Springboard

—

A Guide to Software Engineering Salaries

2020 Edition

Table of Contents

What is Software Engineering?

Software engineering is one of the world's most exciting fields. It is the fundamental discipline that built the modern social media networks we use in our daily lives like Facebook, Twitter, and Instagram. It also enables the internet, mobile devices, and computing — whether that's creating the software for the iPhone or Android, powering web payments through PayPal and Stripe or business applications like Excel and PowerPoint.

Almost any business today benefits from software — and software engineers are the ones who create it.

Software engineering is a complex field. According to the IEEE, the world's largest technical professional organization, software engineering is "the application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software."

What Skills does a Software Engineer Need?

Software engineering combines elements of computer science, engineering, design, data science and analytics to create powerful products and systems. If you choose to become a software engineer, you'll learn how to:

- Program in languages like C or Javascript

- Evaluate and solve problems in a business

- Work with a team of developers and designers

- Use a variety of tools and techniques to accomplish your goals.

Software engineering is a high-demand, versatile career — as you'll learn in this book — with abundant jobs, high salaries and useful skills to be learned. While it is a challenging field, there are clear steps you can take to become a software engineer at a top company, and we're happy to share them with you.

> 66
>
> Software engineering concerns methods and techniques to develop large software systems. The engineering metaphor is used to emphasize a systematic approach to develop systems that satisfy organizational requirements and constraints.
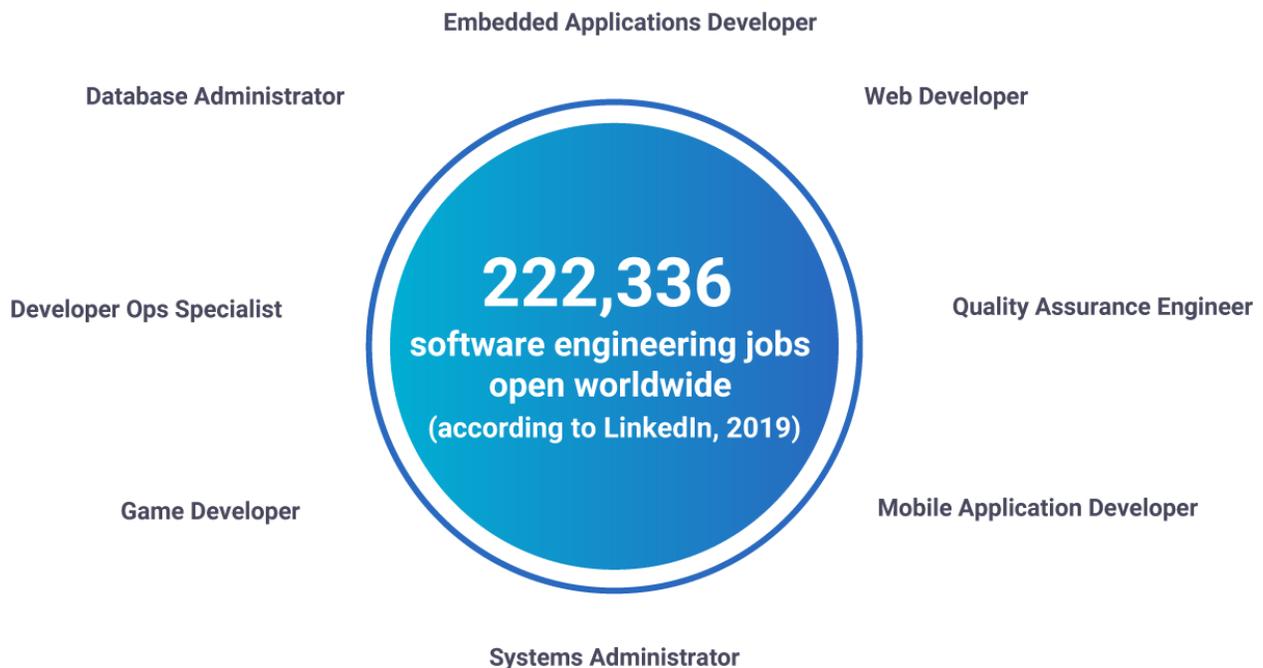> - Hans Van Vliet

The Job Market for Software Engineers

Software engineers are in high demand. In 2019, there were over 23.9 million software developers around the world, according to Evans Data Corporation. That number is expected to reach 28.7 million by 2024. There are over 3.4 million developers in the US alone.

