readability of the code itself  4. The GUI of Java is not very pretty when it compares to other languages. They are also not suitable for creating more complex GUI.  5. Java is currently lacking in terms of its interactions with machines. When the software is needed to run quickly, Java is actually less practical to use. |
| **Uses** 1. Cloud-based applications  2. Web-based applications  3. Mobile and Desktop Apps Developments  4. Gaming Developments  5. Distributed Applications | **Limitation** 1. Paid commercial license  2. Multiple inheritance issues  3. Lacks the feel of desktop interfaces in GUI  4. Is technically slow  5. Bugs in JVM implementation |

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| **Programming Language**: C++  Definition:  C++ is an object-oriented programming language that is created as part of the evolution of the C and its family of programming languages. It was created as an improvement of C that could provide developers with better control over its memory and system.  **Compatible OS**: Windows, Android, MacOS, Linux  **Compatible Databases:** MySQL. PostgreSQL. SQLite, Oracle, MSSQL | |
| **Advantages** 1. C++ is a very portable programming language. This means that we don’t have to worry what platform will be used.  2. As a compiler-based programming language. C++ has no need for installation of a special runtime while the program is ongoing. This makes the program run faster and more powerful.  3. It is possible for C++ to run on a small scale as well as large scale.  4. C++ features object-oriented programming that includes classes, inheritances etc. that allow reusing of codes making the program more definitive.  5. C++ gives its user total control over its memory and allows DMA which stands for *Dynamic Memory Allocation* that grants free memory allocation. | **Disadvantages**  1. Pointers in C++ are some of the concepts that are very hard to understand. Not handling them properly may lead to system crash and additional memory allocation.  2. By corrupting a small part of the memory, it is possible to destroy the entire program. This means that C++ is relatively unsafe.  3. It is not possible to define a new operator in C++. However, redefining some of the existing operators is within reach  4. Programmers usually must handle most of the memory management in C++ due to its limited memory handling.  5. C++ is very strict when it comes to its syntax in programming. Studies show that it takes more time to get accustomed with C++ compared to other languages. |
| **Uses** 1. GUI Based Applications  2. Game Development  3. Database Software  4. Web Browsers  5. Machine learning tools | **Limitation** 1. Does not have its own garbage collector  2. No built-in threads  3. Lack of algebraic data types  4. Less memory management  5. Less flexible |

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| **Programming Language**: C# Definition:  C++ is an object-oriented programming language that is developed by Microsoft with the goal to provide the computing capabilities of C++ and the programming handle of Visual Basic. C# shows some similarities to Java programming language.  **Compatible OS**: Windows, MacOS, Linux  **Compatible Databases:** MySQL. PostgreSQL. SQLite, Oracle, MSSQL | |
| **Advantages** 1. C# can be easily connected to Windows. There is no need for special resources to use when integrating C# to Windows OS.  2. C# is secure due to its characteristic being an assembly language. On the off chance that someone hacks into your system, the hacker cannot access the source code automatically as it is in binary form.  3. C# is one of the most popular and common programming languages used in the world. Because of this, it is relatively easy to find developers to work with.  4. There is a functionality in Visual Studio that allows changes and code merging with many people. This comes in handy when working with a large development team.  5. C# is actually an open-source programming language under .NET Foundation. | **Disadvantages**  1. The codes created with C# must be compiled every time it is executed. This consumes more time for developers.  2. C# was created as part of .NET Framework meaning that the server running the application must be under Windows for the program to execute.  3. Microsoft now has stopped offering support to older versions of .NET Framework since there are now new operating systems present. This can be a problem to organizations using an older version of operating systems  4. Programmers cannot handle interacting directly with the computer’s hardware through its drivers and firmware  5. C# doesn’t have the same capabilities as Visual Basic. In the event that you have to convert a C# project to a Visual Basic Project, there may be problems present. |
| **Uses** 1. Windows Desktop Applications  2. Game Development  3. Back-end services  4. Website Development  5. Windows Client Applications | **Limitation** 1. Microsoft stopped supporting older versions of .NET Framework  2. Syntax is case-sensitive  3. Poor platform GUI  4. Less flexible due to being dependent to .NET Framework  5. Huge learning curve for beginners |

