

Hello!

Welcome to Computer Science for WOMEN!



Why do we have fewer women in computer science?

The future is being written in lines of code. And the female audience, despite being a user of apps, social networks and digital devices, does not participate in the production of the technology. We need to talk about women's challenges in the area and what to do to increase their participation.

Dolls X Computers

Think fast: what was your favorite toy? It is likely that if you are a woman, the answer is doll or cliques. If you are a man, you possibly answered the question by remembering video games or computers. This division, considered natural by many, reflects historically constructed gender stereotypes, which delegate tasks and interests related to the sphere of care and the private sphere to girls from an early age. "I couldn't play with my cousins and brothers. I was presented with dolls and pink objects, which I detested", says systems analyst Larissa Pereira Gambale, 22 years old. Product designer Lucia Salamanca, 27 years old, got tired of hearing: "you can't be the same to the boys", "look, he scratched his knee ... It looks like a kid!"; "Try to be more feminine ...".

Despite being overthrown by science, the idea that biological reasons determine the different paths of boys and girls still persists. According to this perception, women would have a "natural" ability for activities that require attention and affection, but not rationality, an attribute considered masculine. There are subtle differences in the size and composition of the male and female brains, it is true. The relationship between them and their behavior, however, remains unknown. It is worth remembering that brain structure and function change in response to experience, so that any differences can be related to differences in your socialization and education. "The way our society thinks and defines what it means to be a woman and what it means to be a man is directly related to the development of its skills and competences", says sociologist Bárbara Castro, author of a doctoral research that investigated the female presence on thee.

Such division affects the ways of being of men and women, influencing future choices, including professional ones. It is not by chance that it is unusual to see girls who identify early on with technological and exact science careers. In her study, Bárbara found that all of her interviewees found a justification of interest in the area supported by inspiration from someone close to them who had chosen this career and showed them how it could be interesting. Men, on the other hand, when asked how and when they became interested in IT, replied that they always liked technology and machines. "It is a path that presents itself as natural. For them, something to be explored", says Bárbara.

"My family even tried to focus my activities on more feminine things, but they always supported me to explore whatever I wanted. I would like to take the dolls apart to, for example, remove the motor and make a fan. "

Tatiane F., 36 years According to the researcher, this construction spans generations. English feminists, for example, have already demonstrated how a relationship between technology and masculinity has historically been established. "When, in the industrial revolution, in the 19th century, productive work was separated from the space of the house and men started to act more massively in industrial work, they were the ones who manipulated the machines, developed them and perfected them", he continues she.

The association between technology and masculinity continues to distance IT girls. They suffer prejudice from friends, colleagues and society when making choices linked to the male universe. "They are often accused of being homosexuals, which should not be a problem in itself", concludes Bárbara. "My father forbade me to use any male toys. I once got a top and he threw it away. I thought I could become 'dyke' !. When he decided to go to IT college, luckily he didn't know what it was", says Tuany Fortunato, 26 years old. And what about the stereotype of the intelligent programmer, but without a lot of social skills, that stick to writing code nights? "It is difficult to identify with something that we are not", says Silvia Amelia Bim, a professor at the Federal Technological University of Paraná (UTFPR) and one of the coordinators of Emílias - Armação em Bits, a project that aims to encourage technology as a career option for girls , in addition to supporting those already in higher education.

The masculinization process of information technology, more precisely, the figure of the anti-social geek, developed in the 1960s, from the institution of formal programs of the discipline, magazines and professional societies and certification programs. In other words, it has little to do with intellectual abilities of biological origin, but with corporatism. Who tells this story is Nathan Ensmenger, a professor at Indiana University, in the United States, in the book The Computer Boys Take Over: Computers, Programmers, and the Politics of Technical Experts.

At the same time, new hiring tools - including seemingly objective ones - have strengthened the male presence in the area. The tests favored mathematical problems, the resolution of which was available from university associations and organizations of programmers. Another type of assessment, the personality profile, leaned even more towards male candidates. Based on a series of questions, drawn up by recruiters, these tests sought to identify the best, having as reference the personality traits of white collar professionals (office workers, lawyers, accountants, for example), with one distinction: the employee ideal had "disinterest in people" and disliked "activities involving personal interaction".

