Features of OOP

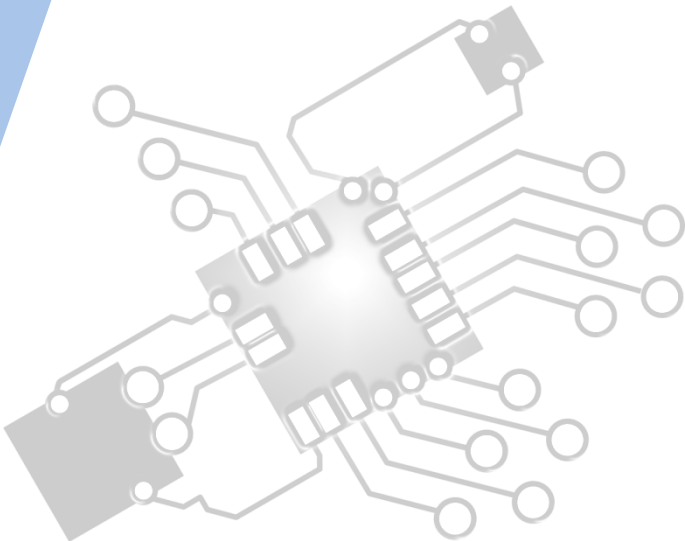## IB Computer Science

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 D.2 Overview

D.2 Features of OOP

D.2.1 Define the term encapsulation

D.2.2 Define the term inheritance

D.2.3 Define the term polymorphism

D.2.4 Explain the advantages of encapsulation

D.2.5 Explain the advantages of inheritance

D.2.6 Explain the advantages of polymorphism

D.2.7 Describe the advantages of libraries of objects

D.2.8 Describe the disadvantages of OOP

D.2.9 Discuss the use of programming teams

D.2.10 Explain the advantages of modularity in program development

1: System design

2: Computer Organisation

3: Networks

4: Computational thinking

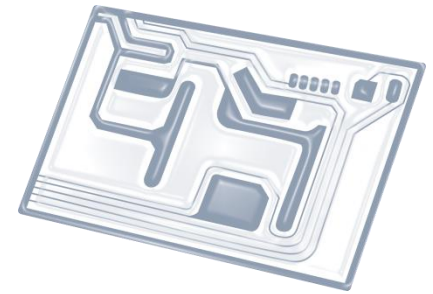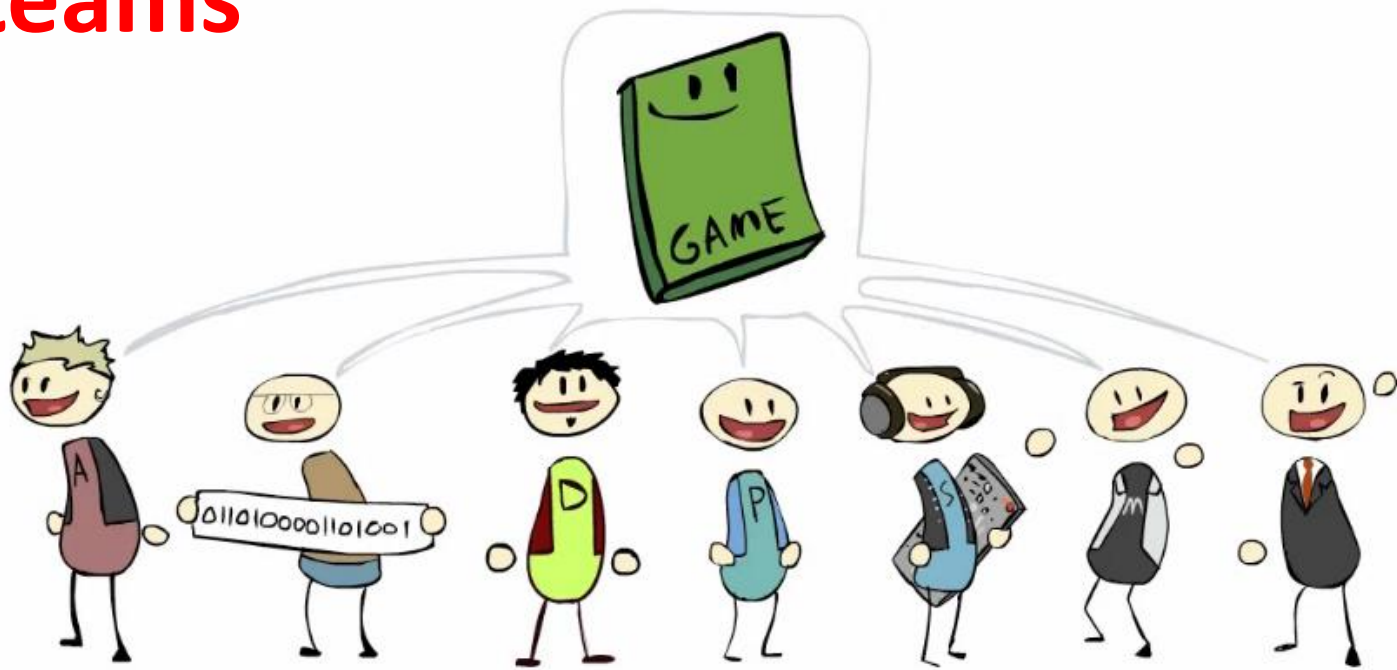5: Abstract data structures

