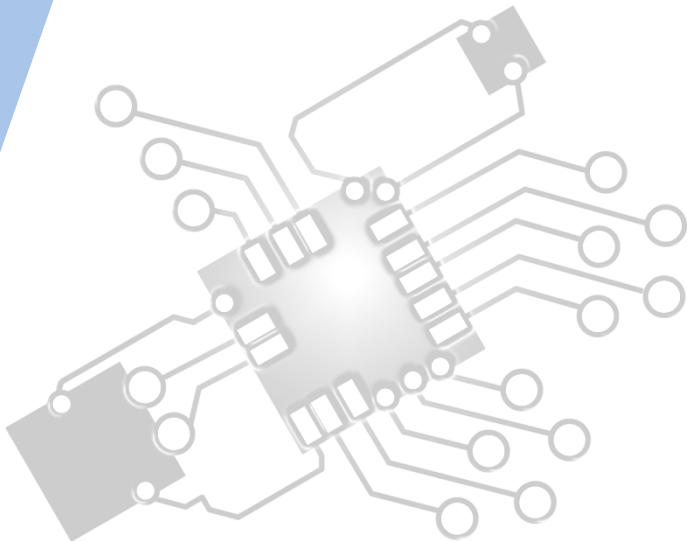




Planning & system installation

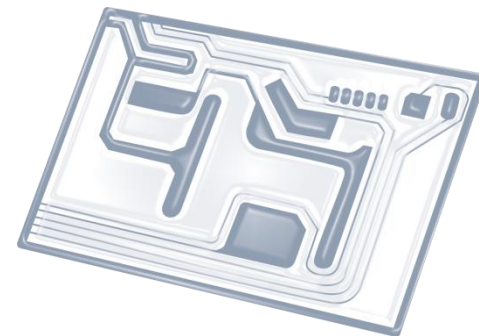
IB Computer Science



Content developed by
Dartford Grammar School
Computer Science Department



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



1: System design

2: Computer Organisation



3: Networks

4: Computational thinking



5: Abstract data structures

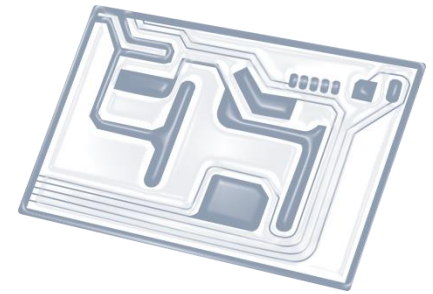
6: Resource management



7: Control

D: OOP





Topic 3.1.16

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



userID



- **Advantages:**

- Access rights to the network can be set for each user
- User groups can be created to manage user rights in batches

- **Disadvantages:**

- A userID can be stolen
- system can be bypassed
- Does not protect against intercepting messages in the network

Encryption security



- **Advantages:**

- A strong encryption is very hard to break
- Computer are fast enough to encrypt data on-the-fly

- **Disadvantages:**

- Often, users are lazy and take a password that is easy to guess
- The password needs to be transmitted over the network to receiver to allow them to read the message
- Some encryptions are designed to have backdoors built in