
LEARN ABOUT WEB PROGRAMMING
Buku Tentang Pembelajaran Web Programming
Padepokan SEAMEO
BY : MUHAMMAD FATHAN AGRILYAN

FOREWORD

The author expresses his gratitude to the presence of God Almighty who has bestowed His blessings and mercy. so that the author can complete this "Learn About Web Programming" e-book properly and without any hindrance.

This e-book is the first e-book that I made which is equipped with pictures to make it easier to learn and practice. Where in it are grouped in the Technician category. In detail, this book will discuss related to the introduction of programming languages, history, and learning to make web programming.

The author feels that there are still many shortcomings in the preparation of this e-book. Therefore, readers can send all criticism and suggestions to the address "fathannabigh2@gmail.com". Finally, the writer would like to thank all people who cannot be mentioned one by one

The author hopes that this e-book will be useful for all those who read it. The author does not forget to thank all parties for their support so that this e-book is realized.

WHAT IS WEB PROGRAMMING

-Understanding Web Programming

Web programming or web programming is a term that is closely related to websites and the internet. Why so? Because web programming is one of the processes of making websites for internet purposes which are usually referred to as the WWW or the world wide web. The term WWW is widely known because after all it is the most popular internet service today. Sites/websites can be categorized into two, namely static web and dynamic web.

1. Static web

Static web is a web that contains/displays information that is static (fixed). It is called static because users cannot interact with the web. In short, to find out whether a web is static or dynamic can be seen from its appearance. other web pages and contains fixed information, the web is called a static web. On a static web, users can only view the contents of the document on the web page and when clicked will move to another web page. User interaction is limited to viewing the information displayed. but cannot process the information generated. static web is usually HTML written in a text editor and saved in .html or .htm form.

2. Dynamic Web

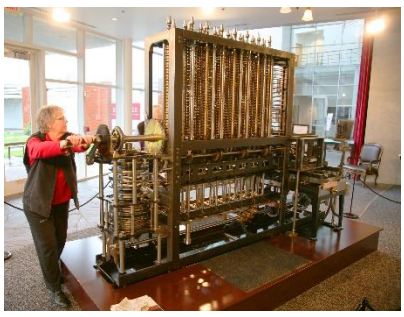
Dynamic web is a web that displays information and can interact with users. Dynamic web allows users to interact using forms so that they can process the information displayed. Dynamic web is interactive, not rigid, and looks more beautiful.

HISTORY OF PROGRAMMING DEVELOPMENT

The beginning of the creation of programming languages goes hand in hand with the history of machines and computers. The beginning of the programming language starts from Antikythera which comes from ancient Greece. Antikythera is a calculator that uses several levers and configurations to run it.

In the 1200s Ismail Al-Jazari, a scientist during the heyday of Islam built a machine called Automata, a peacock robot that moves using hydropower (water flow).

The forerunner of the first programming language appeared in 1822, a machine called the Difference Engine was created by Charles Babbage, a student at the University of Cambridge, England. But Babbage's machine could only issue one type of output. It was only 10 years later that Charles Babbage developed the data processing machine until it reached the second version in 1849.



Babbage's struggle was continued by his son, Henry Prevost. Prevost makes copies of the machine's algorithm calculations and sends them to various institutions around the world. With the spread of the Prevost engine algorithm, developments are increasingly happening. In 1854, George Boole

discovered a system of logic called Boolean logic. This logic states the relationship relationship is greater, less, equal to and not equal to.

The development of this logic continued to grow from year to year until a German scientist named Konrad Zuse made a binary calculator machine with the name Z-1 in 1935. Then in 1939, Zuse was called to serve in the military by making Z-2 and continued with Z -3 and Z-4.

While developing the Z-4, Zuse realized that machine language programming was too complicated. This machine language is classified as a low-level language, because it is only a collection of codes 0 and 1, or yes and no. After doing research for a year, in 1945 the world's first high-level programming language was created, namely Plankalkul (Plan Calculus). With Plankalkul proven to be able to create the world's first computer chess engine.

Short Code was coined in 1949 as the first high-level programming language to develop an electronic computer created by John Mauchly. However, the program must be translated into machine language every time it is run, this makes the program's performance in processing the code take quite a long time.

