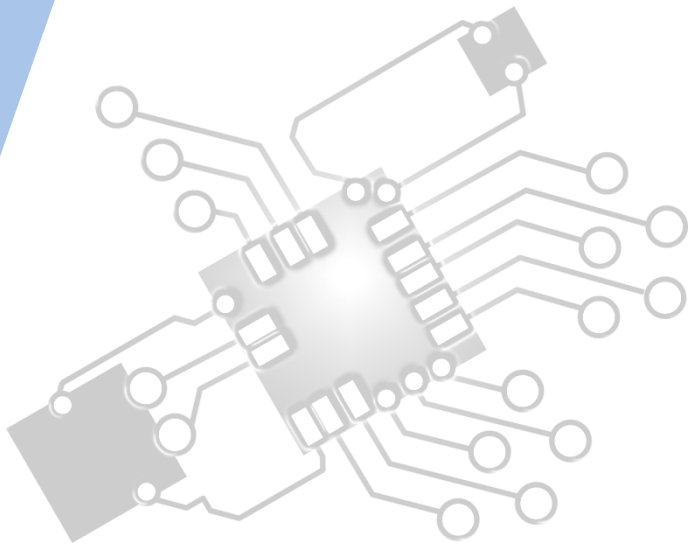
# *Objects as a programming concept*

## IB Computer Science



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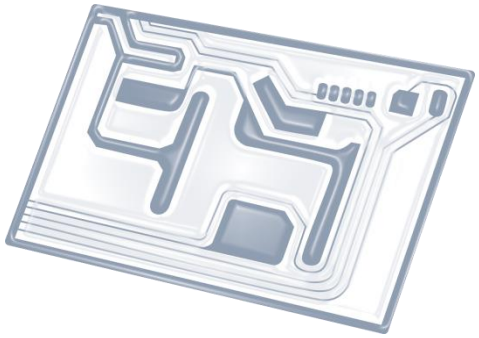
# HL Topics 1-7, D1-4



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

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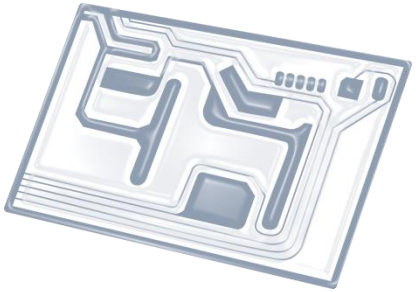
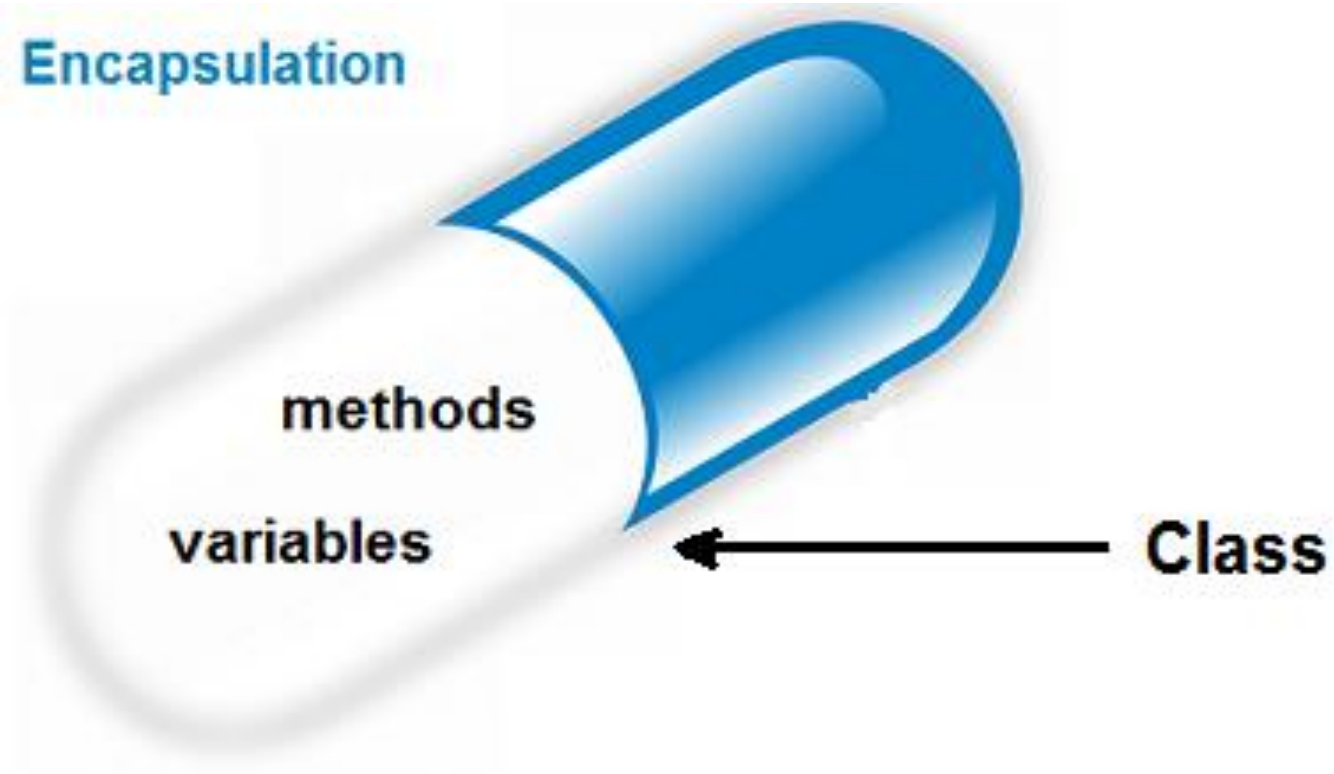


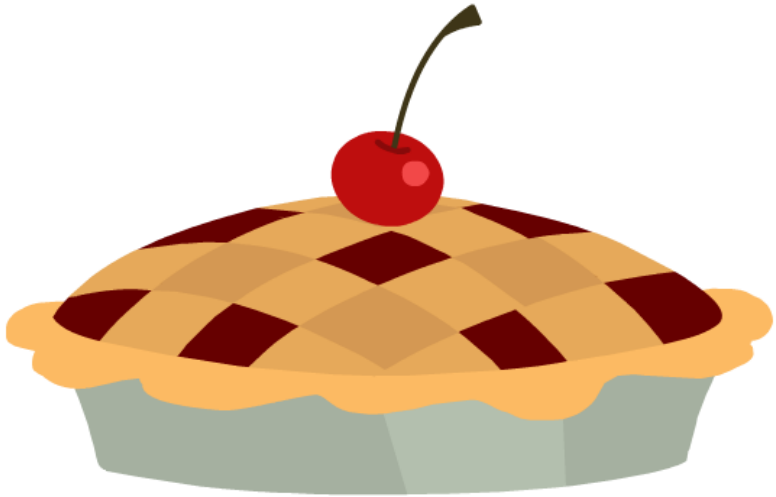
# Topic D.2.1

Define the term: **encapsulation**



# Four OOP fundamentals:

- **A**bstraction
- **P**olymorphism
- **I**nheritance
- **E**ncapsulation



# Definition: Encapsulation

- Encapsulation is the technique of making the **fields** in a class **private** and providing access to the fields via **public methods**.
- If a field is declared private, it cannot be accessed by anyone outside the class, thereby hiding the fields within the class.
- For this reason, encapsulation is also referred to as **data hiding.**

# What is the point?

- Encapsulation can be described as a **protective barrier** that prevents the code and data being randomly accessed by other code defined outside the class.
- Access to the data and code is tightly controlled by an **interface**.