And that was how information technology, the subject of a report by Cosmopolitan magazine, which, in 1967, encouraged women to join the area, became male territory.

Newspaper entitled Computer boys with April 1967 cosmopolitan The idea that many of the computer professions were historically common for girls and were in fact 'female' occupations seems extraordinary, if not unbelievable. "And yet, a historical understanding of how the computing professions acquired their gender identity, how they were" made male "is central to any attempt to tackle the current imbalance," writes Ensmenger.

School and naturalisation of stereotypes

"I don't have a knack for math" and other myths that keep girls away

School girl running from numbers Nor does our model of education help to disconnect preconceived notions that gain space even in childhood, with a dichotomy between games and ways of being a boy and a girl. At school, this selection continues to influence their future choices. A study published in 2016 by the American Educational Research Association shows that the disparity in performance is beginning to emerge in early childhood education, reflecting cultural stereotypes.

"Are you sure you want to study this college? We don't know if you can do it. " -parents of Lucia S., 27 years old

The researchers follow two distinct groups: one of 5,000 children, who entered kindergarten in 1998, and more than 7,500 members, in 2010. They observed that the differences in mathematical skills did not change much in the two groups, which entered the pre- school separated by 12 years. Initially, both had equal mathematical skills. But a disparity logo began to be identified, and as of the middle of the year, there were more boys than girls in the group of students with the best performance. Arriving in the third grade, with difference of difference, especially among those who had better school performance.

The study also showed that the teachers considered the students' performance to be inferior to the students, even if they had grades identical to theirs. Lower expectations for girls can influence their future abilities in several ways. Fear and anxiety can be an impediment to learning. In the early years of elementary school, where the majority of teachers are female, anxiety is caused by a relationship with the mathematical consequences for girls' performance, influencing how little girls' beliefs about who is good in the discipline. "Many choose not to pursue careers in science, technology and engineering because they lack confidence in their ability to excel in mathematics, despite having the ability and skills to exhibit it," says one of the study authors, Sian Beilock, a professor in the department of psychology at the University of Chicago, in an interview with the Program.

Difficulties in mathematics

Another work, carried out by researchers from the universities of New York, Princeton and Illinois, also in the United States, investigated the behavior of children of 5, 6 and 7 years in relation to their intellectual abilities. At the age of 5, they were invited to hear a story about a "very, very intelligent" person, without any clue about the protagonist's gender. When asking who that person would be, choose someone of the same sex. From the age of 6, at least for girls, this identification begins to decrease.

The studies by psychologist Andrew Meltzoff, co-director of the Institute for Learning and Brain Sciences at the University of Washington, provided more information about the power of cultural stereotypes in children's learning. A survey points to similar data: "Very early, as girls incorporate false conceptions that they are not good at mathematics", writes the authors in the article Gender Stereotypes and Mathematics in Primary School Children.

And more: the physical space can contribute to the design of them. If a room had Star Trek exhibits and is from Spock, instead of neutral items, fewer high school girls wanted to be in that environment. Using statistical statistics, Meltzoff found that they are not "owned" here.

Information related to Tel Aviv University in Israel. The authors carry out the following experiment, with three groups of students, from the 6th grade until the end of schooling: each made two identical tests, and they were corrected by two times of the teachers: one who knew the names of the students (able, therefore , deduct their gender) and one that corrects anonymous evidence. The corrections were uneven even when the responses were the same.

See unconscious: studies show that teachers can give the best grades to boys, even when a presentation in relation to girls is similar.

Edith Sand and Victor Lavi

The time that the names gave the boys higher marks. The anonymous correction gave the girls higher marks. But this effect was observed in the subjects of Mathematics and Science - such as English tests, for example, received similarly. The researchers concluded that the documents overestimated the victims.