Alick Glennie of the University of Manchester developed the Autocode programming language in the early 1950s. As a programming language, this language uses a compiler which automatically converts the language into machine language. The first programming language was used in 1952 for the Mark 1 computer at the University of Manchester.

John W. Backus made a proposal to his superiors at IBM (International Business Machines Corporation) to develop a more practical alternative language than assembly language to program the IBM 704 mainframe computer with the name Formula Translation or what we know as FORTRAN. The FORTRAN compiler was completed successfully in April 1957.

Next is FLOW-MATIC which was created by Grace Hopper. FLOW-MATIC was officially published in 1959 and had a major influence on the creation of the COBOL (Common Business Oriented Language) programming language, a programming language which in 1959 was widely used on mainframes and mini computers.

Programming language development accelerated with the introduction of the C language. Dennis Ritchie and Brian Kernighan created C initially for the DEC PDP-11 machine. With the existence of the C language, many new languages have emerged such as C++, Java, C#, and many more. Programming languages will continue to evolve to become easier to use along with the times.

STAGES OF THE PROGRAMMING LANGUAGE AND THEIR FUNCTIONS

1. **HTML**

HTML or Hypertext Markup Language is a markup language or scripting language. HTML is a derivative or development of SGML (Standard Generalized Markup Language). HTML itself was developed by Tim Berners-Lee while still working at CERN which was first popularized by the Mosaic browser developed

by NCSA. During the early 1990s, HTML continued to progress at a very fast pace. But the official development of HTML was only issued in 1995 by the Internet Engineering Task Force (IETF).

The developed HTML2 is a derivative of HTML+ in 1993. HTML3, which was also released in 1995, has much better capabilities than the previous version. Is the result of efforts developed by the World Wide Web Consortium's (W3C) and then produced HTML3.2 in 1996. And finally HTML4 and HTML4.1 were published at the end of 1997 and 1998. HTML is a plain text that is designed not to depend on any operating system. Even though HTML is not a programming language but a markup language, HTML is the basic thing that must be learned.

2. CSS

CSS or Cascading Style Sheets is a website display language that is useful for managing website elements such as fonts, background colors, and layouts. In the world of web development, CSS is used together with HTML or XML which are markup languages. In fact, historically, CSS was created to make coding using HTML more practical so that the work of developers is easier. Initially in 1996, Hakon Wium Lie, who was working at CERN at that time, created this style language. So, CSS is not a programming language.

Prior to CSS, changes to display formats such as color and font type had to be made repeatedly. That means web developers must always write element tags in all HTML pages that are created. As we know, CSS is a

complement to HTML, according to the explanation regarding HTML which is the basis for styling, CSS is what enhances the appearance or styling of the website. You must learn CSS, because CSS is one that determines the appearance of the website later.

3. **JavaScript**

Javascript is a language that functions to make websites more interactive or functional. It can be said that HTML, CSS, and Javascript have a relationship, HTML is a frame while CSS is an interface and is supported by JavaScript as functionality. JavaScript was first introduced by Netscape in 1995.

At first this language was called "Livescript" and served as a simple language for the Netscape Navigator 2 browser. With Sun (the developer of the Java programming language) at that time, Netscape gave the name "Javascript" to the language on December 4, 1995.

Javascript is a simple programming language because this language cannot be used to create applications or applets. With Javascript we can easily create interactive web pages. Java script programs are written in HTML files. In other words, you don't need to write Javascript programs in separate files (although you can do it too). This language is a programming language to provide additional capabilities to the HTML language. By allowing Execution of commands on the client side, which means the browser side not the web server side.

Javascript depends on the browser calling the web page containing the script. JavaScript does not require a special compiler or translator to run it. In

Javascript, it is impossible to hide the script code that we write. The code is written directly in HTML documents and is very easy to see. JavaScript is a "case" language. -sensitive". That is, it differentiates between variable and function names. Initially Javascript was often used by frontend developers, but in its current development it is often used by backend developers.

4. PHP

Hypertext Preprocessor or PHP is the most popular language. According to w3techs.com, PHP is a backend programming language that is used by approximately 82.3% of websites that use backend technology. PHP is also a programming language that runs on server-side scripting and is open source. PHP as a server side scripting language means a web programming language where the source code is only on the web server so it will not appear on the client (browser) side.

