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Why there are so Many Programming Languages?

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Abstract: This paper presents an overview on the existence of many programming languages. The exploration of privacy concerns in the 5G landscape necessitates an examination of the technological underpinnings that define this network's capabilities. From the increased reliance on edge computing to the proliferation of IoT devices, understanding the mechanics of 5G is crucial for comprehending the vulnerabilities that may compromise user privacy. Moreover, this paper aims to analyse the evolving regulatory landscape and policy frameworks surrounding data protection in the context of 5G, assessing their adequacy in safeguarding individual privacy rights.
Keywords: Programming languages.

I. INTRODUCTION

To run an electronic machine-like computer, we need programming languages. A programming language is set of instructions which tell computer to perform a specific
Operation for a specific task. The programming languages were invented back in 90's and most of them are still popular among the masses. First programming language was invented in 1950's and after that thousands of languages have been discovered. A programming language is a medium for humans to communicate with computers through computer codes.
Programming language have a major role in development of internet which has made the life of humans simpler. A programming language is an essential part of our daily-to-daily life and future advancements too. A language also helps a programmer to innovate new things for the demand and for the future betterment of the masses. A programming language enables to make machine perform the desired task. A programming language is the most essential part when it comes to technology.

A. Characteristics

1) A programming language must be easy to learn, read and recognize.
2) A programming language must be portable.
3) A programming language must be memory efficient and should use computer resources to an optimum level.
4) The programming language must have consistent syntax and semantics. The library consisting of functions must be well documented so that sufficient information is available for developing a program or an application.

II. KEY FEATURES AND CAPABILITIES

A. Different Tools for Different Jobs

Programming languages are tools, and we choose different tools for different jobs. A tractor trailer and a bicycle and a Tesla are all vehicles – they have wheels and steering and will get you from point A to point B – but obviously we use them for different things. Programming languages are similar. Ruby and JavaScript are great for building web sites; Java and C++ are often used for financial trading; Python and R are the tools of choice for analysing statistics. Languages often make trade-offs in terms of convenience, safety, and speed – much like vehicles. The trade-off is dictated by the job at hand. Low Latency: 5G aims to minimize latency, the delay between sending and receiving data. With latency as low as 1 millisecond, 5G is expected to support real-time applications such as augmented reality (AR), autonomous vehicles, and remote medical procedures.

B. Developers have Tastes

Beyond mere utility, developers choose tools based on personal tastes. A programming language is a tool for humans to *express ideas* to computers. While we developers have many things in common, there is natural variety in the way our minds work. Because we have many choices of good programming languages, we can select one that "works the way I think". Some developers like Ruby's flexibility, while others prefer Java's strictness. Where some languages feel like math, others look like prose.

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C. Peoples First

Beyond utility, and beyond taste, businesses run on people. Often, you will choose a programming language based on what you, or the people around you, know. Stack Overflow chose C# mostly because that's what our founders knew. In turn, it's what the founders' friends and colleagues knew. Which made recruiting easier, and allowed Stack to get to market more quickly. (Luckily, C# also happens to have excellent technical characteristics.) Technologies are supported by "ecosystems" – communities and organizations that provide the tools and assistance that every developer needs. A good ecosystem – Ruby has a great one, for example – can make the individual developer more successful.

III. REASON FOR DIFFERENCE IN LANGUAGE

Increased technological advancement

The simple reason is that technology is developing and getting advanced day by day. If we want to keep pace with the speed of the technology, we need to create and adopt more sophisticated tools that make and run software that caters to the change.

People and companies create new languages because the current languages lack the capabilities to address their specific problems. The existing languages may become obsolete, and others may take their role with time.

For instance,

In 1972, Bell Labs and Dennis Ritchie developed C to address their specific problems because the older language failed to do so. They wanted to run Unix operating system with it. Now, almost all software can run this language.

C lacked certain features and needed an upgrade, so Bjarne Stroustrup created C++ in 1985 to upgrade the C language features and make it accessible for all the fields.

Rasmus Lerdorf created PHP in 1994 to use for his specific project initially. But later on, he improved it and released it to the public. Today, developers use it for web development.

