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# Overview of the current state of information technology and web development, JavaScript and its frameworks.

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**Анотація**
*У статті досліджується розвиток інформаційних технологій та веб розробки, а також мови програмування JavaScript.*
**Ключові слова:** IT, Інформаційні Технології, Веб-розробка, JavaScript.

**Abstract**
*The article explores the development of information technology and web development, as well as the JavaScript programming language.*
**Keywords:** IT, Information Technologies, Web-Development, JavaScript.

## Introduction

Information technology (IT) has been developing rapidly in recent years. IT covers almost all areas of our lives, including medicine, agronomy, and business. Web development is one of the most popular areas in IT, and it is growing every year. This report explores innovations in web development, with a special focus on the JavaScript language. It also provides a brief overview of the current state of IT and web development, particularly in Ukraine. Including trends and new technologies.

## Research results

The progress of Information Technology (IT) and web development has been significant in recent years. With the widespread use of smartphones and the internet, the demand for web development services has increased dramatically. As a result, web developers are focusing on creating websites and applications that are user-friendly, responsive, and interactive.

JavaScript (JS) is one of the most popular programming languages used in web development because it allows you to create interactive and dynamic web pages with features such as animations, form validation, pop-up menus, and more. It's a high-level language that's easy to learn and can be used for both front-end and back-end development. Some of the most popular JS frameworks include React, Angular, and Vue.js.

JavaScript differs from other programming languages in several ways. Here are some of them:
- JavaScript is prototype-based, meaning it uses objects as the primary way to represent data and behavior instead of classes.
- JavaScript is event-driven, which means it can execute code in different ways depending on the occurrence of certain events, such as user input, network requests, timers, etc.
- JavaScript is platform independent, meaning it can run in any browser that supports it, regardless of the operating system.
- JavaScript uses just-in-time compilation, which means that it compiles code at runtime, not in advance.
The advantages of using JavaScript in web development compared to other languages are as follows:
- JavaScript is easy to learn and has a simple syntax that resembles a natural language.
- JavaScript is flexible and can be used for a variety of purposes, such as front-end development, back-end development (with Node.js), game development, mobile development, etc[13].
- JavaScript is powerful and has many features that make modern web development possible, such as first-class functions, closures, promises, asynchronization/waiting, modules, classes, inheritance, etc.
- JavaScript is compatible with other web technologies such as HTML and CSS and can interact with them seamlessly.

JavaScript was first introduced in 1995 by Brendan H. Hatch while he was working at Netscape Communications. Initially, it was designed as a simple scripting language for web browsers, allowing developers to add interactive features to web pages. However, over time, JavaScript has evolved into a powerful and versatile language for developing front-end and back-end applications.

In the following, I would like to show how often this language is updated. So here's a list of major updates and what they include:

ECMAScript 3 (ES3) was released in 1999 and was the first widely adopted version of JavaScript. It introduced new features such as regular expressions, try/catch exception handling, and JSON support.

ECMAScript 4 (ES4) was developed in the mid-2000s, but was ultimately abandoned due to disagreements within the standards committee.

ECMAScript 5 (ES5) was released in 2009 and introduced new features such as strict mode, JSON support, and the Array.forEach() method.

ECMAScript 6 (ES6), also known as ECMAScript 2015, was released in 2015 and made significant changes and improvements to the language. New syntax for declaring variables such as let and const was added, and arrow functions, classes, modules, and promises were introduced.

ECMAScript 7 (ES7), also known as ECMAScript 2016, was released in 2016 and introduced new features such as Array.prototype.includes() and the exponential operator (**).

ECMAScript 8 (ES8), also known as ECMAScript 2017, was released in 2017 and introduced new features such as async/await, Object.values() and Object.entries().

ECMAScript 9 (ES9), also known as ECMAScript 2018, was released in 2018 and introduced new features such as rest/spread properties for objects, Promise.prototype.finally(), and RegExp improvements.

