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What Does a Microprocessor Designer Do?

Being a microprocessor designer is one of the most challenging and interesting jobs in the tech industry. As you might expect, these engineers work for companies like Intel, Nvidia and AMD to design the next generation of silicon semiconductors, and it takes hundreds of engineers several years of working together to complete a design. They usually have advanced degrees in electrical or computer engineering, and they spend their days solving logic problems that can be reduced to a series of symbols with a pen and paper.

What Do Chip Designers Do All Day?

The specifics of their work are often top-secret, so there isn't much in-depth information on the inner workings of the Intel Haswell or Nvidia GTX 980. However, chip designers are quite open about their work environment and the process they follow when designing a CPU. Out of the hundreds of engineers working on a processor, small teams are formed to tackle individual parts of the problem separately. They have to work around the clock to complete scheduled project milestones ahead of the deadline, and the job can be quite hectic when a shipment of silicon is received from the fabrication plant.

While most engineers are assigned to work on small, independent problems within the project, a few people are chosen to work on horizontal domains, which are problems that affect all parts of the project. These teams are considered the most exciting and interesting ones to be a part of, but in general, microprocessor engineers enjoy their work very much. It's not easy to find work in this profession because job growth is slowing down and competition is increasing. Most microprocessor designer jobs are with big companies that offer high salaries and comprehensive employee benefits, and these companies are in the position to hire only the most exemplary candidates.

Getting Your Foot in the Door

To get a dream job in Silicon Valley, you usually have to graduate from a well-known engineering college like Cal Tech or MIT, although it's not always necessary to have a master's degree. Another possible path to working for Intel, Nvidia, AMD, Qualcom or another big-name chip maker is to work for a small company that gets acquired by one of these top brands. Some research into a company's history may tell you if it's working on a project of interest to a famous chip maker like Arm or Qualcom, and then you can narrow your job search to a few key firms.

The strategy is a gamble, but in the worst case, you'll get valuable job experience that can lay the foundation for a career in chip design. Another very important point that is sometimes overlooked is to study computer science in college. Computer engineering programs usually include a few fundamental CS courses, but hardware engineers aren't required to know how to do high-level software engineering. As a chip designer, you don't need to know high-level programming, but low-level Assembly language programming is a very relevant skill to have when you're building device hardware. Your job prospects are much higher when you can design logic circuits and the OS to run on them.

The silicon semiconductor is one of the most advanced technologies ever created, and passionate engineers are needed to dedicate their lives to designing these chips. If you love computers and logic design, you should consider becoming a microprocessor designer.