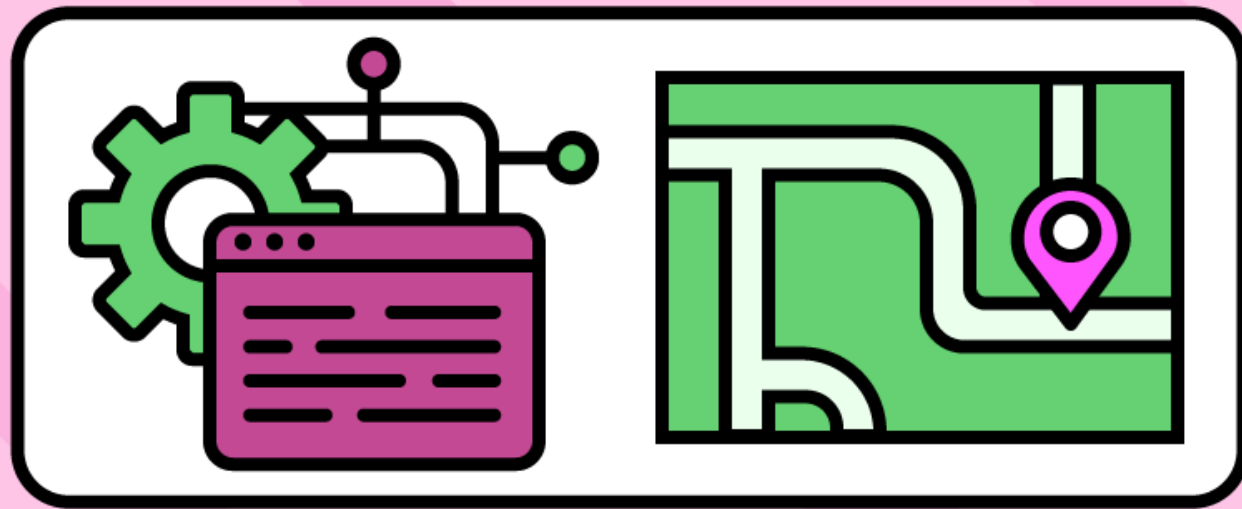


# Roadmap to a software engineer career



## As an SWE, you can:

- Earn great compensation
- Join an evergreen profession
- Work on exciting problems



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# Steps to a SWE career

## 1 Make a career plan

Choose a specialization and how you'll learn skills

🕒 **Timeline:** Variable

## 2 Get an education

🕒 **Timeline:** 12 weeks to six years

## 3 Get real-world experience

E.g., internships, hackathons, coding projects (open source, anyone?)

🕒 **Timeline:** A few months

# Steps to a SWE career

## 4 Earn a certification (optional)

E.g., Certified Secure Software Lifecycle Professional, Professional Software Developer

🕒 **Timeline:** Could take multiple years.

## 5 Prepare for your job search

E.g., Build a GitHub portfolio, practice coding problems, study interview questions, network


🕒 **Timeline:** A few weeks to a few months

## 6 Search for SWE jobs

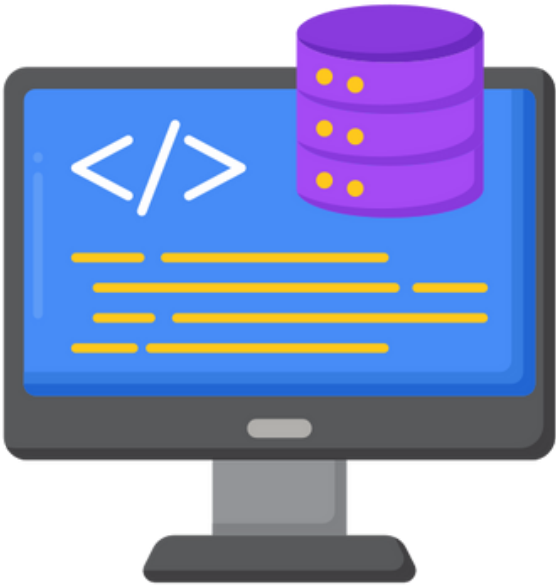
Use Indeed, Glassdoor, Dice, etc., and keep track of applications

🕒 **Timeline:** 1-2 months


# What's required?

Specialization	Technical skills	Education and experience
<p>Front-end developer</p> 	<ul style="list-style-type: none"><li>• HTML + CSS</li><li>• Programming languages (JavaScript)</li><li>• Front-end frameworks and libraries (Angular, React, Vue)</li><li>• Version control (Git + repository services like GitHub)</li><li>• RESTful services and APIs</li><li>• Testing frameworks</li><li>• Graphic design</li><li>• Web security</li></ul>	<ul style="list-style-type: none"><li>• CS or related degree helpful</li><li>• Bootcamp grads and self-taught developers also get hired</li><li>• Entry-level positions generally available</li></ul>