[Here you can see some tips in how to start the science carrier](#)

Role Models

ADA LOVELACE

December 10, 1815 – November 27, 1852

Diva of programming, already described the logical operations of a machine more than a century before the computer existed as we understand it today. Daughter of the romantic Lord Byron and confined to a society that prevented women from studying at universities, Ada fell in love with mathematics – and she was brilliant. He exchanged letters intensively with Charles Babbage, creator of the Analytical Machine, and published articles (signed only with his initials) that expanded the boundaries of information processing.



EDITH CLARKE

1884 - 1959

Born in a rural community in Maryland (USA), Edith Clarke graduated in mathematics and astronomy in 1908 and later studied Civil Engineering. She interrupted her studies to work as a human computer, but her passion spoke louder: in 1919 she became the first woman to earn a Master's degree in the Department of Electrical Engineering and Computer Science at MIT, becoming the first electrical engineer in the country. Two years later, he registered his first patent: a graphing calculator, which improved methods for solving electrical energy transmission problems. When she retired in 1956, she was a professor at the University of Texas, where she was the first woman to teach engineering. In 2015 she joined the National Inventors Hall of Fame.



GRACE HOPPER

December 9, 1906 - January 1, 1992

She was a North American computer scientist and Rear Admiral of the United States Navy. One of the first programmers at the Harvard Mark I computer in 1944, she invented the first compiler for a programming language (which turns programming code into binary code) and was one of the people who popularized the idea of a machine-independent programming language that led to the development of COBOL, one of the first programming languages to approach human language.



DOROTHY JOHNSON VAUGHAN

1910 - 2008

Born in the state of Missouri, Dorothy Vaughan graduated in mathematics and joined NACA, an agency that would become NASA in 1943. She specialized in computing and six years later led a group composed only of African American women trained in math. He dominated electronic computing, programming and the operational process of the first IBM machine used by the government agency. He retired in 1971. His story is told in the movie 'Stars Beyond Time'.



MARY KENNETH KELLER

December 1913 - 1985

Born in Cleveland, Ohio, Mary Keller was the first woman to have a doctorate in computer science in the United States in 1965. She graduated in mathematics and did a master's degree in mathematics and physics in the 1940s. Her electronic from the University of Wisconsin covered the construction of algorithms that made analytical differentiation in algebraic expression, written in CDC FORTRAN 65. At the time of her graduation, the University of Dartmouth only allowed men, but broke the rule so she could work at the computer center. He later founded the Department of Computer Science at Clarke College in Iowa, where he taught for 20 years.



HEDY LAMARR

November 9, 1914 - January 19, 2000

She was an Austrian actress and inventor based in the United States. His most significant technological contribution came during the Second World War, with his co-invention, together with the composer George Antheil, of a communications system for the United States Armed Forces that served as the basis for the current telephony: cell phone.



JOAN CLARKE

June 24, 1917 - September 4, 1996

She was an English cryptanalyst and mathematician, best known for her work as a decoder of Nazi messages during World War II that made it possible to save countless lives. She was also a friend, confidante and ex-fiancee of Alan Turing.



1918 - 2020

KATHERINE COLEMAN GOBLE JOHNSON

1918 - 2020

A scientist trained in physics and mathematics, Katherine Johnson made history in the American space race: she calculated the trajectory for Project Mercury (NASA's first manned project) and for the Apollo 11 flight (which took man to the Moon). African-American, she came from a humble family and demonstrated early on her aptitude and precision for calculations. He contributed immensely to the agency at a time when the United States was still institutionalizing racial segregation. He received the Presidential Medal of Freedom in 2015, the highest honor the US government bestows on civilians. His story is told in the film 'Stars Beyond Time'.



MARY WINSTON JACKSON

1921 - 2005

Mary Winston Jackson was born in the USA and graduated from the Hampton Institute in 1942, where she studied mathematics and physics. She was the author and co-author of several research reports and stood out at NASA, where she started working in 1951. In order to continue her experiments at the Institution, she had to study engineering, being the first black woman engineer at NASA. He mainly researched the air boundary layer around airplanes and experimented with wind tunnels. His story is told in the movie 'Stars Beyond Time'.