6: Resource management

7: Control

D: OOP

Topic D.2.9

Discuss the use of **programming teams**

Single vs Team

Is it always better work in a team?
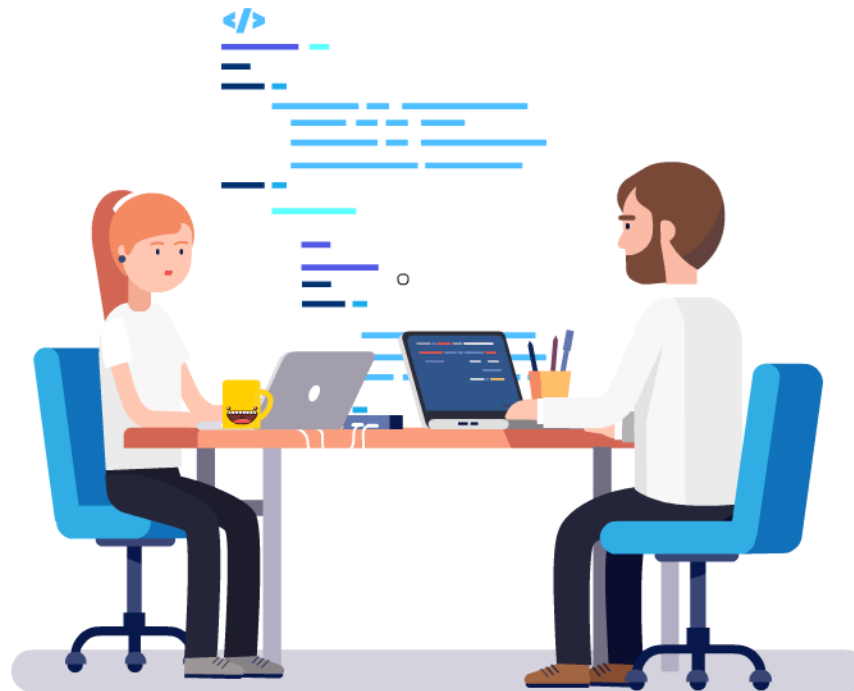**It is every better to work alone?**

Team vs. Individuals

A. **Speed** of **completion**

B. **Information hiding** to reduce module dependencies

C. **Expertise** in a **narrow field** (e.g. testing, documentation)

A. Speed to completion

- Because tasks can be completed **concurrently**, the overall project can be completed in a shorter time.

B. Information hiding

- Because developers only need to know the **name** and **required parameters** to use a behaviour, they can use code without needing to understand how it functions.

- There is also **a security benefit** to coders not having access to the actual data items themselves.

C. Expertise in narrow fields

- Assembling a **complex** project needs **many different skills**.

- By allowing each part to be programmed by an expert in that field, the quality of the final product is significantly higher than expecting one person to be a 'jack-of-all-trades'.

⚠️ *Warning!*

When collaborating across international frontiers, a **common "language"** needs to be developed when resolving problems.