Some webservers that are often used together with PHP, for example LiteSpeed, NGINX, and Apache. PHP is very suitable for building and developing websites because it is open-source which is free to be developed and modified by its users.

5. **C++**

C ++ is a very efficient and flexible language. C ++ itself is widely used by desktop application developers, especially for performance-intensive tasks. Currently C ++ is a teaching material or included in the curriculum at school, but for those of you at school there is no material about programming you can learn basic coding on your own.

6. **Python**

Python is a multipurpose interpretive programming language with a design philosophy that focuses on code readability. Python itself is a programming language that can do many things on all modern computer operating systems. Python is a scripting language or the term programming language that needs to be translated first. This means that python will not be converted to computer readable code before the program is executed. So it will only be translated when the program is run.

7. **Java**

Java is a programming language that is commonly used to develop the back-end part of software, Android applications, and websites. Java is also known for having the motto "Write Once, Run Anywhere". This means that Java can run on various platforms without the need to rearrange it to suit the platform. For example, running on Android, Linux, Windows, and more.

This can happen because Java has a syntax system or high-level programming code. Where when executed, the syntax will be compiled with the Java Virtual Machine (JVM) into a platform numeric code (bytescode). So that Java applications can run on various devices.

8. **Ruby**

Ruby is developed in open source so you can expand on it. The main goal of creating the Ruby programming language is to unify all the advantages of other popular programming languages. Because it brings together the advantages of other programming languages, Ruby is one of the most popular programming languages. This programming language is designed to be friendly and easy to use by developers.

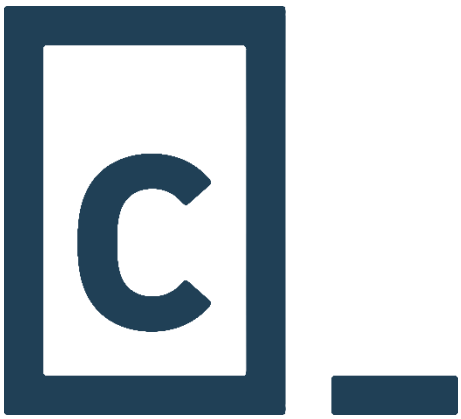
LEARN WEB PROGRAMMING

There are ways to learn the web automatically or at school, one of which is:

-Site for Learning Web Programming

For those of you who want to learn web programming, don't worry. Sites are available for learning web programming for beginners which are of course very easy to use, namely:

1. **CodeCademy**



Codecademy is a very popular programming learning site. Those of you who want to learn coding from scratch to expert can learn on that site. The site

provides very complete learning materials ranging from beginners to more expert levels.

You can start a learning course with Creating a Simple Website or learn HTML & CSS, Python, JavaScript, Java, etc. programming languages. You can also play quizzes which aim to measure your ability to understand the material being studied.

If you have trouble learning, don't worry, because Codecademy also provides discussion forums, glossaries about programming, and there are various articles that can help you during the learning process.

2. **W3school**

W3school is an easy coding learning site, because this site has an online compiler feature. So it is useful to display directly the results of the programming language written. This site is suitable for those of you who want to learn and practice immediately.

The most interesting thing is that this site provides sample program code in every part of the programming language that you learn. So you can immediately try to edit the program code and execute it with an online compiler to find out the results.

3. **FreeCodeCamp**

FreeCodeCamp is a site for the open-source community that provides projects, certificates, and connections between coders. Free Code Camp is a site that is currently still developing. This site provides learning that has been separated between FrontEnd, Data Visualization, BackEnd, and several other sections.

Interestingly there is a guide on Coding Interview Preparation which aims for you to learn preparation before conducting a coding interview. And you can get a certificate as described above.

Don't be afraid to get confused if there are problems because this site provides forums like stack overflow, so you can discuss, ask questions and help in the forum. And don't worry, this website is free, so you are free to learn coding here.

4. **CodeWars**

As the name implies, CodeWars is a unique programming learning website. On this site you will be guided through several levels. The higher the level you reach, the more complex coding challenges you will face.

This site is suitable for those of you who want to learn programming languages along with challenges. If you have successfully learned all the levels you get, you can create your own challenge for other coders to complete it.

5. **HackerRank**

If you already understand a little about programming, you can test your skills on this website. There are more than millions of programmers who use hackerrank.com to hone their development skills.