KAREN SPÄRCK

August 26, 1935 - April 4, 2007

Karen Spärck Jones created the concept of "Inverse Document Frequency" (IDF). The IDF is used in most current search engines, usually using the tf-idf frequency, and was introduced in a 1972 article. Karen was born in England and taught at the Cambridge Computer Lab from 1974 to 2002, when she retired, but he continued to work there until shortly before his death in 2007. In his lifetime, he received several awards and recognitions for his contributions, such as the ACL Lifetime Achievement Award, in 2004. He was also vice president of the British Academy.



MARGARET HAMILTON

August 17, 1936

She is a computer scientist, systems engineer and American businesswoman. She was director of the Software Division at the MIT Instrumentation Laboratory, which developed the flight program used in the Apollo 11 project, the first manned mission to the moon. Hamilton's software prevented the moon landing from being aborted. Margaret published more than 130 articles, minutes and reports related to the 60 projects and six important programs in which she was involved.



[More female role models](#)

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Advice I wish I had heard when I switched to technology

Carol Soares

It's been two and a half years since I moved from Public Relations to Front End Development, after many crises, doubts, anxieties and a lot of learning. I decided to talk a little about the things I would like to know before I migrated from the area.

- Programming / Developing is not easy

Don't fall for the myth of Silicon Valley and the sensational headlines that you'll learn to code in a weekend, or that there are kids making millions from apps they made in a month. Things don't work out that well. I usually say in all my career talks that everything is difficult. Imagine you spend the whole day cleaning, standing, carrying things, it doesn't seem easy, right? But this is the life of more than millions of day laborers around the world. And save someone's life? Be a researcher? Taking care of a nation? Well, none of this is easy, programming would not be a different area. It is important to keep this in mind, because this way, you understand that the process to learn things, the mistakes we make and cycle to understand something, can be time consuming - it helps a lot to silence the impostor inside you that makes you angry with negative thoughts.
- Without good bases, hypes cannot be sustained

Things in technology change too quickly. It's language, framework, methodology, everything happening at the same time and all the time. This can be very dangerous. Of course it's important to keep up to date, but if you don't know the base well first, you end up building a sand-based building. Learn things that have not changed over time, which are still important today and that apply to any project (or most of them) and then update yourself - this makes the process of learning new things less painful, because the "thick" you already know and just stick to what really modernized.
- A person to mentor you can clarify a lot

Mentoring is a process where another person who already works in the field helps you to understand some processes ranging from career to technical things. This greatly relieves the anxiety of knowing if we are doing it right and already understanding how the market really works. You can mentor for free with the Training Center and / or identify yourself as a woman through facebook groups.
- We are never ready

We tend to believe that something is always missing. A language, a skill, a language, a course etc. The reality is that this is pure sabotage. We will only understand what is really missing (and improve that) by putting what we know into play. It sounds hideous, I know, but we need to overcome the first fear in order to have new fears, and thus achieve more interesting things. Don't be inconsistent, but watch out for that impostor there.
- Make the community count

I wouldn't be the professional I am today if it weren't for the community. I learned a lot, met people, made friends, established professional contacts and grew a lot - in many ways. But I think it's important to remember that the community is a place of exchange and that it needs more people who understand this. You don't necessarily need to become a meetup organizer, but do what you can to repay what helps you and so many others. If you were present at the event, go - and if you can't go, tell them beforehand, give that space to someone else. Help with coffee, at the end of the meetups offer to help organize the place, take new people, talk, make content etc. We will only be able to maintain the community culture if everyone does a little.
- Everything is great ~ it depends ~

There is no better operating system / language / programmer. Seriously, it doesn't exist. It all depends on the conditions of that moment. Don't feel guilty about not mastering English, not having the high tech mac of the moment, not being able to attend the most expensive events. Technology is still an extremely elitist-white-heteronormative medium and we know that not everyone has so many privileges. And everything is fine. Do your best with what you have available now.
- Live beyond technology

