

Web and App Careers

SEVERAL CAREER PATHS fall under the umbrella of web development and app development. There are specialties for those who are artistic; those who are great at math and programming; and those who are skilled designers. This unit explores web and app career opportunities in this booming industry.



Objective:



Summarize web and app careers and the associated educational opportunities, workplace skills, and entrepreneurship opportunities.

Key Terms:



app developer	entrepreneur	postsecondary institution
application development	ethics	scrum
apprenticeship	freelancing	self-learning
back-end	front-end	social entrepreneurship
back-end developer	front-end developer	soft technical skill
blended learning	full-stack	user interface (UI) designer
bootcamps	full-stack developer	user experience (UX) designer
brain break	informal learning	web designer
brainstorming	internship	web developer
coder	massive open online course (MOOC)	
database	mentorship	
database developer		
e-learning		

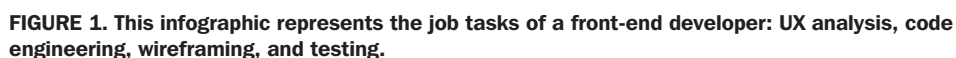
Understanding Web and App Development Careers

Web and app development is the creation of application programs that reside on remote servers and are delivered to the user's device over the Internet. A **web developer** is a programmer who creates websites and/or computer software for the Internet. An **app developer**

Application development is the development of a software product in a planned and structured process. It is an interrelated field, as many web developers are also app developers. A **coder** is a programmer who writes computer software. “Coder” and “programmer” are used interchangeably in this material.

Careers in Web and app development can take various paths.

The **front-end** of a website or app is the code and layout to create what a user can see or user interactions. A **front-end developer** is a programmer skilled at coding the user side of



the website or app. He or she may have duties similar to a web designer if he or she is expected to work with the visual design and artistic aspects of the website or app. Front-end developers are expected to have working knowledge of the following languages:

- ◆ HTML
- ◆ CSS
- ◆ JavaScript
- ◆ jQuery
- ◆ AJAX

Back-End Development Jobs

The **back-end** of a website or an app is the application data stored on a server. This part of a website is unseen by the end user. A **back-end developer** is a programmer who works to accurately store, change, and access data to provide the requested information “back to the user.” One back-end job title is database developer. A **database developer** is a programmer who sets up a database for a new app, decides which programming language will be used for the project, and/or works with the interface between the app and the server. A **database** is a collection of information organized for easy access, manageability, and updating. Languages may include:

- ◆ Ruby
- ◆ PHP
- ◆ Python
- ◆ SQL



FIGURE 2. A back-end developer is a programmer who works to accurately store, change, and access data to provide the requested information “back to the user.” Who writes programming and code: the front-end or the back-end developer?

Full-Stack Jobs

Full-stack is working with the front-end and the back-end of a website. The **full-stack developer** is a programmer who has the skills necessary to code for the front-end and back-end of a website. As a programmer, you must be highly skilled and able to create an entire website from what the user sees to the server side.

Related Careers

A **web designer** is a person who creates the visual look of a website: page layout, styling, text font, and images. This artistic job may not require knowledge of programming languages, as the focus is making the website and/or app visually appealing. However, many web designers manipulate HTML code and may use CSS to create a unified look for a website.

User Interface (UI) Designer

A **user interface (UI) designer** is the person concerned with the layout of the product with focus on how a user interacts with the website. He or she determines where a user would most like items to be placed, which item should appear first on a list, etc. In short, the UI designer helps create the user experience: aesthetics (including graphics), response time, and available content.

User Experience (UX) Designer

A **user experience (UX) designer** is the person concerned with the entire interface and overall interaction of a user with a device. He or she focuses on making the act of using a website or app an enjoyable one. UI and UX are sometimes used interchangeably and are often posted together as one job.

Technology-Specific Developer

A technology-specific developer is someone who is highly skilled in one language and is often hired for his or her specialty in that language field, such as:

- ◆ JavaScript
- ◆ PHP
- ◆ Java

ANALYZE WEB AND APP CONTINUING EDUCATION OPTIONS

Technology is constantly changing, so continuing education is essential to working in this field.