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| **Programming Language**: Ruby Definition:  Ruby is a vibrant, open-sourced programming language used by many web developers with a goal to focus on being an undemanding and productive language. It has a balanced combination of both functional and imperative programming.  **Compatible OS**: Linux, BSD, Solaris, AIX, macOS, Windows  **Compatible Databases:** MySQL. PostgreSQL. SQLite, Oracle, ADO, DB2, Frontbase | |
| **Advantages** 1. The Ruby programming language combined with Rails framework allows developers to design software faster compared to other languages.  2. Aside from the Rails framework, there are other external libraries that could aid developers in designing programs.  3. Ruby combined with the Rails framework makes for a safe and secure technology. Ruby has its own built-in security implementations that prevents attacks and intrusions.  4. Rails framework can provide developers with great tools that gives structure for web applications.  5. Ruby has a large community of developers that supports and runs maintenances on the language making Ruby one of the most popular language in the world. | **Disadvantages**  1. Depending on the number of gems that the program relies on. The boot speed of the Rails framework may take a little more time to start.  2. The performance of Ruby is slowed down by its connections to databases and must rely on the knowledge of the developers to work.  3. The process of documentation in Ruby is not always updated with its gems. This documentation plays a large part in application development.  4. The development of new technologies and updates on Ruby are relatively slow compared to other languages  5. While the Rails framework may support multithreading, some other libraries in Ruby do not and this presents a performance issue with the program. |
| **Uses** 1. Web Design Applications  2. Data processing  3. Web Server deployments  4. Automation  5. Static site generation | **Limitation** 1. Slow runtime speed  2. Relatively new language  3. Lack of flexibility  4. Fast development but slow processing  5. Declining of popularity within the developers |

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| **Programming Language**: Matlab Definition:  Matlab is a proprietary programming language that uses computations and algorithms that is created specifically for scientists and engineers to aid in the designing and creation of software and systems that could help in our world.  **Compatible OS**: Windows, MacOS, Linux  **Compatible Databases:** MySQL. PostgreSQL. SQLite, Oracle, MSSQL | |
| **Advantages** 1. Matlab has the fastest IDE used in mathematical operations of matrices and linear algebra.  2. The built-in library of Matlab contains many tools used by its developers making their work easy and saves time when implementing simulation.  3. Matlab also supports user-defined function making the programmer’s job easier and allowing them to store in separate files in the event that these functions are needed in the future.  4. Matlab is a programming language that is free of compiler and doesn’t require it to execute codes. The codes are written and being ran one by one.  5. Matlab supports multi-threading and allows garbage collection to enable the execution of programs. | **Disadvantages**  1. The process of cross-compiling in Matlab is very tedious and requires deep understanding to deal with problems that may occur.  2. Matlab has a license that needs to be bought for users to use. Every module in matlab needs to be bought as well.  3. Matlab requires faster specifications in a computer with a sufficient memory as well for a smooth flow in programming.  4. Since Matlab is an interpreted language, it has a tendency to be slow when it comes to running programs.  5. Matlab is mainly used for scientific research and is not typically useful when it comes to developing programs and activities created by a user. |
| **Uses** 1. Data analyzation  2. Algorithms developments  3. Plotting of graphs in data sets  4. Image processing and Computer Vision  5. Digital Signal Processing | **Limitation** 1. Mainly used for scientific and computation purposes  2. Syntax is case-sensitive  3. Requires a license for users to use  4. Large learning curve  5. Difficult to develop real time applications |

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| **Programming Language**: PHP Definition:  PHP is an open source, general server scripting language that is typically used for developing web applications for websites and can be embedded into HTML. PHP itself became the basis for  **Compatible OS**: Windows, MacOS, Linux, Ubuntu  **Compatible Databases:** MySQL. MariaDB, PostgreSQL. SQLite, MongoDB, Oracle | |
| **Advantages** 1. PHP can be easily integrated with other programming languages such as C which incidentally, PHP also has a lot of extensions related to C as well.  2. PHP also serves as a ready-made platform for servers with scripts that have been written already. This in turn saves time to developers and they in turn can focus on other important tasks in a program.  3. PHP is maintained by many developers. Therefore, when an error or bug occurs, it can be easily traced and fixed.  4. PHP is an open-source software. This makes it available for a large part of people who are new to programming.  5. Database can be easily integrated with PHP as there are built-in modules used for databases within PHP. | **Disadvantages**  1. PHP is an open-source software, therefore many people can see your program  2. PHP is a slow programming language and therefore cannot handle when there are many incoming requests. PHP also doesn’t have JIT compiler making it slower than other programming languages.  3. Since PHP is not highly modular, developing huge programming applications is not recommended in PHP as it will be demanding task just to maintain it.  4. Usage of features and tools that are present in PHP may cause poor performance on online applications.  5. PHP lacks debugging tools that assist in looking for errors within the program, making its quality poor when handling errors. |
| **Uses** 1. Database server interactions  2. Content Management System  3. Development of features in Flash  4. Web-based Development  5. Web Application and Database Connection- | **Limitation** 1. Executes slowly compared to other languages  2. Poses security risks with its open-source characteristic  3. Not suited for large web-based applications  4. Lacks debugging tools  5. Doesn’t allow changes to its main behavior in online applications |