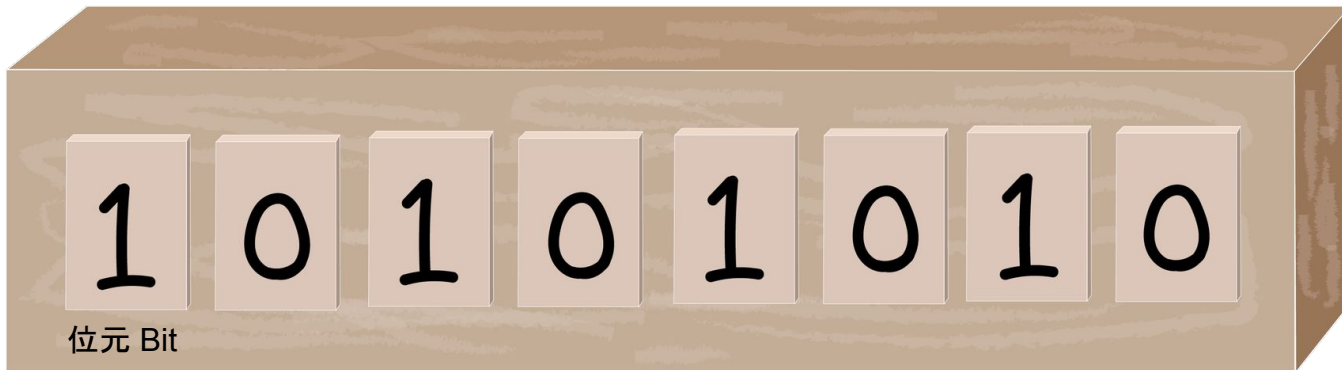
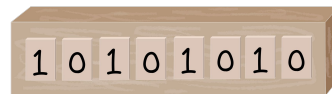


$$2^7 + 2^6 + 2^5 + 2^4 + 2^3 + 2^2 + 2^1 + 2^0$$



位元組(Byte)

Java 資料型別



byte

Data Type	Size	Description
byte	1 byte	Stores whole numbers from -128 to 127
short	2 bytes	Stores whole numbers from -32,768 to 32,767
int	4 bytes	Stores whole numbers from -2,147,483,648 to 2,147,483,647
long	8 bytes	Stores whole numbers from -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807
float	4 bytes	Stores fractional numbers. Sufficient for storing 6 to 7 decimal digits
double	8 bytes	Stores fractional numbers. Sufficient for storing 15 decimal digits
boolean	1 bit	Stores true or false values
char	2 bytes	Stores a single character/letter or ASCII values

String

依字串長度決定

儲存多個字元(字串)

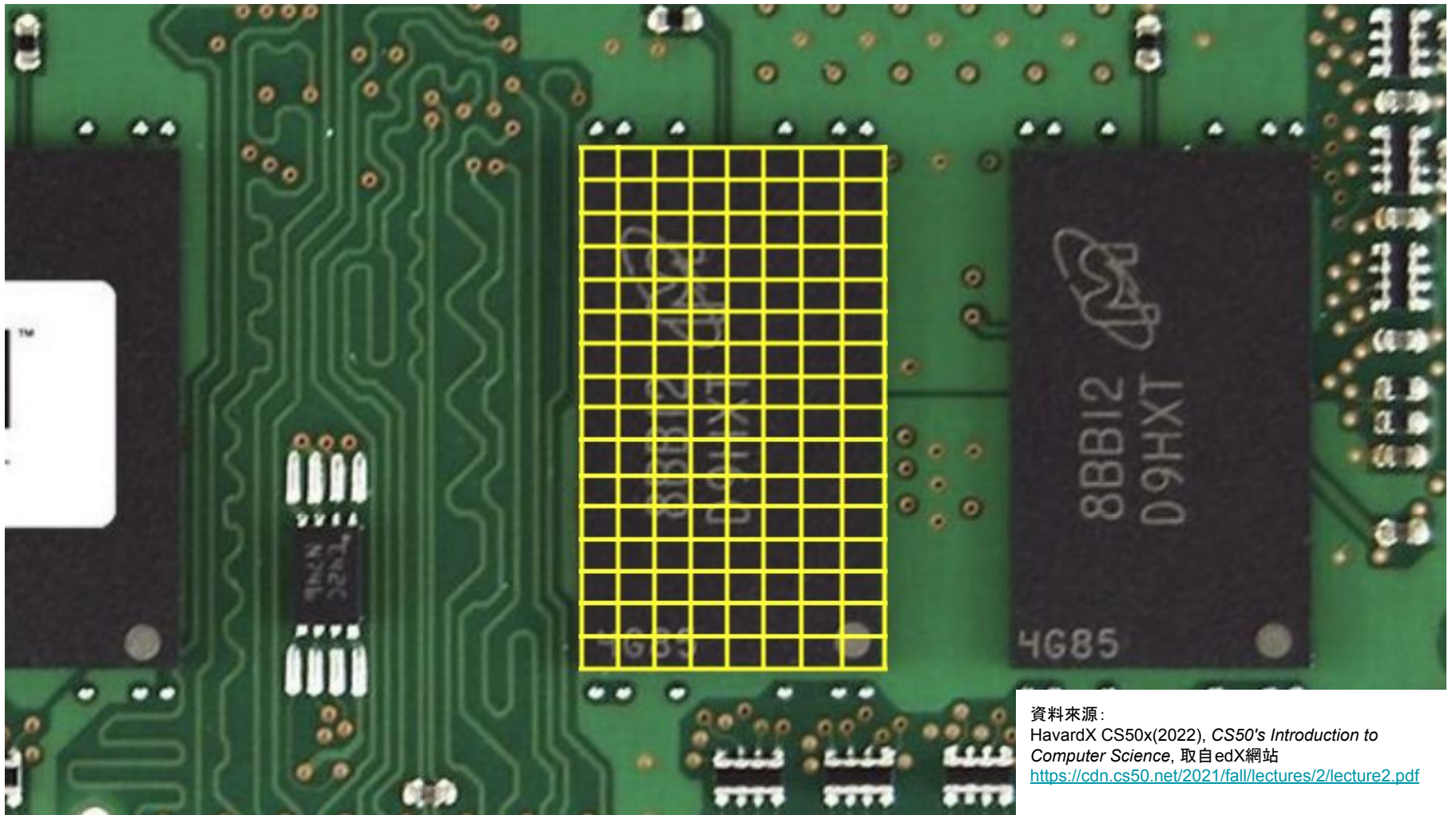
資料來源:

取自w3school網站

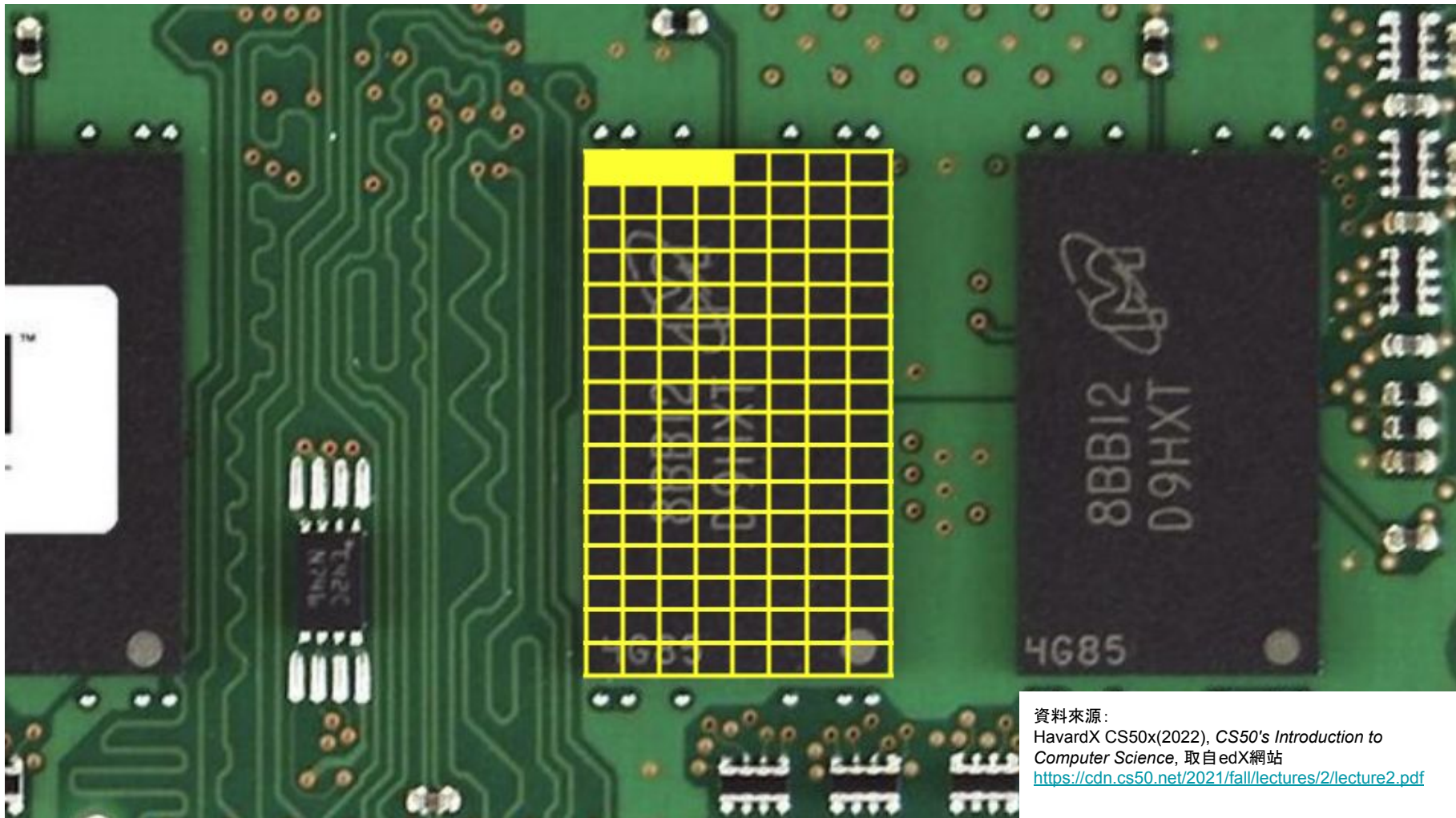
https://www.w3schools.com/java/java_data_types.asp