Self-Directed Learning

Self-directed learning may come in a variety of designs, including bootcamps, self-learning, and informal learning.

Bootcamps

Bootcamps are intensive two- to three-month courses designed to teach information technology or security content quickly. Bootcamps—especially coding bootcamps—have become extremely popular in recent years as people change careers and want to learn quickly without a traditional college experience. The *New York Times* reported that an information technology bootcamp averages \$1,000 per attendee.

Self-Learning

Self-learning is the act of educating oneself. In the ever-changing world of technology, being a strong self-learner is mandatory. Anyone working in the web and app industry must

recognize when additional knowledge is needed and how to teach that knowledge to oneself. Most self-learning is conducted by reading and by using online tutorials and videos. E-learning, blended learning, and MOOCs are common types of self-learning.

- ◆ **E-learning** is the act of being an online student.
- ◆ **Blended learning** is a combination of e-learning with another (perhaps more formal) type of education.
- ◆ A **massive open online course (MOOC)** is an open access, Internet-based, and typically free course, with unlimited enrollment. These courses have become popular as avenues of learning for people who are unable or do not wish to pay for a specific course. A MOOC is a type of self-learning, as the course is usually a series of videotaped lectures and readings that the student accesses when convenient.

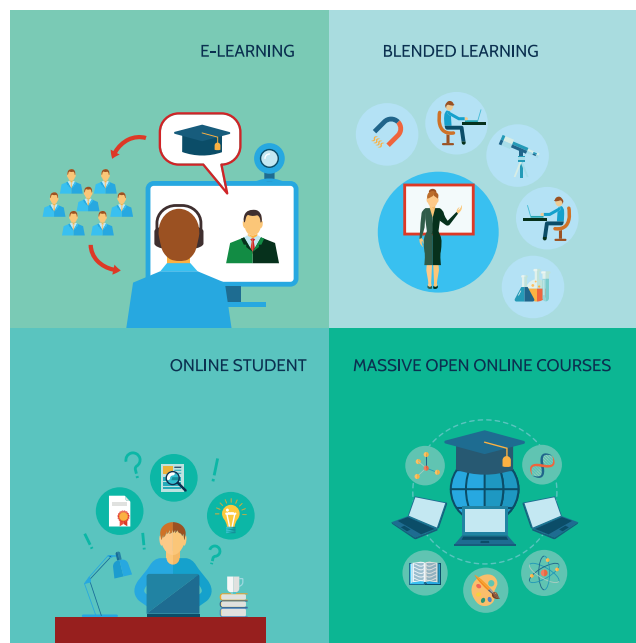


FIGURE 3. Web and app developers often use all four of these examples of self-directed learning.

Informal Learning

Informal learning is the act of learning through doing sparked by immediacy and relevancy. For example, if a company is switching to a new payroll system, any employee who wishes to be involved in the new payroll department must learn the new protocols and procedures. Immediate application to a current job is a benefit of informal learning. This type of learning is related with the idea of internships and mentorships as a company's subject matter experts (SMEs) can create the learning process and share it with others via an internal and informal process as compared with "taking a course at the college." The experience of learning and doing something new is informal learning, especially when the learner chooses to learn.

Formal Education Options

Formal education options may include a postsecondary institution, an internship, a mentorship, or an apprenticeship.

Postsecondary Institution

A **postsecondary institution** is any school after high school, including two- and four-year institutions.

- ◆ Two-year institutions: junior colleges, community colleges, technical schools, trade schools, etc.
- ◆ Four-year institutions: colleges and universities

Internship

An **internship** is a temporary work position—sometimes paid and sometimes unpaid—at a company or in a field in which someone has an interest and wishes to gain experience. The emphasis is on job training rather than employment. An internship may include housing and/or living expenses.

Mentorship

A **mentorship** is a training system in which a senior—or a more experienced employee—guides, counsels, and/or advises a less experienced worker (e.g., trainee or mentee). The mentor provides support and feedback to the mentee and assists the mentee in learning the job tasks associated with the new employee's position.

Apprenticeship

An **apprenticeship** is a training system in which someone learns a trade or skill on the job from a master of that trade or skill. An apprenticeship is often a paid position.



FIGURE 4. A mentorship is a training system in which a senior—or more experienced employee—guides, counsels, and/or advises a less experienced worker.