1995, Netscape created JavaScript fundamentally for front-end development. Developers can learn it quickly and develop websites, and design various website features easily with it. The scope of JavaScript expanded with time and is now used for mobile development, apps, and the back end.

Google developed its language — Go, in 2009, because other languages were difficult to read and worked slowly, and created inconvenience at specific tasks. Google also made it for better performance.

Different developer tasks require different programming languages

Developers work on different tasks in the process of developing websites, games, and other apps. The jobs require different languages and tools in various phases to get accomplished.

Like doctors, poets, and prose writers, developers work in different areas and use other tools. For example, below are some languages various developers use in their other jobs:

Web developers need HTML, PHP, CSS, and JavaScript to make web applications and websites.

Software developers use Java, C, and C++ to create business applications, desktop applications, and system software.

Game developers use C or C++ mainly to develop games.

For Android applications, mobile app developers use Kotlin and Java, and for iOS applications, they use Swift.

Data scientists use MATLAB, Python, and R for educational purposes and data analysis in scientific research.

There are also other languages you can use in these jobs. The list is not exhaustive.

IV. HOW TO CHOOSE A SUITABLE PROGRAMMING LANGUAGE:

Now that you have learned why there are so many programming languages, you will still need to know which programming language you should learn.

The answer is simple, you can learn all the languages later on, but instead of focusing on all the languages, you should focus on one that you know will serve your end goals. It would help if you had a clear idea of why and what of your project.

The next thing is to know what type of programming job you want to have in the future. If you're going to be a data scientist, you should focus on Python, HTML, CSS, and JavaScript.

If you want to develop games, opt for C and C++ because they will help you in game development.

If you want to work as a mobile application developer, you should focus on Kotlin or Java from Android or Swift for iOS applications.

I have been working on C++ and HTML. I am also learning other languages, and I am a beginner in this field. I enjoy learning and working in coding, and it provides me a thrill to be converting my ideas into computational programming.

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I want to be a competent game developer, so I focus on C++ more. I have a lot of fantastic ideas about developing mythical characters in games that are not yet developed.
But it doesn't mean that I am not touching other languages. I practice other languages too. But I believe once you master C++, others are easy to learn.

V. LIBRARIES

A library is a collection of pre-defined and pre compiled modules, data, documentations, message, classes.
While linking, libraries come in two varieties which are:

A. Statically Linked Libraries

Statically linked library are the ones which make use of copies of all the library functions made by linker to the executable files. Static library needs more space on main
memory and disk. It is performed at the last of compilation process by linker. In order to workout external references, the linker combines library files with the written program code. In static linking process, the whole code is hold in single executable module.

B. Dynamically Linked Libraries

In the process of dynamic linking the name of shared libraries are placed in final executable files. It allows different programs to use single copy of viable module. The load time is reduced
in the case where the memory already holds the shared library code. The working of code completely depends on its compatibility with the available library. Programs using common libraries are relatively slower than those that make use of statically linked libraries.

VI. CHANGE OF REQUIREMENT OF TIME :

As modern time has arrived, everything has been added with a taste of modernity. So as coding is changed now a days. Now a days it has become more convenient to use coding because of more flexibility and speed. If we study the statistics of older language like C and assembly language which were more complex to use. But now a day's easier languages like python have taken the race in its control because of its better readability key. Programming languages have made a huge evolution over time but still in order to add a new feature in programming language compiler has to be modified first. These changes include addition of keyword, change in syntax, introduction of functions in library. Making changes in old programming languages is lot more difficult and hectic than creating a new one.