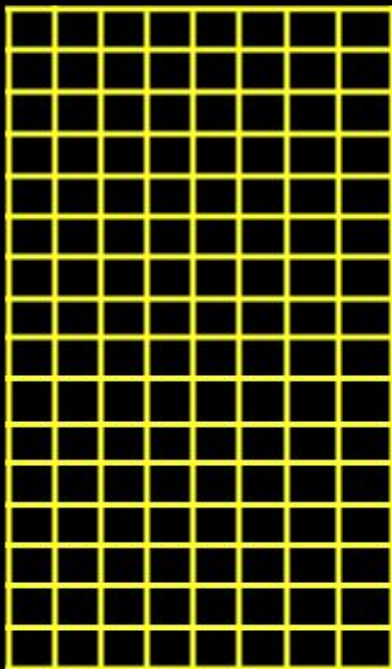
資料來源：
HarvardX CS50x(2022), CS50's *Introduction to Computer Science*, 取自edX網站
<https://cdn.cs50.net/2021/fall/lectures/2/lecture2.pdf>



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<https://cdn.cs50.net/2021/fall/lectures/2/lecture2.pdf>

```
int score1 = 72;
```

```
int score2 = 73;
```

```
int score3 = 33;
```

資料來源:

HarvardX CS50x(2022), *CS50's Introduction to Computer Science*, 取自edX網站

<https://cdn.cs50.net/2021/fall/lectures/2/lecture2.pdf>

72

score1

73

score2

33

score3

資料來源:

HarvardX CS50x(2022), *CS50's Introduction to Computer Science*, 取自edX網站

<https://cdn.cs50.net/2021/fall/lectures/2/lecture2.pdf>

0000000000000000000000000000001001000

score1

0000000000000000000000000000001001001

score2

000000000000000000000000000000100001

score3

資料來源：
HarvardX CS50x(2022), *CS50's Introduction to Computer Science*, 取自edX網站
<https://cdn.cs50.net/2021/fall/lectures/2/lecture2.pdf>

Processing 資料型別

Data

Primitive

`boolean`

Datatype for the Boolean values `true` and `false`

`byte`

Datatype for bytes, 8 bits of information storing numerical values from 127 to -128

`char`

Datatype for characters, typographic symbols such as A, d, and \$

`color` 4 bytes

Datatype for storing color values

`double`

Datatype for floating-point numbers larger than those that can be stored in a `float`