WEB AND APP WORKPLACE SKILLS

Some specific workplace skills are essential for web and app design.



FURTHER EXPLORATION...

ONLINE CONNECTION: Apple TestFlight

A popular tool among app developers is Apple's TestFlight. This tool allows developers to invite many users to beta test an app before it is available to the public at large. Investigate the TestFlight app. If possible, download the app to an Apple device and look through the options. Watch a YouTube tutorial of TestFlight in use, such as:

<http://code.tutsplus.com/tutorials/ios-8-beta-testing-with-testflight--cms-22224>

<https://developer.apple.com/testflight/>

Client Communication

- ◆ Listening is the most important part of communication, especially when dealing with a client. It is impossible to fully understand the client's needs and concerns without first listening.
- ◆ Speaking to a client requires someone to avoid slang, jargon, and (most importantly) curse words. The client is a formal workplace relationship, and speech should reflect that relationship.
- ◆ Other communication to a client may take several forms. Important documents (e.g., proposals, timelines, and specifications) should be written in formal language and should be reviewed by several people before sending or handing it to the client. A lawyer may need to be consulted when legal documents and contracts are involved.

Although email and text messages are a less formal type of writing, they must be sent without typos and grammatical errors. If unsure of grammar, find a mentor in the office who can read emails, texts, etc. before sending to a client. Emails, in particular, have a way of sounding harsher to the reader than intended. For issues concerning sensitive topics, call or meet the client. Phone calls are less popular with younger generations. If calling makes either party feel uncomfortable, a video chat (e.g., Skype) can be a good option to relay information. During a phone call or video chat:

- ◆ Do not eat, drink, or chew gum.
- ◆ Do not place or take that call in a noisy setting.
- ◆ Address the client by his or her proper title, and identify yourself properly.

Soft Technical Skills

A **soft technical skill** is an advanced core workplace competency that applies to nearly every career and requires instruction for understanding and application. The National Association of State Directors of Career and Technical Education at <http://www.careerclusters.org> refer to these skills as “essential knowledge and skills, academic foundations, and common cores required for career success.” Following are some of the soft technical skills necessary for success in web and app development careers.

Teamwork

The ability to work well within a team is absolutely essential in web and app development fields. Teamwork is often considered more valuable than coding skills. This skill is not something to be taken lightly.

Scrum Meetings

Scrum is a development model in which project participants meet daily for 15 minutes. Each team member is accountable to the group and reports on his or her task efforts daily. This

method allows the group to always know the project status, any problems that need to be addressed, and if changes need to be made.

Social Skills

Social skills are critical in being successful within a team.

- ◆ A negative attitude makes others less inclined to work with you. In contrast, a positive attitude encourages others and fosters a friendly atmosphere.
- ◆ Ego can kill teamwork. Carrying an attitude of superiority can be “off-putting” (not pleasing, not likeable) to team members. Every person should remain open to learning from others and accept constructive criticism without letting an inflated ego get in the way.
- ◆ Supporting other team members is crucial. You may require another team member’s help or advice. In addition, you may just need someone to “bounce an idea off of.” A helpful team member is an asset to the team and the company.

Creativity

Creativity is not limited to the work of artists. Programming requires considering problems from many angles. Problem solving and a creative mindset