In today's job market, companies are looking to fill over *half a million* software engineering roles right now, spanning a variety of specializations and roles, such as:

Embedded Applications Developer

Database Administrator   **Web Developer**

Developer Ops Specialist

222,336
software engineering jobs
open worldwide
(according to LinkedIn, 2019)

Quality Assurance Engineer

Game Developer   **Mobile Application Developer**

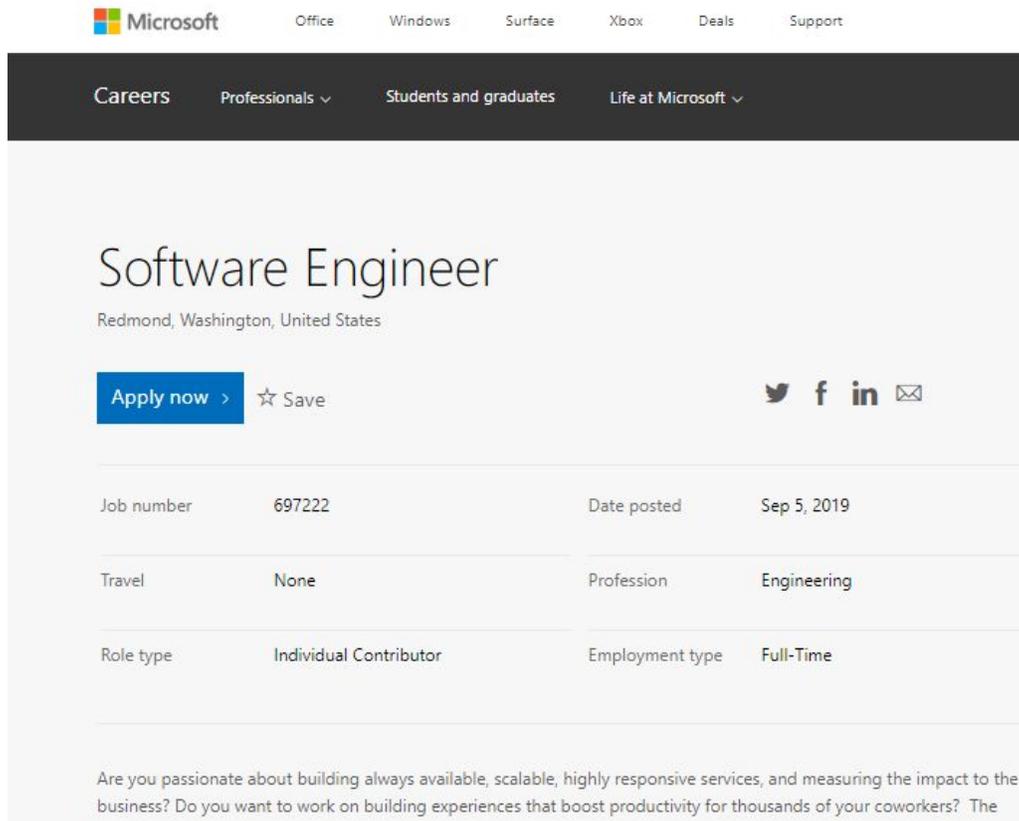**Systems Administrator**

Source: Hackernoon

With so many job openings available, employers are intent on hiring the best and brightest engineers. To help you understand what employers are looking for, we referred to this comprehensive list from [Balance Careers](). We also scoured 10 open job postings from major companies like Microsoft, Tesla, Intel, JP Morgan, and Amazon to note key skills. When taking stock of small- and medium-sized companies, we also found common criteria and qualifications for software engineering roles.

