Network fundamentals

IB Computer Science
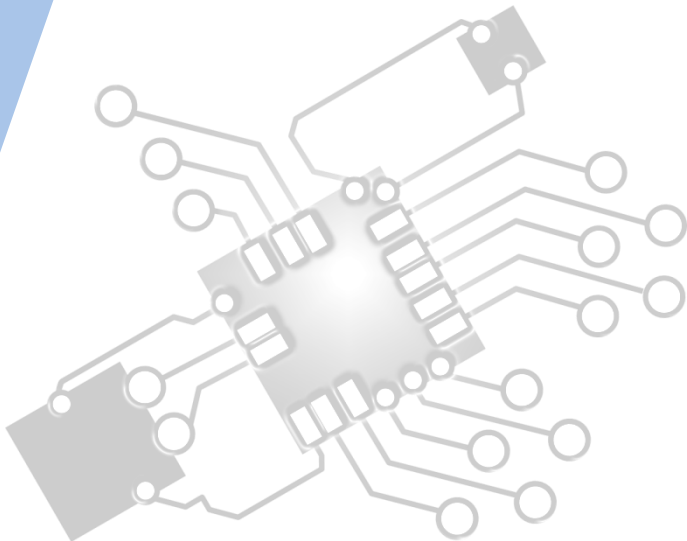
HL Topics 1-7, D1-4
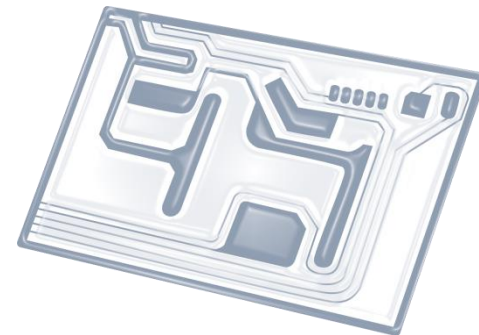
1: System design

2: Computer Organisation

3: Networks

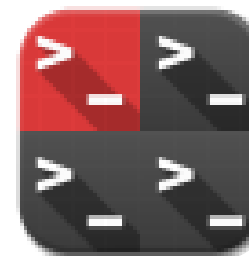4: Computational thinking

5: Abstract data structures

6: Resource management

7: Control

D: OOP

HL & SL 3 Overview

Network fundamentals

3.1.1 Identify different types of networks

3.1.2 Outline the importance of standards in the construction of networks

3.1.3 Describe how communication over networks is broken down into different layers

3.1.4 Identify the technologies required to provide a VPN

3.1.5 Evaluate the use of a VPN

Data transmission

3.1.6 Define the terms: protocol, data packet

3.1.7 Explain why protocols are necessary

3.1.8 Explain why the speed of data transmission across a network can vary

3.1.9 Explain why compression of data is often necessary when transmitting across a network

3.1.10 Outline the characteristics of different transmission media

3.1.11 Explain how data is transmitted by packet switching

Wireless networking

3.1.12 Outline the advantages and disadvantages of wireless networks

3.1.13 Describe the hardware and software components of a wireless network

3.1.14 Describe the characteristics of wireless networks

3.1.15 Describe the different methods of network security

3.1.16 Evaluate the advantages and disadvantages of each method of network security

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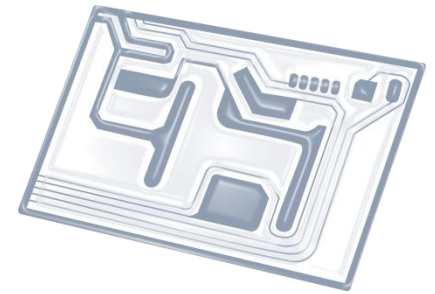5: Abstract data structures

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Topic 3.1.2

Outline the **importance** of **standards** in the construction of networks

Standards are important!

- Standards play an important role in networking.
- Without standards, manufacturers of networking products have **no common ground** on which to build their systems.
- Interconnecting products from various vendors would be difficult, if not impossible.
- Without agreed standards, **communication would be difficult** (if not impossible)