Once in the community, you become their crazy person. It is in all events, it only has friendships in the middle, its free time is full of side projects, the contents you consume are all technical and hopefully it will arrive soon on black friday for you to remove that new gadget from the wish list. Just writing this I remember how unbearable I was in the first months in the area. Imagine that a human being without grace is the person who only lives for a theme in life. Yeah, have different hobbies, go out with people / friendships outside the work circle. Have a life beyond IT. A good professional (from any area), is made up of plural experiences, which will make new points of view known, in order to find new solutions - think about it.
- Thinking about the user is not just UX / UI

I could spend hours on this topic, but I believe the message is very clear. If you program without thinking about the user, you are a doctor who needs to operate on a leg but is thinking about the patient's stomach - this is irresponsible, inconsistent and does not solve any problem. So let's study a little, exchange that naughty idea with the UX / UI person and try to understand this important part of our work. I swear it doesn't hurt.
- Small steps, great achievements

I still remember my first Hello World, I stopped by my house to show how awesome I was for doing that. But I also remember that after a week, I was really upset because I advanced "little" in my studies. The truth is that every new thing we do is an achievement. You didn't know it before, there are people who don't know it yet and why not celebrate it too? As important as the arrival is the way to it - I know it is mushy and motivational, but it is real.
- Burn your idols

People will let you down. We are the sum of our experiences, creations, knowledge and a huge number of variables, the weather conditions and situations make us see things differently. So, lower your expectations, that genius can be an asshole as a human being, that person who fucks the articles where you learned everything can be an intolerant or unsympathetic. So as you wisely tweeted Miguel Soares, lower your expectations and burn your idols. I hope this text has helped you in some way, if you have any other tips that you would like to give, put them in the comments, and if you liked it please don't forget the palminhas, until next time!

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What is HTML?

HTML stands for **HyperText Markup Language**. Unlike a scripting or programming language that uses scripts to perform functions, a markup language uses tags to identify content. It was created together with HTTP (HyperText Transfer Protocol) to make possible the internet to be popular. It was created in 1991 by Tim Berners-Lee in Switzerland. In the beginning it was created to use between research institutions. In 1992 was developed the world wide web which made the HTML possible for the whole world.

This language has codes that defines what kind of letters, the size, colour, space, border, among others. The entire HTML has languages that forms layers of web development. When accessing a web page with a reduce interface, in most cases, it is applied through 3 layers with different functions. Each layer is represented by a specific language. So, we can conclude that HTML does not work alone. We can say that HTML is the first layer. In this part we assign the semantics to the content. It is where we can define that certain information is paragraph, title, or that certain text is an article, etc. The HTML is responsible for displaying the content giving the meaning.

After the first layer we use the CSS which is the language for styling, formatting. When you see text with a certain style, a page with a certain background colour or a block wrapped around a border, we can say that this was achieved with CSS. CSS selects an element of HTML to style it and present it as a new form in the browser. The third layer is JavaScript which adds dynamic behaviours to the page. When the user is in contact with the interface of a page, he can at any time perform an action that results in behaviour on the page. Many of these results are due to triggering scripts created by the JavaScript language. An example of how JavaScript works in a page is when we are filling out a form and type the wrong email, JavaScript can warn us that the email is wrong. HTML can be the base of a sophisticated webpage, so is very important to learn. It is so important that both CSS and JavaScript link HTML elements, classes or identifiers in their code, so that an action can be performed within the HTML file.

When it comes to working with HTML codes, we have in mind that there is a logical way to arrange the character set for building these codes that will show the content. It is about syntax. The way worked in HTML is through tags. Tags are specific marks, instructions that delimit the content and tell the browser what kind of information it is (a title, a paragraph, a list). When you see a visual element on a web page, from a text, a photo or a video, know that they are inserted through tags. Every tag contains a name (brand name) and it also gives the HTML element a name. They are used to mark the beginning and end of an element. From there we can conclude that HTML elements are built by tags. Elements specify how HTML documents are to be constructed. Through them, it is possible to determine what type of content and where it, within the HTML document, can be inserted and convey semantic meaning to the inserted content.

```
<html>
  <head>
    <title>
      Hello World!
    </title>
  </head>
  <body>
    Learning about Elements
    <br>
    It is fun to write HTML.
  </body>
</html>
```

HTML tag

Markup Element

Empty Element

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What is URL?

