# Supporting Careers Education in Computer Science and IT

*The following careers link with the teaching and learning of each key stage across the curriculum*

In the computer science field, people or "soft" skills can help professionals find new ways to tackle problems. They also help IT specialists communicate and collaborate. Below are some of the most useful hard and soft skills in this field.

| Soft skills | Hard skills |
|---|---|
| <ul><li>Communication</li><li>Analytical reasoning</li><li>Problem-solving</li><li>Leadership</li><li>Time management</li></ul> | <ul><li>Mathematics</li><li>Coding</li><li>Technical writing</li><li>Software development</li><li>Networking</li></ul> |

| Key Stage 3 | Key Stage 4 | Key Stage 5 |
|---|---|---|
| **Mobile application designer**<br>Mobile application designers create applications for organisations, websites, and software. They design based on consumer and user needs, run the application through testing, and make upgrades and improvements when necessary. | **Data Scientist**<br>Data scientists look for different ways to use data to help organisations and industries make more informed decisions. They create mining strategies, analysis methods, and various models and visualisations to make sense of the results. | **Cloud Engineer**<br>Cloud engineers create plans and development strategies for cloud computing networks. They base their designs on consumer needs and technological demands while upgrading and improving the existing network and systems. These engineers ensure the system is scalable and operable for all users. |

| Key Stage 3 | Key Stage 4 | Key Stage 5 |
|---|---|---|
| **Computer Hardware Engineers**<br>Computer hardware engineers design and develop new computer components and equipment. They research hardware needs and create solutions and upgrades for automobiles, computers, and other technologies. They also test the hardware and provide input during the manufacturing phase.<br><br>**Network administrators**<br>Network administrators oversee the daily operations of an organisation's networks. They perform upgrades, regular maintenance, and troubleshooting. They also train users and look for opportunities to improve network performance based on organisational needs.<br><br>**Web Developers**<br>Web developers work independently as freelancers or with company teams to create websites. Depending on the job, these professionals may focus on front-end development, which involves designing sites and producing content, or back-end development, which involves writing code to make website features work. Web developers may also become webmasters for a site, providing maintenance, updates, and troubleshooting when needed.<br><br>**Database Administrator**<br>Database administrators or managers create and maintain databases compatible with their companies' needs. These information technology (IT) professionals oversee database updates, storage, security, and troubleshooting. | **Software developer**<br>Software developers design and develop software that works on various systems. They ensure the various applications within the software and those interacting with it all work together. They collaborate with coders, engineers, and testers.<br><br>**IT Project Manager**<br>IT project managers oversee information technology maintenance, installation, and development projects. They manage other IT professionals, such as developers and programmers, and handle project budgets and scheduling.<br><br>**Computer and information research scientists**<br>Computer and information research scientists seek out new and improved uses for technology. They research new applications and test out possible solutions using existing technologies, publishing and presenting their findings.<br><br>**Security Analyst**<br>Information security analysts keep their companies' data and computer systems safe from cyberattacks. They install protective software, watch for potential breaches, and respond to any attacks that do occur. Companies across industries need information security analysts. Top employers include computer systems design and related services, finance and insurance, and information. | **AI research Scientist**<br>AI research scientists look for ways to improve artificial intelligence and use it in new and revealing ways. These scientists seek out problems that AI might help solve, conducting experiments and presenting the results of these tests.<br><br>**Computer Systems Analysts**<br>Computer systems analysts evaluate an organisation's technological needs and computer systems to identify possible improvements and inefficiencies. They then plan upgrades by developing budgets and projections, while also designing and implementing the new systems and training users and administrators.<br><br>**Machine learning Engineers**<br>Machine learning engineers work in a niche field of information systems research. They seek ways to use machines and artificial intelligence to solve complex problems, test systems, and make projections. They also develop ways for machines to process information and sensory data.<br><br>**Computer Science teacher**<br>Computer science professors teach classrooms of computer science students, plan lessons, develop curriculums, and oversee lab work. Teachers also conduct their own research projects, leading teams of researchers, and publishing their findings. |

| Key Stage 3 | Key Stage 4 | Key Stage 5 |
|---|---|---|
| | **Information Researcher**<br>Computer information researchers create new and emerging technologies. They conduct experiments and analyse data to find solutions to diverse computing problems. As tech leaders, these researchers hold prestigious positions that often come with higher-than-average salaries and high demand. Many pursue master's and doctoral degrees in computer science before becoming research scientists. | **Health Information Technician**<br>As a subset of the larger information technology field, health information technology incorporates interdisciplinary competencies from health and computer science. Health information technology professionals work in a variety of settings, including hospitals, insurance companies, and government agencies, collecting, interpreting, and protecting patient-related data.<br><br>**User Experience designer (UX)**<br>As a UX designer, you'll ensure that the 'user experience' for individuals using websites or applications is as efficient and pleasurable as possible. |