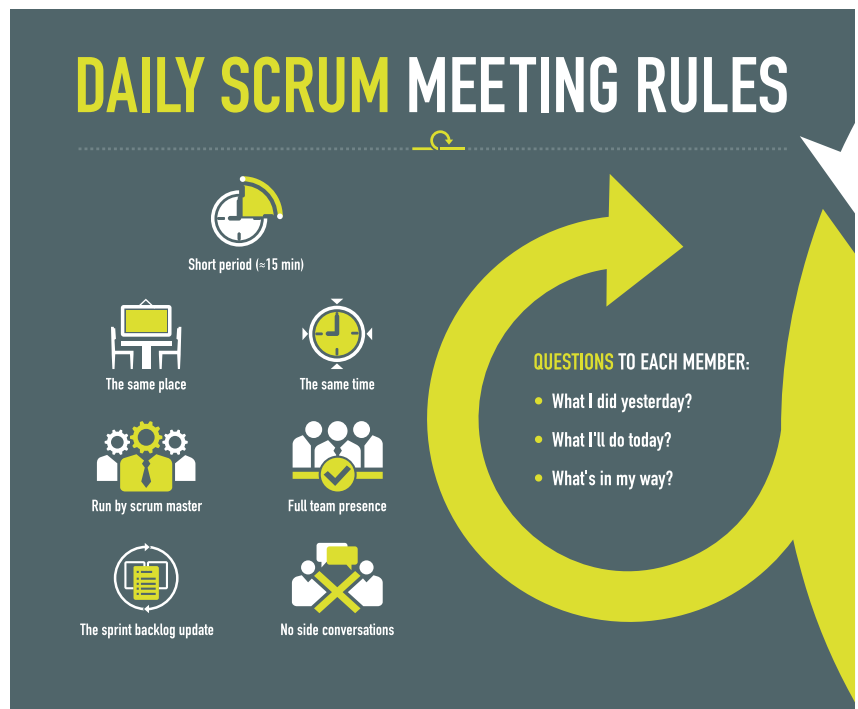


FIGURE 5. Scrum is a development model in which project participants meet daily for 15 minutes. Each team member is accountable to the group and reports on daily task efforts.



FIGURE 6. Jumpstart your creativity.

are valuable in the web and app development industries. Following are several ways to jumpstart the creative process.

- ◆ **Brainstorming** is a conference or group problem-solving technique in which numerous creative ideas and solutions are generated. The brainstorming process may be about a problem or a task for which everyone adds ideas and input without any criticism. The goal is to get a lot of ideas, not to sort the ideas while the brainstorming process is in progress. Each new idea can bring something different to mind for another group member. Avoid analysis of the ideas until the entire list is posted. Brainstorming can be a formal process, or it can be as informal as a discussion during a coffee break.
- ◆ A **brain break** is a short mental break from whatever task has been the focus to help refocus the mind. It is recommended to get up and move around to provide blood and oxygen to the brain. Examples of brain breaks are lunch, snacks, reading fiction, taking a walk, playing ping pong, bicycling, etc.

Research may not sound creative. However, reading and learning more about a topic of interest may lead to new avenues of thought and ideas. Learning what others in the field are doing, what is currently popular, and what has been done in the past is important.

Work Ethic

Ethics in the workplace is conducting oneself with integrity and making daily decisions in accordance with generally accepted practices and principles of right and wrong. Being honest; not cheating, harassing, or stealing from an employer or co-worker; and/or using the Internet in an appropriate manner are examples of ethics. A strong work ethic is something every employer desires, and it means more than just going to work every day. It is important to maintain a good work ethic at every position, as future employers ask about this when calling references.

- ◆ Taking responsibility is necessary for success in all workplaces. For example, taking a break and returning to work on time; showing initiative; and seeing what needs to be done without being told show responsibility. Being at work on time everyday is part of being a responsible employee. Time management is more than attendance; it means finishing work on time and maintaining pace with bigger projects.
- ◆ Perseverance is not giving up when an answer is not immediately clear or obvious. Sticking to a problem is part of the job in the programming world. Researching the topic, asking others for help, and trying again are all perseverance strategies.
- ◆ Integrity is honesty, truthfulness, and reliability. Without integrity, it would be nearly impossible to make friends at work. It is important to uphold promises, especially with regard to deadlines. Taking credit for the work of others will create hard feelings and could lead to the unemployment office.

Adaptability

Adaptability (flexibility), as an employee, is perhaps more important in web and app development than in other careers. Change happens quickly when working with web and app clients. Continuously learning increases the ability to remain adaptable. Software and computer languages are always evolving (changing). Employers expect their employees to change and learn with the times. A group of web developers met recently and, at the break, asked each other: “What are you playing with?” They were exhibiting the ability to learn on the job and discovered they were all “playing” with some new software, tool, or language.

Clients change their minds often. Being prepared for changes in a project is being adaptable. Flexible hours are part of web and app careers. Many programmers and developers are expected to work long hours when meeting a project deadline or launch. Flexibility of working hours is often an expectation in this field.

