

**GREAT
JOBS**



GREAT JOBS IN TECHNOLOGY

Tom Streissguth

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Great Jobs in Technology

Occupation	Minimum Educational Requirements	2017 Median Pay
Computer and information systems manager	Bachelor's degree	\$139,220
Computer hardware engineer	Bachelor's degree	\$115,120
Computer network architect	Bachelor's degree	\$104,650
Computer support specialist	Associate's degree	\$52,810
Computer systems analyst	Bachelor's degree	\$88,270
Database administrator	Bachelor's degree	\$87,020
Electrical and electronics engineer	Bachelor's degree	\$97,970
Information security analyst	Bachelor's degree	\$95,510
Network and computer systems administrator	Bachelor's degree	\$81,100
Software developer	Bachelor's degree	\$103,560
Web developer	High school diploma or equivalent	\$67,990

Source: Bureau of Labor Statistics, *Occupational Outlook Handbook*, 2018. www.bls.gov

work to meet a need or solve a problem. Tech skills apply in every sector of the economy, and they are needed by for-profit, non-profit, and public sector organizations. That means a great job in tech can also be a job in media, health care, retail, or the hospitality industry—in whatever direction an applicant's interest or passion lies.

Climbing the Ladder of Opportunity

At most jobs, a tech worker will also find a long ladder of opportunity waiting to be climbed. Because this kind of knowledge is valuable, it can bring an employee to management levels quickly. It also opens up other opportunities; for example, it is common for certain tech jobs, such as those in data security, to be in demand in many locations, among many different employers. Many tech jobs are open to freelancers, who are consultants who work on their own time and their own schedule. And for those with an interest in running things, smart innovations bring the chance to build a start-up company that creates its own profitable niche in the tech universe.

It is not necessary to be a genius hacker, or to win a hackathon, to get a start in tech. Anyone interested can take a few classes, try a summer camp or internship, or just volunteer to help a nonprofit that needs a hand in collecting data or building a web page. As opportunities present themselves, newbies in this field will discover soon enough what is boring and what is interesting, and they can apply effort and time in the right direction. There seems to be no limit to the future possibilities of computers, robots, artificial intelligence, and those who work in the many cool corners of technology.

Website Developer

At a Glance

Website Developer

Minimum Educational Requirements

None; however, many employers require at least a high school diploma, with courses in computer science, marketing, or web design and development

Personal Qualities

Interest in coding, graphic design, and digital media; good communication and problem-solving skills

Certification and Licensing

No license is required; a wide variety of certifications are available from public and private organizations

Working Conditions

Indoors, on desktop and laptop computers; frequent meetings and phone contact with clients

Salary Range

From \$36,000 to \$122,000 annually

Number of Jobs

About 163,000 employees and freelancers as of 2016

Future Job Outlook

Predicted growth of 15 percent through 2026, which is faster than average

What Does a Website Developer Do?

The World Wide Web is a big place, and for skilled website developers, there is a lot of work to do. According to different estimates, there were 1.3 to 1.8 billion websites up and running as of 2018. Each of them must be created, designed, filled with content, and maintained. These are the basic tasks of website developers.

At one time, website developers built sites through a lot of monotonous coding in hypertext markup language (HTML) and other web-oriented programming languages. Many website developers assigned to functions such as e-mail and credit card transactions still do just that. "In order to complete these site-specific integrations, I extensively familiarize myself with the client's website, so as to write the code that jives perfectly with their existing code," explains Bethanne Zink, a developer interviewed on the code training

website Skillcrush. “Today I’m writing code that hooks into the API [application programming interface] for the e-mail service provider of one of our e-commerce sites. It’s a project that I’ve tackled for many of our other clients.”

Some website developers have full-time office jobs, working for employers who need to keep their big websites fresh and responsive to the public. The majority, however, work independently to find their own clients, who hire them on a project-by-project basis to either create or upgrade their sites. These clients have a budget and scope—a range of capabilities they want their web pages to have—and they need designers who can manage their time efficiently.

The technical knowledge and skill needed by website developers does not mean it is a difficult field to enter, at least compared to many other tech jobs. But a website developer needs to have hands-on experience and build a portfolio of completed projects to acquire paying clients. When searching for full-time website developers, employers want some skills, including knowledge of object-oriented programming, HTML coding, user interface design, and how to build wireframe prototypes—the blueprints of websites. Developers must also use and understand social media and be able to read the essential metrics of site speed and traffic.

Furthermore, developers need mastery of a graphics program such as Photoshop, Illustrator, or Fireworks. They will have to mount animation, video, and audio on web pages, and they must be ready to use version-control systems such as Git, which keep track of a project as multiple users create, change, and maintain it. These are industrial-strength systems and programs, and even experienced developers are constantly learning how to use them. “I may be in Photoshop to whip up some graphics,” explains Jeff Pollard on the website of Moz, an Internet marketing company. “If I’m ever making major changes to a design or page, I’ll take a screenshot of the existing site, wipe the area I’m changing clean, and design the new component in Photoshop before I even start writing HTML. . . . Occasionally I’ll be in IRC (Internet relay chat)

Internships for website developers are plentiful. A summer break gives students in the last year or two of their college careers an excellent chance to audition possible employers and vice versa. Skilled applicants can be selective; there are hundreds of internships offered by companies large and small, and information about them is available through big job sites such as Indeed, Glassdoor, and LinkedIn. Several useful websites, including Internships.com and YouTern, focus on internship openings as well.