The philosophy used by this website is “Learn By Doing” so you can learn coding and practice while taking other courses. You can also get points by solving problems/challenges, which later these points are accumulated on the leaderboard.

6. **edX**

edX is a programming learning website which is arguably the most famous online learning place in the world. If you know this site provides various kinds of learning with classes from well-known universities such as MIT and Harvard. Classes provided by edX are free, but to get a certified certificate you have to pay. Here you can learn coding at your own pace.

7. **Coursera**

Coursera is a popular and well-known online course website. This website provides many courses and tutorials ranging from coding, business, art, mathematics, and many other types. You can learn coding from zero to expert on this website.

There are courses on coursera that are paid and some are free. No need to worry because there are lots of free courses that you can try on the website. If you are later interested in pursuing a topic of study in greater depth, Coursera offers specializations that will make you more proficient in your chosen field of study.

9. CodeSaya

For those of you who are looking for a website to learn Indonesian coding, this website is right for you. CodeSaya is a free programming learning site created by Indonesian coders. According to information from the website, currently there are more than 81,000 members.

CodeSaya is a place for you to learn and develop skills about technology, especially in programming Python, PHP, JavaScript, and other programming languages. You can also take advantage of the system provided to learn how to develop websites.

-Tips for Learning Web Programming

You have to prepare yourself to study harder following some tips or directions so that you are good at web programming, here are the tips :

1. Find motivation

When you are going to learn something, you must have a reason why you want to learn it, right? Try to find out what motivates you first.

2. Select the programming language you want to learn

Learn an easy programming language first. For starters, you can try to learn HTML, CSS, Javascript, and then other more complex programming languages.

3. Learn data structures and algorithms

Even though programming varies, you can still learn everything. There are concepts that can become the backbone of all programming languages such as Variables, Control structures, Data structures, Syntax, and Tools.

4. Do not give up quickly

Even though you could say the programming language is quite complicated, don't give up quickly. Remember point number 1, which is to find motivation.

-Benefits of Learning Web Programming

Not only to improve skills in programming, but there are several other things that can be a benefit of learning web programming, including:

1. Able to run application and software business

By learning web programming, you can start your career as a web programmer at a startup or company.

2. Can build their own website

When running an application and software business, there are two options, namely becoming the founder of a startup or a freelancer.

3. Support career

With all the benefits that you get above, of course learning web programming will help to support your career

Profession and Entrepreneurship (Jobprofile and Technoprener)

"Programmer" is a type of profession or job that aims to create a system using a programming language. Someone who has the skills to write program code (syntax) and design systems, can also be called a programmer. Code or program language in question such as Java, Python, Javascript, PHP, etc. The systems that you use every day, such as the web, Android applications, operating systems (Windows, Linux, iOS) etc., are all created using a programming language written by programmers.

A. Career Description

Technopreneur is a term for someone who utilizes the latest technological developments to be optimized as a basis for developing business development. Simply put, a technopreneur is someone who manages a business using a technology base. The emergence of technopreneurs cannot be separated from the shift in the economic landscape from resource-based to knowledge-based.

In order for entrepreneurs to remain competitive in the business world, they must upgrade their business. No wonder innovation is an important thing that must always be considered. One type of technopreneur is high-tech business, namely businesses that use technological innovation. This technology-based innovation is expected to add value to the entire production process. Thus comfort, convenience, efficiency, productivity, speed can also be realized.

To become a Technopreneur requires Competence which consists of knowledge, skills, and attitude. A Technopreneur must have an attitude of never giving up, optimistic, diligent, and highly disciplined. Capability in the field of technology and business can make innovations that are created widely developed and useful for many people.

In the era of the industrial revolution as it is now, it is hoped that the existence of technopreneurs will contribute to opening new jobs. Apart from that, technopreneurship can also be a strategy for managing Indonesia's very high demographic bonus.

Technopreneur roles and responsibilities namely,

- carry out research and development of science and technology,

-prioritize ease of use of technology,

- processing technology by prioritizing efficiency and effectiveness so as to produce quality products,

-innovate technology to make it more sophisticated,

-Modern and in accordance with market demands.