ECMAScript 10 (ES10), also known as ECMAScript 2019, was released in 2019 and introduced new features such as Array.prototype.flat(), Array.prototype.flatMap(), and optional catch binding.

ECMAScript 11 (ES11), also known as ECMAScript 2020, was released in 2020 and introduced new features such as string.matchAll(), globalThis, and BigInt.

ECMAScript 12 (ES12), also known as ECMAScript 2021, was released in 2021 and introduced new features such as Boolean assignment operators, String.prototype.replaceAll(), and WeakRefs.

JavaScript has come a long way since its first release, and its ongoing development continues to make it a powerful and flexible language for web development. The latest update, ES 2022, was introduced in June 2022 and is still being finalized. Although there are plans to release a newer ES 2023.

Despite the constant updates of JS, its popularity, and multitasking, it has a huge number of competitors in the field of programming languages. However, we will not know soon whether it will be able to be displaced from the palm of the popular languages.

The situation in the global IT labor market in 2023 is characterized by uncertainty, change, and opportunity. According to various sources, the main factors shaping the IT labor market include the following:

- Wider adoption of new and advanced technologies, such as artificial intelligence, cloud computing, blockchain, etc., which are driving business transformation and innovation across industries and sectors.

- Increased adoption of environmental, social and governance (ESG) standards in organizations, creating demand for the role of sustainability, cybersecurity and social impact.

- Macroeconomic headwinds, such as slow economic growth, high inflation, supply shortages, and geopolitical tensions, which create challenges and risks for IT businesses and employees.

- Investments that promote a green business transition, which creates opportunities for IT workers with skills and knowledge related to renewable energy, carbon capture, circular economy, etc.

- Demographic dividends in developing and transition countries, which create a large pool of young and tech-savvy workers and consumers.

Despite the economic instability and upheaval caused by these factors, the global IT labor market is expected to grow in 2023, with job creation outpacing displacement. However, growth will be unevenly distributed across regions, sectors, and skill levels. Here are some of the trends that are likely to affect the global IT labor market in 2023:

- The IT labor market will remain tight compared to pre-pandemic levels, which means that in most regions there will be more open positions than active applicants. This will give IT workers more bargaining power and flexibility in choosing employers and working conditions.

- The IT labor market will become more localized as supply chains become shorter and more sustainable, and businesses try to meet local consumer preferences and regulations. This will create opportunities for IT workers who can adapt to different cultural and regulatory contexts.

- The IT labor market will become more diverse and inclusive as companies seek to attract and retain talented workers of diverse backgrounds, genders, and abilities. This will create opportunities for IT workers to foster a culture of collaboration and innovation across teams.

- The IT labor market will require upskilling and retraining as technology evolves rapidly and new skills emerge. This will create opportunities for IT workers who can continuously learn and utilize online platforms and resources.

Speaking about the IT labor market in Ukraine, the following can be said:

Ukraine has a large pool of talented IT professionals, and the cost of web development services is relatively low compared to other countries.

According to DOU, a Ukrainian job board for IT professionals, the number of IT professionals in Ukraine has increased by more than 20% in recent years.

Due to the global crisis and the unstable situation in the IT market, a large number of highly qualified IT professionals have appeared. However, according to the studies reviewed and the resources used in writing this thesis, we can predict an increase in demand for IT specialists in 2023 and beyond. Also, it is worth noting that companies are ready to invest in Ukraine, both now and after the end of Russian aggression.

As a result, Ukraine has become a popular destination for outsourcing web development services and will continue to grow in the future.

## Conclusion

The research revealed that IT in Ukraine is developing rapidly. Undoubtedly, there are some nuances in this, but this is not the topic of my research. It is clear that with the stabilization of the situation in the world, IT will return to its previous pace of development, although it will take time. We also realized that JavaScript is one of the most popular and rapidly developing programming languages. Despite the oversaturation of the labor market with programmers, we can say that this is a temporary phenomenon.

The potential of IT has not yet been exhausted, so it is a promising industry that can safely name the 21st century the "Century of Digital Development".

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