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Markup Languages

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We all use the Internet every day, looking for the information we need. We do this for different purposes: work, entertainment, education, etc. And in the end we find the information on different websites. But have you ever wondered how this information is displayed on page? Have you not? Then in this article I will try to explain how it is possible.

Any information (text, pictures, videos, etc.) on websites is displayed using a special kind of computer languages - markup languages.

First, let's figure out what a markup language is. In simple terms, it is a set of symbols, instructions (tags) that allows you to structure the text on a website and determine how various elements of the structure interact with each other. In other words, a markup language helps to determine where a title, subtitle, body, author words, etc. should be. There are many markup languages. The most famous of them are HTML, XML, XHTML and CSS [1].

Many people call markup languages programming languages because they think they are the same thing. But this is not the case. Markup languages are a collection of tags that helps the browser to understand how text is placed on a website. With their help we specify different parameters, for example indents, font, text size, color, etc. Programming languages allow a programmer to communicate with a computer in a way. With the help of built-in programming languages functions the programmer gives the central

processor commands that it must perform (mathematical or logical operations).

In modern times markup languages have become very advanced. They allow website developers to do whatever they want with the text, customize it in great detail. But where did it all start? We'll find out now.

Initially, the concept of hypertext was mentioned in 1945 in the article “As We May Think” by Dr. Vannevar Bush. In that article he put forward a concept for a machine called "Memex". It was a knowledge base designed to store various types of scientific materials. Bush wanted to assign a specific index to all of the cells of this vault. With such index the cells would be accessed with a few keystrokes. It was also assumed that it was possible to add your own scientific materials. But this machine was never invented [2].

The first functioning hypertext application was the HES (Hypertext Editing System). It was developed by Ted Nelson and Andries van Dam in 1967 in collaboration with students at Brown University. This system worked for the IBM / 360 mainframe. The development team was funded by IBM. The essence of this system was that it converted a large amount of information into branched text and links. The "back" button was used for the first time in HES. As a result, the system was sold to NASA and was later used in the preparation of documentation for the Apollo project.

A year after finishing work on HES, Andries van Dam created FRESS (File Retrieval and Editing System). It was the first commercial hypertext system. The innovation was that with the help of FRESS several people could work on a set of documents at the same time. It was also the first system to have an «undo» function that allows you to go back one step [3].

But despite all previously mentioned discoveries, IBM employee Charles Goldfarb is considered to be the real «father» of markup languages. In 1969 he worked on a system

for law firms that was designed for routine document management. While working on this project he came up with an idea of creating a complete markup language. In the same year Goldfarb led the development of this language. 4 years later in 1973 a language called GML (Generalized Markup Language) was first introduced. It did not depend on computer model or operating system. The text could be easily edited or adjusted to another device as the text was tagged. With those tags' help it was easy to determine where the title, subtitle, author's words, etc. were.

In 1974 Charles Goldfarb continued the development of markup languages. This led to creation of SGML (Standard Generalized Markup Language). In 1986 ISO organization awarded the language with a status of an international standard. This language defines the allowed set of tags, a general structure of the document. It has been widely used in printing and publishing. But due to its complexity SGML is commonly used to create custom tags or even other markup languages.

In 1993 the first version of HTML (Hyper Text Markup Language) markup language was released (version HTML 1.2). It was based on SGML. It was developed by Briton Timothy John Berners-Lee. The main goal of creating this language was to simplify the use of SGML. Berners-Lee wanted to make a markup language that any developer could quickly learn to work with. HTML is still widely used today. Its latest version (HTML 5.3) was released on December 24, 2018. Many developers use this language to design sites.

Since 1996 the development of the eXtensible Markup Language (XML) has been underway. Development was led by the W3C (World Wide Web Consortium). It was based on SGML. XML is a meta markup language. The main purpose of its creation is for it to be simpler than SGML. At the same time this language was designed to have its focus on working on documents on the Internet. This language allows you to

describe user interface for mobile devices. XML is very useful for storing and transmitting data over the network. It is possible due to the fact that an xml file is easily readable by both humans and computers. Therefore, there will be no compatibility issues when transferring the file to another computer.

After 4 years, the W3C organization launched the development of the XHTML (eXtensible Hypertext Markup Language) markup language, which combined two languages in one: XML and HTML. It was created due to the fact that after the release of XML users needed elements of both of the two languages [4].

I hope I was able to tell you about markup languages and their development history in simple words. I want to say that the development of markup languages is not over. It continues to grow actively along with the technology development. I can't even begin to imagine what awaits us in a few decades.

References:

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