Example Job Postings

Here are three example job postings and highlights of desired qualifications:

[Microsoft - Software Engineer](#)

- Bachelor's in Computer Science/Engineering or similar discipline
- 5+ years of software development experience
- C, C++, or C#
- Solid architecture, design, development, and testing skills
- Experience in UX
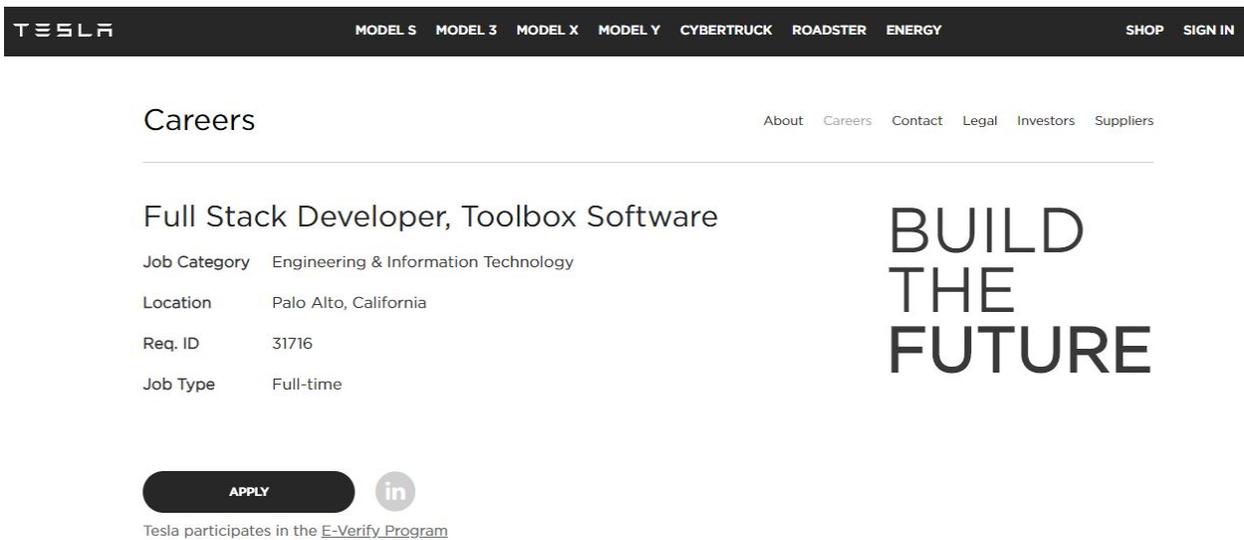- Analytical skills
- Communication skills

Tesla - Software Engineer

- Bachelor's in Computer Science/Engineering or similar discipline
- 2+ years in web application development, REST Api, Service Oriented Architecture
- .Net, C#
- Angular, JS
- SQL
- Automated unit and functional testing skills
- Knowledge of microservice architecture

TESLA	MODEL S	MODEL 3	MODEL X	MODEL Y	CYBERTRUCK	ROADSTER	ENERGY	SHOP SIGN IN

Careers

About Careers Contact Legal Investors Suppliers

Full Stack Developer, Toolbox Software

Job Category	Engineering & Information Technology
Location	Palo Alto, California
Req. ID	31716
Job Type	Full-time

BUILD THE FUTURE

APPLY   in

Tesla participates in the E-Verify Program

[Flowstate (Casper) - Software Engineer](#)

- Bachelor's in Computer Science/Engineering or similar discipline
- Knowledge of software development lifecycle
- C++, Python
- AngularJS, Git, Tensorflow
- Experience in unit testing
- Full-stack developer, able to understand different parts of the stack.

You'll see that most of these jobs require prior experience (2-5+ years) in software engineering, as well as a Bachelor of Computer Science degree. However, companies are increasingly open to accepting candidates without these degree requirements, which are often just a stipulation from HR.

In fact, companies like [Google and Apple have explicitly said they no longer require a college degree](#). That's because college completion doesn't necessarily correlate with competence. What's more, startup bootcamps and non-traditional courses can also equip candidates with the skills they need. So instead of worrying about the degree or the experience, it's better to ensure you have the following skills.

Springboard

Key Software Engineer Skills Chart

Programming Languages	Team Skills	Personal Management	Analytical Skills	Technical Skills
C / C++	Collaborating with others	Organizing information and materials	Analyzing data	Understanding database architecture
Javascript (and frameworks including Angular, jQuery, Node.js)	Disagreeing and committing	Prioritizing tasks	Troubleshooting bugs and problems	Source control (e.g. Git)
SQL	Active listening	Managing deadlines	Devising formulas and algorithms	Data optimization
Java	Conflict resolution	Setting expectations	Solving problems creatively	Databases and data structures
Ruby	Strong oral communication		Critically thinking through solutions	Machine learning
PHP	Strong written communication		Objective and dispassionate thinking	Web services
Python	Software development lifecycle			APIs (including REST/Restful)
HTML/CSS	Working with an Agile Scrum team			Code reviews
C# / .Net	Design reviews			Unit tests
React/Redux				Documenting code

A Day in the Life of a Software Engineer

Generally, software engineers have a flexible schedule. An advantage of working almost entirely on the computer is that you can often work from home or remotely. Software engineers are notorious for keeping irregular hours, such as working late at night or getting up very early. The bottom line is that software engineers can work at any time of day.

