



# *Objects as a programming concept*

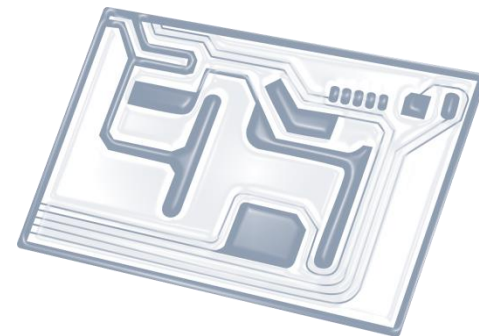
IB Computer Science



*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.3 Overview

## D.3 Program development

D.3.1 Define the terms: class, identifier, primitive, instance variable, parameter variable, local variable

D.3.2 Define the terms: method, accessor, mutator, constructor, signature, return value

D.3.3 Define the terms: private, protected, public, extends, static

D.3.4 Describe the uses of the primitive data types and the reference class string

D.3.5 Construct code to implement assessment statements

D.3.6 Construct code examples related to selection statements

D.3.7 Construct code examples related to repetition statements

D.3.8 Construct code examples related to static arrays

D.3.9 Discuss the features of modern programming languages that enable internationalization

D.3.10 Discuss the ethical and moral obligations of programmers



1: System design

2: Computer Organisation



3: Networks

4: Computational thinking



5: Abstract data structures

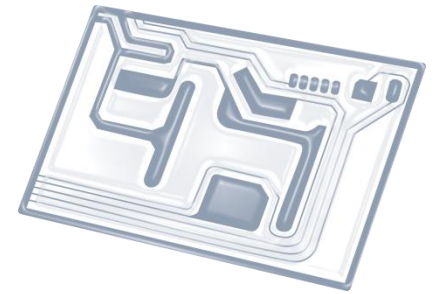
6: Resource management



7: Control

D: OOP





# Topic D.3.8

Construct code examples related to **static arrays**

**One Dimensional array**

Initialization `int a[] = new int [12];`

Value	1	2	3	4	5	6	7	8	9	10	11	12
Index	a[0]	a[1]	a[2]	a[3]	a[4]	a[5]	a[6]	a[7]	a[8]	a[9]	a[10]	a[11]

`System.out.print(a[5]);`      **Output: 6**

## Arrays.

a

a[0]
a[1]
a[2]
a[3]
a[4]
a[5]
a[6]
a[7]

Practice reading from an array,  
moving data to/from the array,  
printing out selections from it... etc.

**Practice, Practice, Practice!!**

Compile-time initialization.

```
String[] suit = { "Clubs", "Diamonds", "Hearts", "Spades" };  
  
String[] rank =  
{  
    "2", "3", "4", "5", "6", "7", "8", "9", "10",  
    "Jack", "Queen", "King", "Ace"  
};
```

<i>create an array with random values</i>	<pre>double[] a = new double[N]; for (int i = 0; i &lt; N; i++)     a[i] = Math.random();</pre>
<i>print the array values, one per line</i>	<pre>for (int i = 0; i &lt; N; i++)     System.out.println(a[i]);</pre>
<i>find the maximum of the array values</i>	<pre>double max = Double.NEGATIVE_INFINITY; for (int i = 0; i &lt; N; i++)     if (a[i] &gt; max) max = a[i];</pre>
<i>compute the average of the array values</i>	<pre>double sum = 0.0; for (int i = 0; i &lt; N; i++)     sum += a[i]; double average = sum / N;</pre>
<i>copy to another array</i>	<pre>double[] b = new double[N]; for (int i = 0; i &lt; N; i++)     b[i] = a[i];</pre>
<i>reverse the elements within an array</i>	<pre>for (int i = 0; i &lt; N/2; i++) {     double temp = b[i];     b[i] = b[N-1-i];     b[N-i-1] = temp; }</pre>