B. Job-profile

Along with the development of technology, employment opportunities are also growing. There are new professions that have not been popular in the past few years, or even do not exist yet. The Android Developer profession, for example, only existed after Android-based smartphones started to boom.

Below are several professions in the field of technology that will be needed today:

1. **Database Administrators**

The database administrator has control over the company's database which can only be accessed by authorized parties. The database admin works with the system manager to adjust database capacity to company needs. In the field, database administrators are divided into two categories namely, as System Database Administrators,

In general, the scope of a database administrator system covers technical aspects of database management, including updating software and debugging code. Roughly speaking, the system database administrator is in charge of operpatching and management. Not infrequently, they are also trusted to recommend software and hardware that can increase work efficiency. System DBA also has one task that is no less important, namely designing a security system to protect the database.

Application Database Administrator, application database administrator is responsible for database usage activities. The task can be considered quite complex, from designing data architectures, data models, to supporting database usage for certain applications. An understanding of database security design and implementation is also required for this position. In addition to the specific responsibilities above, both system and application DBA have the same daily tasks.

The database administrator is responsible for protecting data with a structured system, restoring lost data, creating new user permissions, merging old databases, testing modifications, and monitoring database systems to ensure their effectiveness. Career paths and job prospects DBA (Database Administrator) can progress up to management positions, especially if it's a national database.

Starting from installation, having taken a Master's education, almost all industries need database administrators, there are many job vacancies as DBA on various internet sites, opportunities come from various companies in

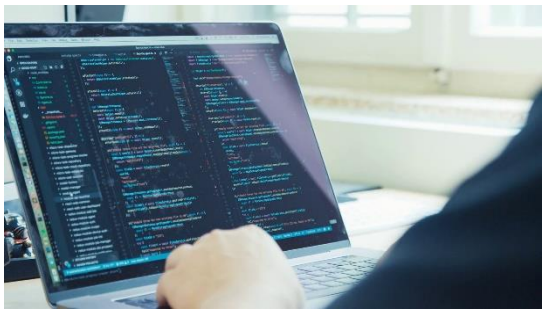
Indonesia. The skills that a Database Administrator must have are that, in addition to meeting educational qualifications, a DBA is also required to have knowledge of database programming languages.

You also need to equip yourself with a series of soft skills such as being oriented to a logical and methodical mindset, being able to pay attention to details, having effective organizational skills and being able to solve problems, being able to analyze data accurately, and being able to work with a team.

2. **Game Developers**

Becoming a game developer means that later you will make basic designs, design levels, including applying certain systems to your game. Human computer interaction and computer graphics are just two of the many provisions you get from Computer Engineering to create and develop games. You have to master various operating systems (OS), especially iOS and Android. Equally important, you must continue to be updated with the rapid developments in the game world. That way, you can create and design games according to market trends.

3. **Programmers**

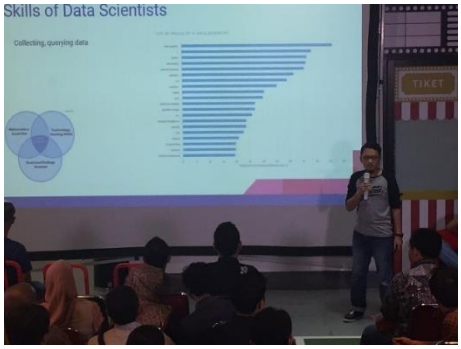


As a Computer Engineering alumnus, you must know how to create, maintain, and develop various computer programs, websites, and applications. Both as an application developer and a system programmer, this special

expertise possessed by Computer Engineering students is needed by various companies and government agencies.

Apart from that, the IT industry, banking, and even the media also need the skills of Computer Engineering alumni. Along with today's technological advances, almost all companies or organizations use computer programs, both in the form of applications and websites.

8. Data scientists



Of course, the work of a data scientist is not far from a matter of data. Every day, their job is to collect and analyze data. After analyzing, the data scientist communicates the findings and conclusions, these conclusions can be used for making strategic decisions for a company or a government policy.

9. Web Developers

A web developer is in charge of creating and managing a site. What's more, nowadays almost all agencies and companies have websites, from government departments, consumer goods companies, to barbershops who have their own websites. In addition to providing information and forming the company's image, the company's website also functions as a means of communication. Therefore, web developer is a much needed profession.