WEB AND APP ENTREPRENEURSHIP OPPORTUNITIES

An **entrepreneur** is someone who decides to start his or her own business. This can be something done on one’s own, with a small group of people, or even starting a new division within a larger company. Entrepreneurship can occur for various reasons.

Job Loss

Job loss, or your inability to gain employment, is a kick-starter for many first-time entrepreneurs. You do not necessarily need to be hired by a company to have clients and to start making money.

Moonlighting

Some people want a side business to practice the skills they are not using at their day jobs.

Expertise

Expertise in a difficult programming language could lead to freelance opportunities in the web and app development field.

Unique Ideas

Many app developers have become entrepreneurs because they had a new and unique idea.

Social Entrepreneurship

Social entrepreneurship is a business that directly benefits society; either the product is for the social “good” or a percentage of the profits may support a specific charity. It is a relatively new term. Often people who are disillusioned working for large companies and want to feel they are benefitting society in a more direct fashion embrace social entrepreneurship.

Entrepreneurial Opportunities

Website development is a good small business startup. To begin, an entrepreneur needs a working knowledge of:

- ◆ HTML
- ◆ CSS
- ◆ Javascript

App Development

App development is a popular choice today, but it is a task that is difficult to accomplish without a team. Often, apps make little money. To make money, a truly unique idea is needed.

Web Development Consultant

A web development consultant is someone who reviews a client's website and makes suggestions for change to increase sales, increase business opportunities, market to a new audience, etc. This is a great small business idea for those with a great deal of experience in the industry. To be taken seriously, you would need to have worked in this field for several years.

Freelancing

Freelancing is working for a company or entity on a contracted basis or being self-employed. A benefit of freelancing is picking projects of interest; a drawback may be a lack of insurance and other full-time employee benefits. Typically, freelance work ceases when the project or goal is completed. A freelancer is not considered a company employee and does not usually receive a salary. His or her compensation is the fee listed on the contract.

- ◆ Freelance work is a good idea for getting a foot in the door at a new company. Many people earn full-time positions after proving themselves as freelance workers.
- ◆ Freelancing is a good idea for someone who has mastered a highly technical or unusual programming language.



FIGURE 7. Freelancing is working for a company or entity on a contracted basis or being self-employed. A benefit of freelancing is picking projects one enjoys; a drawback may be a lack of insurance and other full-time employee benefits.

Considerations

Although benefits exist, you need to consider elements such as work hours, cash flow, and stability when considering a freelance position.

Work Hours

Self-employment often involves working more hours than you would if working for a company. Operating a successful freelance business takes a great deal of the owner's time.

Cash Flow

Money may not come rolling in at the beginning. A beginning entrepreneur may need to live off of savings or start a new business on the side until clients become regular and fees are routine.

Stability

The stability of a startup business may not be as great as working for a company or institution, especially at the beginning of the venture. If you crave stability, entrepreneurship may not be the best route.

Summary:



A web developer is a programmer who creates websites and/or computer software for the Internet. An app developer is a programmer who creates interactive content for the Internet from conception to the final version of the application; he or she creates, tests, and programs software for computers and other devices. The front-end of a website or app is the code and layout to create what a user can see and user interactions. A front-end developer is a programmer skilled at coding the user side of the website or app. The back-end of a website or an app is the application data stored on a server. This part of a website is unseen by the end user. A back-end developer is a programmer who works to accurately store, change, and access data to provide the requested information “back to the user.”

Checking Your Knowledge:



1. In your own words: What is a web developer? What is an app developer?
2. What is the difference between front- and back-end development?
3. Describe a full-stack developer's tasks.
4. Why are workplace ethics important in web and app careers?
5. What are soft-technical skills?

Expanding Your Knowledge:



Find a job posting for a web or app career of interest to you. Use the knowledge gained in this e-unit to write a cover letter and résumé for that job posting.

Web Links:



Web Developer

<https://thewc.co/articles/view/part-3-web-developer-jobs>

Web Developer Opportunities

<https://www.entrepreneur.com/article/241644>

App Developer

<http://www.forbes.com/sites/allbusiness/2013/11/14/how-to-build-your-first-mobile-app-in-12-steps-part-2/#e7a922b5bb99>