`float`

Data type for floating-point numbers, e

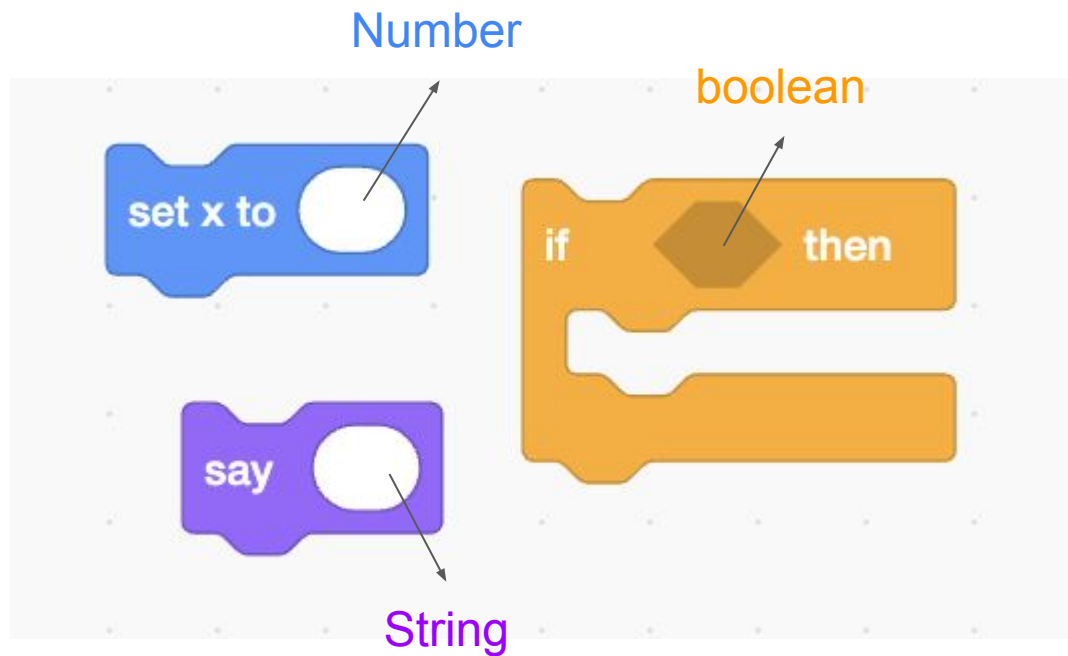
`int`

Datatype for integers, numbers without a decimal point

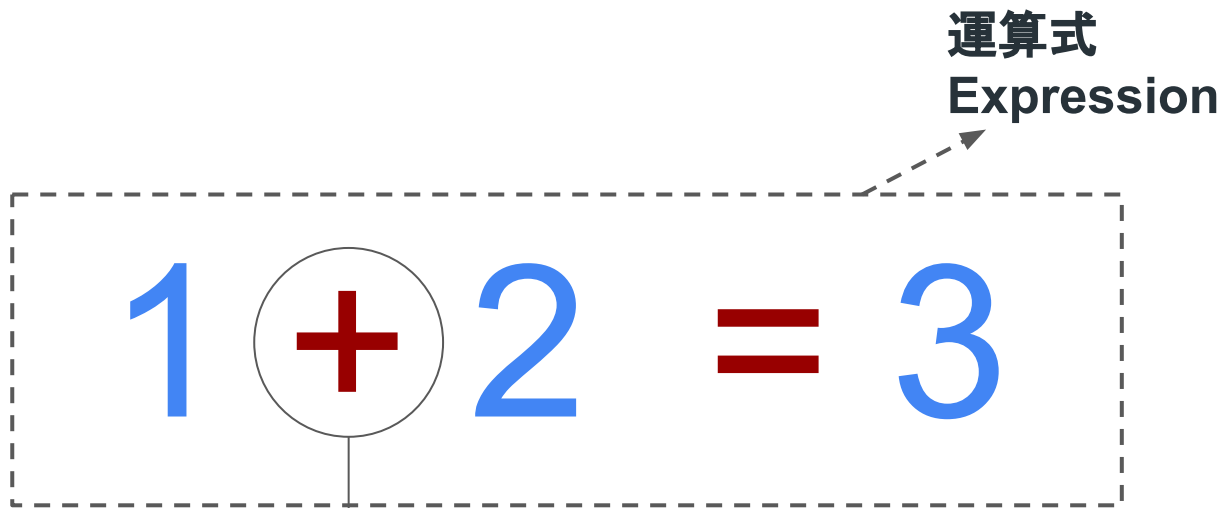
`long`

Datatype for large integers

🎮 Scratch 資料型別



🎮 運算子(Operator)、運算元(Operand)



算術運算子
Arithmetic Operator

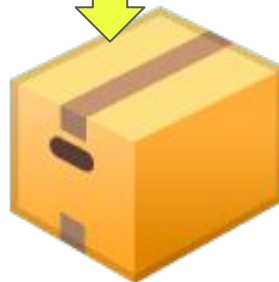
+, -, *, /, %



賦值運算子
Assignment Operator



“=” means assign



`!x`

`x && y`

`x || y`

`x ^ y`

NOT

<i>x</i>	<i>x'</i>
0	1
1	0

AND

<i>x</i>	<i>y</i>	<i>xy</i>
0	0	0
0	1	0
1	0	0
1	1	1

OR

<i>x</i>	<i>y</i>	<i>x+y</i>
0	0	0
0	1	1
1	0	1
1	1	1

XOR

<i>x</i>	<i>y</i>	<i>x⊕y</i>
0	0	0
0	1	1
1	0	1
1	1	0

邏輯運算子 Logical Operator

Relational Operators

`==` (equality)

Determines if two values are equivalent

`>` (greater than)

Tests if the value on the left is larger than the value on the right

`>=` (greater than or equal to)

Tests if the value on the left is larger than the value on the right or if the values are equivalent

`!=` (inequality)

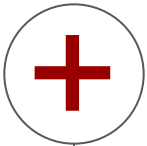
Determines if one expression is not equivalent to another

`<` (less than)

Tests if the value on the left is smaller than the value on the right

`<=` (less than or equal to)

Tests if the value on the left is less than the value on the right or if the values are equivalent

“Hello, ”  “World”

↓
字串運算子
String Operator