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# Computer Science

## Fundamentals of data representation

Number bases, Converting between number bases, Units of information, Binary arithmetic, Character encoding, Representing images, Representing sound and Data compression

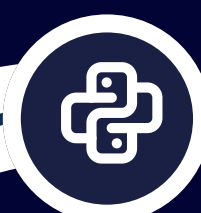


## Programming

Data types, Programming concepts; Arithmetic, Relational and Boolean operations, Data structures, Input/output, String handling, Random number generation and, Structured, robust and secure programming

## Relational databases and structured query language (SQL)

Relational databases  
Structured query language (SQL)

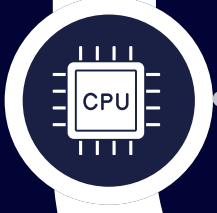


## Programming Techniques

Structured programming and subroutines  
Robust and secure programming; Errors and Testing

## Computer systems

Hardware and software  
Boolean logic  
Software classification  
Classification of programming languages and translators  
Systems architecture



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## Fundamentals of computer networks

Types of computer network; Personal Area Network (PAN); Local Area Network (LAN); Wide Area Network (WAN).  
Topologies and transmission  
Network protocols  
Network security  
TCP/IP model:

## Fundamentals of cyber security

Cyber security threats  
Social engineering  
Malicious code (malware)  
Methods to detect and prevent cyber security threats



## Ethical, legal and environmental impacts

cyber security  
mobile technologies  
wireless networking  
cloud storage  
hacking (unauthorised access to a computer system)  
wearable technologies  
computer based implants  
autonomous vehicles.

**A-Levels**  
**T-Levels**  
**Apprenticeships**  
**Work**