Typically, a software engineer's day consists of three key things: a stand-up/scrum meeting with their team, whiteboarding sessions, and coding.

Team meetings tend to be in the morning, and whiteboard sessions once a day for an hour. The rest of the time, engineers are in deep focus mode so they can program to solve the difficult problems in front of them.

One of the goals of an engineer should be to create and maintain solid blocks of uninterrupted focus time for engineering work. Often, engineers will aim to carve out at least three hours a day, if not more, of this time.

Your day-to-day might look like [Elie Schoppik's](link). Elie is a web developer by trade, as well as the co-founder and lead instructor at Rithm School, a full-stack web development program.

7/8 am

Wake up, eat breakfast, exercise, prepare for the day, and head to work.

9-10:30 am

Arrive at work. Typically, a team standup occurs closer to midday, as software engineers have flexible schedules. Mornings can be a good time to focus, pick up on coding work from yesterday and prepare notes and questions for colleagues on problems to be solved. You can also fit in at least one hour of focussed coding work.

10:30 am

Read emails from the previous day and handle any miscellaneous requests from your team that can be done quickly. Or, you have a meeting with your manager or other team members.

11 am

Prepare for a team standup before lunch. Usually, this involves 7-8 people who reiterate the main tasks your team is working on. Standups normally last 15-30 minutes, although they can take up to 60 minutes if there's a big launch on the way.

12 - 1pm

Lunch, typically with the team, to build relationships with coworkers.

1pm - 3 pm

Focus on deep work for a coding project. For example, this could be building a new feature or working on a platform integration.

3pm - 3:30 pm

Participate in an ad hoc whiteboard design session. This is typically when a few engineers discuss how something should work or how a problem could be solved.

| **4 pm - 5 pm** | Work on maintenance and support, such as bugs to fix or answering questions about how things work from another team or even a customer. |

Average Salary Across Software Engineering and Similar Fields

Software engineers are compensated well for their work, though salaries vary between companies, and also depend on the specialization of the engineer.

To understand the average salary, we looked at four different sources of salary data:

- Glassdoor
- Indeed
- LinkedIn
- Payscale

We determined that the average salary for a software engineer is: **$98,278.** We also compared a software engineer's salary to similar industry roles, such as technical and IT functions in a business.

Site/Title	Software Engineer	Database Administrator	IT Administrator	Web Designer	Programmer	Analyst	QA Tester	Technical Support
Payscale	84,414	72,874	61,722	49,601	54,889	57,732	68,946	50,789
Glassdoor	107,287	86,996	62,139	55,810	63,463	77,341	61,072	36,820
Linkedin	95,000	82,000	55,000	52,000	60,000	60,000	45,000	43,700
Indeed	106,411	93,063	63,653	44,200	70,226	71,603	68,360	31,620

Average	98,278	83,733	60,264	52,706	66,845	68,537	60.845	40,732

Source: Glassdoor, Indeed, LinkedIn, Payscale

The most in-demand software engineers

To maximize your salary, you should aim to specialize in an in-demand area. According to a Triplebyte report, the most in-demand software engineer positions are:

1. Full stack generalist software engineer
2. Back end software engineer
3. Front end software engineer
4. Data engineer
5. Android engineer

What are the top locations for software engineers?

The top five highest paying cities in the US for software engineers, according to ZipRecruiter are:

1. San Francisco, CA ($109,175)
2. San Jose, CA ($105,052)
3. New York City, NY ($102,010)
4. Seattle, WA ($101,175)
5. Boston, MA ($100,955)

.

Average Salary for Software Engineering at Different Levels of Experience

As with many industries, compensation is commensurate with experience.

Source: Glassdoor

Who are the Top Employers for Software Engineers?