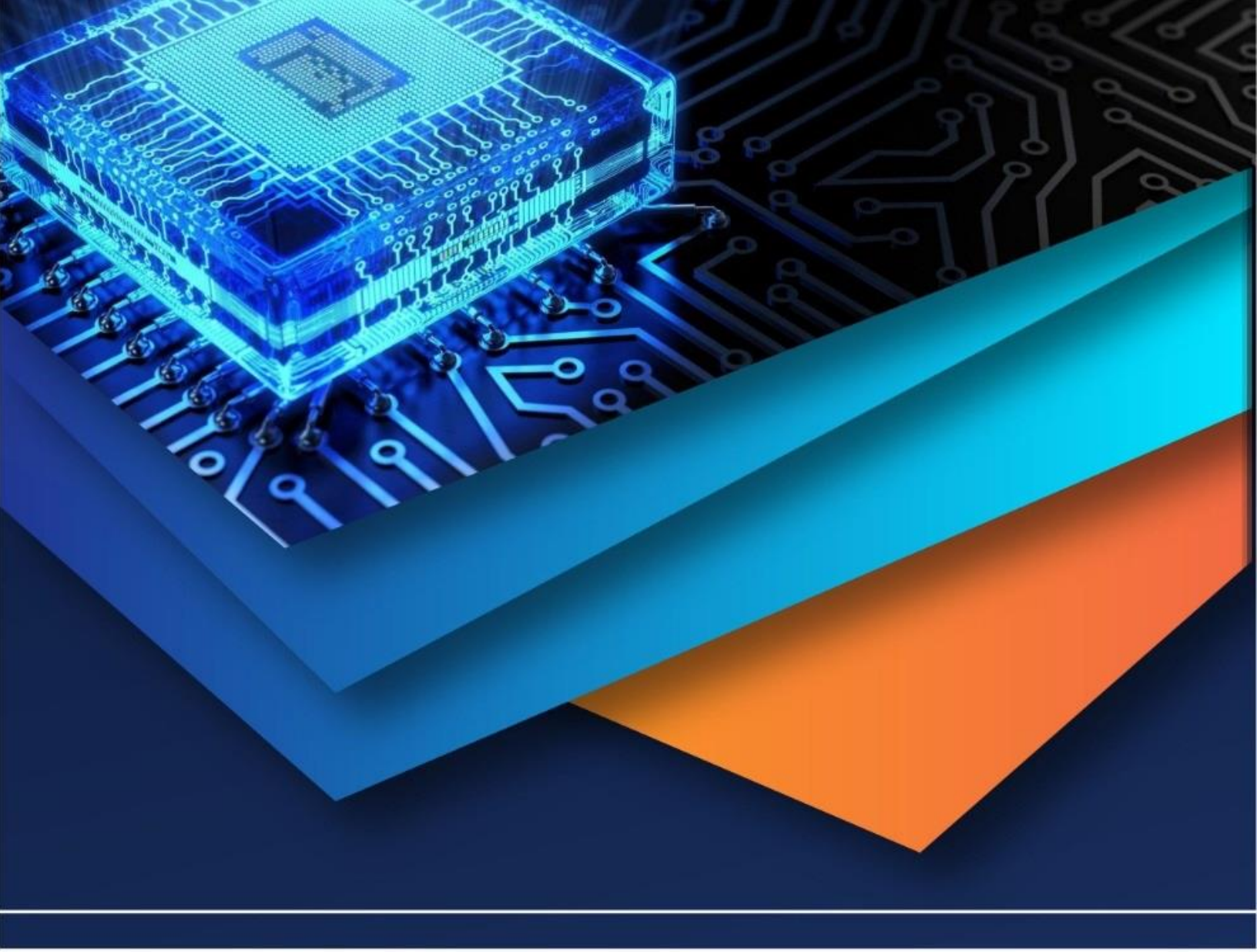
VII. CONCLUSION

We undertake multiple tasks in our day-to-day lives, and we use different tools for almost all the activities. Even in cooking, we use many tools to make bread. Tools run the world, and you should learn how, when, and why to use them.
Similarly, all the programming languages seem similar, yet they have different roles to play. And it would help if you use them for various functions to make one unit. Choose your future career path, know your job, choose a suitable language, and rock it.

REFERENCES

[1] Evolving Technology: As technology advances, new problems arise that existing languages might not handle efficiently. This leads to the creation of new languages suited for these specific tasks.
[2] Problem-Specific Design: Different programming languages are designed to solve different problems. Just like a toolbox has various tools, the programming world benefits from having languages suited for web development, data analysis, mobile app creation, and more.
[3] Developer Preferences: Programmers have varying preferences when it comes to how they interact with computers. Some languages are more concise and flexible, while others prioritize structure and clarity. This variety allows developers to choose a language that aligns with their way of thinking.

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