



STUDENT ACTIVATION



Software Engineer



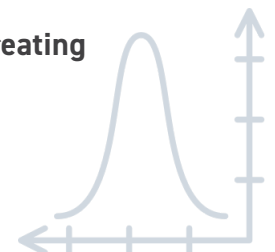
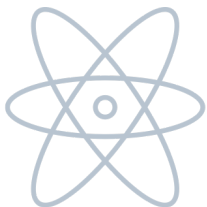
OVERVIEW

Software engineers are the creators of many of the tools used every day, including computer processing systems and smartphone applications. They solve real-world problems using computer science and engineering principles. They work across a wide range of industries, including technology, healthcare, energy, government, finance, and many more. They often work as part of a team and may interact directly with clients to help solve complex problems. Software engineers bring ideas to life.



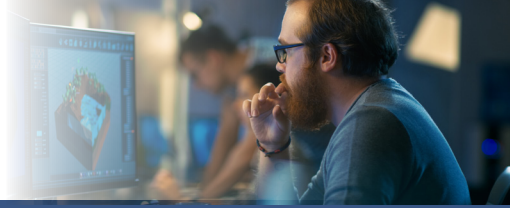
EVALUATE YOUR INTEREST

- I like brainstorming big ideas to solve unique challenges.
- I think critically and am good at evaluating my options.
- I like working as part of a team and helping my teammates succeed.
- I am interested in computer science and other STEM subjects, like math and engineering.
- I can be creative and even artistic.
- I have a strong attention to detail and like creating processes that help me meet my goals.


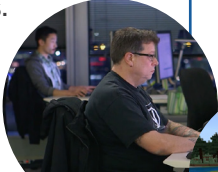
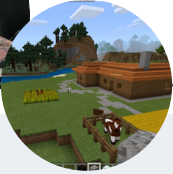


Software Engineer

STUDENT ACTIVATION (CONTINUED)



CAREER CONNECTION

How does this career affect me?	What are some other similar careers?	How does this career affect the world? 
<p>It is very likely that several products you use every day were created by software engineers. Software engineers helped to create video games, weather apps on smartphones, the navigation systems in cars, home security systems, and thermostats. As computers have become a part of our daily lives, the projects that software engineers have the chance to work on have become more diverse and even more important. If someone needs to visit a hospital, the healthcare professionals will very likely use tools that are enabled by the work of software engineers to monitor health and deliver treatments.</p>  	<p>Computer hardware engineers are also involved in creating the computer-based tools used every day. They also design and create the physical components of computers, such as processors, circuit boards, and memory devices.</p> <p>Computer programmers take the ideas that software designers and engineers come up with and turn them into instructions that computers can follow. They write the code that brings computer software and applications to life.</p> <p>Computer and information research scientists help scientists and engineers solve big computing problems, enabling them to take technology further. They find exciting new ways to use existing computer technologies and invent brand new technologies, too.</p>	<p>Software engineers positively impact the world around them by creating programs and applications that make us safer and smarter. One example is the work that software engineers are doing to secure all of the sensitive and critical information that is now housed on computers and in the cloud. From medical histories to top secret government information, all types of data is collected, shared, and housed on computers. Software engineers have had to solve the complex problem of how to keep all that information safe. This is a role for software engineers that is likely to continue to develop as more information is housed on computers, and as those who wish to hack into that information become more sophisticated.</p>

TAKE ACTION

- Think of a household chore that you don't enjoy and brainstorm ways that a computer program or smartphone application could make that task quicker and easier. What would the program need to do and how would a user interact with it? Follow the engineering design process to identify the need, research the issue, brainstorm ideas, develop a solution, prototype, test, and evaluate your design, then improve upon it. Share the results with your classmates.
- Select a computer program or application and make a step-by-step list of the process a user takes to get from the beginning (opening the app or program) to the end (fulfilling whatever need brought someone to the application in the first place). Analyze the process and brainstorm ways that it could be simplified or improved. Write your list of recommended improvements in a memo and share it with your teacher.
- Perform an audit of all the computer programs and applications at use in your home or school. Don't forget that even elements like your family's car or your vacuum might function using software that was designed by a software engineer. Record all of the examples you can find and share your results with your family.