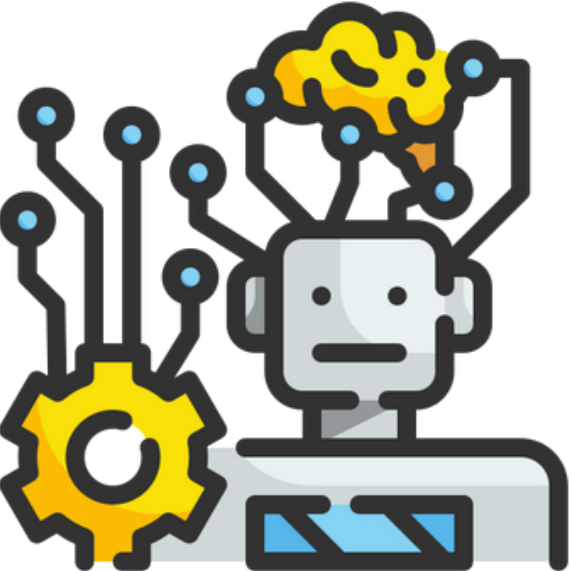
# What's required?

Specialization	Technical skills	Education and experience
<p>Back-end developer</p>  An illustration of a computer monitor with a blue screen. On the screen, there are white code symbols (</>) and several horizontal yellow lines representing code. To the right of the screen is a purple database icon consisting of three stacked cylinders with yellow dots on them.	<ul style="list-style-type: none"><li>• HTML + CSS</li><li>• Programming languages (JavaScript, Python, PHP, Java, SQL)</li><li>• Back-end frameworks and libraries (NodeJS, Django, Laravel)</li><li>• Relational databases (PostgreSQL, MySQL)</li><li>• NoSQL databases (MongoDB, Cassandra, Firebase)</li><li>• Version control (Git + repository services like GitHub)</li><li>• APIs</li><li>• Testing frameworks</li><li>• Web security</li></ul>	<ul style="list-style-type: none"><li>• CS or related degree often expected</li><li>• Bootcamp grads and self-taught devs also get hired</li><li>• Entry-level positions generally available</li></ul>


# What's required?

Specialization	Technical skills	Education and experience
<p>Full-stack developer</p>  A cartoon illustration of a person with a grey hood and a smiling face. They are holding a stack of three books: a blue one on top, a yellow one in the middle, and a red one on the bottom. On either side of the person's head are orange code symbols: a less-than sign (<) on the left and a greater-than sign (>) on the right.	<ul style="list-style-type: none"><li>• Both front-end and back-end skills</li></ul>	<ul style="list-style-type: none"><li>• CS or related degree often expected</li><li>• Bootcamp grads and self-taught devs also get hired</li><li>• Entry-level positions generally available</li></ul>

# What's required?


Specialization	Technical skills	Education and experience
<p>Machine learning engineer</p> 	<ul style="list-style-type: none"><li>• CS fundamentals (algorithms, data structures)</li><li>• Programming languages (SQL, Python, C++, Java, R)</li><li>• Data modeling</li><li>• ML modeling</li><li>• Mathematics, probability, and statistics</li><li>• ML algorithm optimization</li><li>• Cloud computing (AWS, Azure, Google Cloud)</li><li>• Other ML topics (deep learning, neural network architectures, natural language processing)</li></ul>	<ul style="list-style-type: none"><li>• CS science or mathematics degree usually expected</li><li>• Advanced degrees sometimes expected</li><li>• Entry-level positions usually not available</li><li>• Career changes into these roles possible with relevant experience</li></ul>

# What's required?

Specialization	Technical skills	Education and experience
<p>Data engineer</p> 	<ul style="list-style-type: none"><li>• Programming languages (SQL, Python, Java, R)</li><li>• Relational databases (PostgreSQL, MySQL)</li><li>• NoSQL databases (MongoDB, Cassandra, Firebase)</li><li>• ETL (extract, transform, and load) systems</li><li>• Data storage (e.g., data lakes, data warehouse)</li><li>• Automation &amp; scripting</li><li>• Machine learning concepts and tools</li><li>• Big data tools (Hadoop, Kafka)</li><li>• Cloud computing (AWS, Azure, Google Cloud)</li><li>• Data security</li></ul>	<ul style="list-style-type: none"><li>• CS science or mathematics degree usually expected</li><li>• Entry-level positions usually not available</li><li>• Career changes into these roles possible with relevant experience</li><li>• Certifications helpful (e.g., IBM Certified Data Engineer, Google's Certified Professional)</li></ul>



# What's required?

Specialization	Technical skills	Education and experience
<p>Security engineer</p>  An illustration of a computer workstation. It features a grey monitor with a teal shield icon in the center, which has a white padlock symbol. The monitor is connected to a blue keyboard. There are several yellow circular nodes connected to the monitor by thin lines, representing a network or data flow.	<ul style="list-style-type: none"><li>• Computer networking and network security</li><li>• Operating systems</li><li>• Programming languages (Python, C++, Java, Ruby)</li><li>• Computer hardware and software</li><li>• Virus protection software</li><li>• Data management and database platforms</li><li>• Security protocols and standards</li></ul>	<ul style="list-style-type: none"><li>• CS or related degree often expected</li><li>• Entry-level positions generally available</li></ul>

# Join the conversation!

**What do you want to  
become?**

**What have you already  
accomplished?**



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