Most of the Top 10 companies in the world ranked on Forbes' best 2000 employers list are technology companies, and they are all hiring software engineers.

Alphabet (Google)

931 software engineer jobs worldwide

Microsoft

7923 software engineer jobs worldwide

Red Hat

203 software engineer jobs worldwide

Apple

1471 software engineer jobs worldwide

SAP

2277 software engineer jobs worldwide

Cisco

472 software engineer jobs worldwide

Amazon

7625 software engineer jobs worldwide

Each company has its own process for selecting talent. Below, we'll share more about how to ace your interview.

How can I Succeed in a Software Engineering Interview?

Example questions from Facebook:

- Given two strings, write a boolean function to determine whether the first string is the anagram substring of the second one.

- How would you design a scalable system for a given purpose?

- Display the sorted output of a merge of any number of sorted arrays. Then do it again, more efficiently.

For more from Facebook, please visit their Glassdoor interviews page or Facebook's official interview prep page.

Example questions from Microsoft:

- Write a function that copies buffers content from a linked list to another one where both lists total buffer size is variable.

- Given a list of integers l and an int k, find all continuous sequences in l that sum to k.

- Reverse all words in a sentence and keep punctuation (liberty in deciding this) in place. "I am Ironman." becomes "I manamnorI."

For more from Microsoft, please visit their Glassdoor interviews page or Microsoft's official interview prep page.

Example questions from Google:

- Given a sorted matrix where the number below and right of you will always be bigger, write an algorithm to find if a particular number exists in the matrix. What is the running time of your algorithm?

- Given a graph as input, write a java method returning boolean true if the graph is bipartite, else false.

- Convert a post-order tree to pre-order

For more from Google, please visit their Glassdoor interviews page or Google's official interview prep page.

General Interview Questions

We also recommend studying generally useful questions that an aspiring software engineer might be asked in a job interview. Included in the list from [Indeed](link) are:

- What programming languages have you used in the past? What are your top two programming languages?

- How much are you coding on a daily basis? If you do not code on a daily basis, what is typical in your role?

- How comfortable are you in a startup environment, or do you prefer working in a more established company?

- What distinguishes a great software engineer from a good one? Do you feel you have those qualities?

- What's the most important thing to look for or check when reviewing another team member's code?

- In your opinion, what are the principles of good software engineering? What are some basic principles everyone should follow?

- If needed, how would you go about designing scalable applications? Walk us through your process.

General tips for interviews

- Research your interviewer. Look them up on LinkedIn, learn a couple facts about their career and story, and ask them more in person. Mention that you saw their profile and are interested to learn more about how they ended up where they are. People love talking about themselves, so give them a chance to.

- Get a referral or a good word put in. If you know someone at the company who can put in a good word for you, it may make an impact.

- Learn to solve programming problems. Here's a good guide from Simple Programmer, which offers [tactical tips to thinking through algorithms](#) in plain language.

- Think about the question before you answer. It's okay to take your time; you don't need to respond right away.

- Write or draw the answer. Sometimes it's helpful to have a notebook in front of you, and to ask the interviewer if you can take a minute for a problem-solving question.

- Use examples. Share experiences from your previous jobs and from your educational background. Tell stories that demonstrate you understand the work or problem at hand, not just the idea of it.

Finally, here's another [fantastic interview study guide for software engineers](#) from Dev.

How Springboard will Help

What we offer:

- A curated curriculum built in partnership with hiring managers at top software companies

- 1:1 mentorship from software engineering experts

- Personalized career coaching and job search strategy customized for you

- Job guarantee and deferred tuition

You can expect:

- A comprehensive, 800-hour self-paced curriculum covering front-end web development, back-end web development, databases, data structures and algorithms

- 4 hire-ready capstone projects to showcase your talent to hiring managers.

- Skills other software and web bootcamps don't teach, like Python and Flask

By the end of this course, you will be able to:

- Build static web pages with HTML, CSS, and JavaScript

- Create beautiful, interactive client-side web apps

- Make well-designed server-side JavaScript applications using Node and Express

- Build powerful single-page web apps with React

We hope you enjoyed this guide to software engineering salaries. This was put together by Roger with help from Lina from our team, and Jaxson Khan, a technology writer. If you have any questions about digital marketing, don't hesitate to reach out to Lina at lpervez@springboard.com!

Lina & Roger