Skills and Personality

The work of a website developer takes concentration and patience. Anyone working independently also must have some self-marketing skills and interpersonal energy; it is a competitive field that demands a lot of customer service and the ability to listen to and understand what kind of web presence a client wants.

Technical ability also matters, and mastery of desktop publishing software packages widely used for web work is a must. Web designers code pages to format their layout, and then they apply features such as shopping carts and video to make them useful. This demands close attention to detail; a single letter or punctuation mark out of place can crash a page or an entire site. Website developers also must develop a skin thick enough to tolerate the demands and negative feedback from clients on the work they do.

On the Job

Employers

Any organization or company with an online presence needs the time and skill of website developers. Very few companies can hand off web design to employees with other job descriptions because it is a position that demands a lot of time and a very specific skill set. Tech departments at banks, hospitals, insur-



Web developers need a variety of skills and technical knowledge. They need to have expertise in programming, coding, and user interface design in addition to being knowledgeable about social media platforms.

ance companies, media companies, transportation companies, large retail stores, and real estate firms all hire web designers and administrators. Webmasters are needed by groups that have an interactive relationship with clients or customers or, like many government agencies, with the public at large.

Many relatively newer companies, such as Uber, TripAdvisor, Twitter, Spotify, and eBay operate solely via online portals or mobile apps, and the clean operation of their websites is vital to the success of the business. They are usually hiring because not only do they need a big staff of website developers, but they also have a high turnover issue since long-time employees often move to seek better-paying or more rewarding jobs at other companies.

Working Conditions

The work environment for website developers differs depending on the employer. Full-time jobs with a single employer involve fixed offices and work on desktop computer systems. Freelancers work at home on a flexible schedule set to meet the demands

of clients. Long hours on a difficult project is a common experience in the field, and employers will demand overtime and weekend work if needed. Independent workers spend time developing new customers, advertising their services, talking on the phone with prospects, or traveling to meetings with their clients.

Earnings

According to the Bureau of Labor Statistics, website developers earned a median wage of \$67,990 in 2017, with a wide range from \$36,000 to \$122,000. Salaries vary by employer category; tech, finance, and online retailers such as Walmart and the travel site Expedia pay more, and nonprofits and government agencies pay less. Salaries are also higher in tech centers such as California's Silicon Valley, Seattle, and New York.

Opportunities for Advancement

With experience, website developers with a permanent in-house position can move to management positions in sales, marketing, finance, or human resources. The skills demanded of web workers also provide a grounding in higher-level tech positions, such as systems administrator, security analyst, or information technology manager. The executive suites of major companies, where directors and corporate officers work, are also welcoming to those who have mastered the technical aspects of the company's business. In addition, the education sector needs website developers to pass on their knowledge to students, and many universities offer full professorships to experts in the field.

What Is the Future Outlook for Website Developers?

With millions of companies of every size seeking a presence on the Internet, the opportunities for website developers are always

growing. The Bureau of Labor Statistics predicts that employment of website developers will grow by 15 percent through 2026, which is faster than average. Specialists in online retail and mobile platforms are in high demand. There is not a lot of risk to the career from automation since developers need interpersonal skills—which robots cannot provide (yet)—to deal with clients. Nor is overseas competition a problem because language and cultural barriers make managing overseas developers expensive and complicated for US employers. These aspects mean wages will rise with demand, particularly for developers who are skilled in all the key software and are multimedia experts.

Find Out More

edX

website: www.edx.org

A nonprofit founded by teachers from Harvard University and the Massachusetts Institute of Technology, edX offers free online web development courses that prepare students for work in HTML, CSS, and other web-oriented software packages as well as in popular languages, including Java, Python, PHP, and SQL. The site also provides summaries of information from certification courses from large companies.

Foundation

website: <https://foundation.zurb.com>

This library of web development tools offers online training courses from professionals and gives users the resources to easily create professional-looking websites. Browsing through the “Showcase” examples will give an idea of how beautiful pages are built and how scripts (snippets of code that instruct a page to perform a function) provide the building blocks.

Interview with a Robotician

Maria Gini is an internationally renowned researcher, developer, and instructor in the field of robotics. Born in Milan, Italy, she has also been active in the field of artificial intelligence and has created one of the first language interfaces for robots, a system known as POINTY, that allows programmers to more easily develop robot software. She is a professor in the College of Science and Engineering at the University of Minnesota. She discussed her career with the author via e-mail.

Q: Why did you become a roboticist?

A: I became a roboticist following a long path. I studied physics in Italy, I discovered the beginning of artificial intelligence (AI) and robotics by reading some research papers, and I wanted to learn more. I ended up going to Stanford University to work in the famous AI Lab as a postdoc (postdoctoral researcher). At the time there were only a few universities in the world that had robots and were using them in research. At Stanford I absorbed all the knowledge I could get and worked in the AI Lab to develop a new software tool to make it easier to program the Stanford robots. The enthusiasm at the Stanford AI Lab for breaking new ground was so contagious, I could not see myself doing anything else for the rest of my life. I am still doing it, still with the same excitement and desire to share it with others so they can also experience it.

Q: Can you describe your typical workday?

A: Each day is different, but for most of them I spend time teaching, preparing for my classes, meeting with my graduate students

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