URL stands for **Uniform Resource Locator**.

Being straightforward, URL is the same as a web address, the text you type in your browser's address bar to access a particular page or service.

However, a URL contains a series of specific information, which follow a predetermined pattern so that the user can always find the service he is looking for, as long as he types the address correctly. The URL pattern was set in 1994 by Tim Berners-Lee, the "father" of the World Wide Web.

Diagram of a URL

A URL is made up of two main parts, the schema and the path. Let's see what each one of them does:

Outline

The schema is a network protocol and the first group of characters in a URL, which are before the ":", depending on the format, it can indicate web addresses (http, https), communication via email (mailto), file transfer between computers (ftp), communication via chats (irc) and so on.

The schema is always typed in lowercase.

Path

The Path is the nominal address of a website itself. As a rule, all internet addresses are identified by numeric strings and the URL serves to find what we want, without having to decorate gigantic sequences of numbers.

The Path is divided into at least three parts, being the hostname (first part before the first point, such as www, for example), the site domain (the name per se, as Tecnoblog) and the top level domain, or TLD, which is the last term after the last point and before the first bar and indicates the type of the site (com, net, org ...).

For example, at https://tecnoblog.net, https is the schema, tecnoblog is the domain and net is the TLD, with tecnoblog.net being the path.

Some website structures, such as internal links (this text, for example) receive extra calls to point to specific pages. The number that appears after ".net /", in the example given, is an index number and an identifier, while the rest is the name of the file loaded by the browser, which allows you to read this text.

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What is CSS?

CSS stands for **Cascading Style Sheets**.

It is a specification that defines how the elements that make up a page, document or web application will be displayed.

When we talk about accessibility, performance and maintenance, the principle is to separate the content, interactivity and presentation of a website or web application. CSS plays a big role in the presentation layer.

The right way to publish a web document is to follow a semantic structure. CSS brings all the information of the layout, that is, colors, positioning, fonts, sizes and background images, while HTML must provide an "architecture" for the content. Support for CSS by today's browsers is quite solid, but started off timidly, being initially supported by the Netscape browser. The first version of the specification was released in 1996 and a second version published in 1998 but until 2009 not all browsers in use fully supported their resources. A new version of the specification is under development and luckily the latest browsers are already testing it.

As the Internet Explorer browser took a long time to support all CSS resources, web developers and web designers used tables to assemble the structure of the pages and all the style information was next to the content. With the improvement of internet speeds (in times of dial-up connection), it was possible to adopt more complex and modern layouts, still using tables. A myth was created that projects using CSS were very simple, clean and "square". This myth was unraveled when other browsers came into use and support for the new specifications was implemented in Internet Explorer. Another factor that contributed a lot to the adoption of new technologies for CSS was the growth in the use of mobile internet in which the pages need to be light and the content presented correctly on different devices, which would not be possible with tables.

How it works? Why "cascade"?

The word "cascade" in the name is given by the modularity of the specification: In a document you can have several CSS files, carrying different rules that refer to multiple or the same elements.

An important concept for the operation of CSS is the model of blocks and elements "inline". An element within a CSS formatted HTML document consists of a block, a rectangle. Within this block there is a margin, a border and a padding around the content and through some properties we can change their sizes, colors, background images and styles. When a block element is placed next to another, by default each element uses all of its available width and breaks the line before and after itself. Within the block elements there may be other block elements or "inline" elements, those that occupy only their necessary width and do not create lines before and after themselves (links, abbreviations, a label or form element for example).

Perhaps because of this concept, the myth that layouts made with CSS are just "squares" has persisted for so long.

What are the benefits?

CSS was a revolution for web development. Its most concrete benefits are:

- Interface control on different documents in a single file;
- Control of different interfaces for different devices (responsive design);
- Accuracy to maintain the same interface for different browsers;
- Accessibility improvements with the possibility of "hiding" screen elements for users without vision problems, but keeping the same elements accessible for screen readers;
- Forms with a look and feel different from the standard of the operating system;
- Lower bandwidth consumption for user and server;
- Countless dynamic techniques that could not be used in tables;

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