

1 引言

Tuesday, July 6, 2021 9:39 AM

Variables

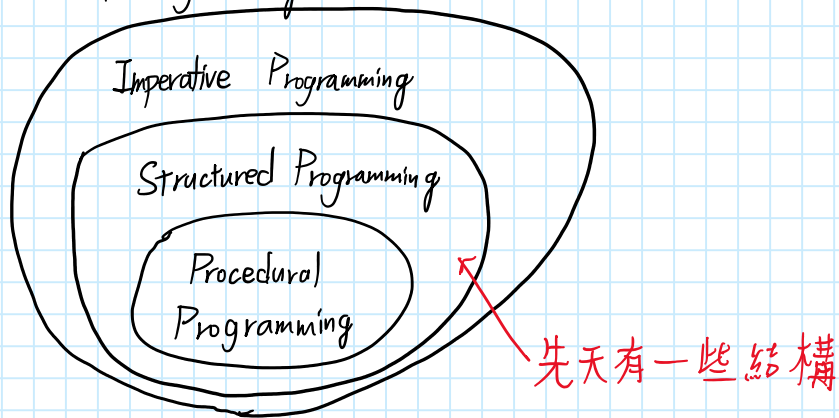
→ 一個變數就像一個量杯。

Write / Read.

→ 程式設計

其實就是在 Access (存取) 變數。

Structured Programming



2 Variables

Tuesday, July 6, 2021

11:10 AM

Integers

Digits

→ 考慮 + 進位數字.

$$1234 = 1 \times 10^3 + 2 \times 10^2 + 3 \times 10^1 + 4 \times 10^0$$

Binary Representation.

$$1010 = 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 0 \times 2^0$$

2's complement.

- 8-bit 整數.

→ Unsigned: $0 \sim 255$

→ Signed: $-128 \sim 127$

- 16-bit 整數

→ Unsigned: $0 \sim 65535$

→ Signed: $-32768 \sim 32767$

- 32-bit 整數. (標準大小)

→ Unsigned: $0 \sim 4294967295$ (9位)

→ Signed: $-2147483648 \sim 2147483647$ (9位)

- 64-bit 整數

→ Unsigned $0 \sim 18446744073709551615$ (19位)

→ Signed $-9223372036854775808 \sim 9223372036854775807$ (18位)

char	8 bits	unsigned char
short	16 bits	unsigned short
int	32 bits	:
long	32/64 bits	:
long long	64 bits	:

Variables - Integers

- 定義於 <stdint.h>

○ int8_t	INT8_MIN	INT8_MAX
○ int16_t	INT16_MIN	INT16_MAX
○ int32_t	INT32_MIN	INT32_MAX
○ int64_t	INT64_MIN	INT64_MAX
○ uint8_t	UINT8_MIN	UINT8_MAX
○ uint16_t	UINT16_MIN	UINT16_MAX
○ uint32_t	UINT32_MIN	UINT32_MAX
○ uint64_t	UINT64_MIN	UINT64_MAX

3 Operators

Tuesday, July 6, 2021 2:25 PM



DD352...

Variables - Operators

<ul style="list-style-type: none">• 賦值<ul style="list-style-type: none">◦ =• 數值運算<ul style="list-style-type: none">◦ 加法<ul style="list-style-type: none">■ +◦ 減法<ul style="list-style-type: none">■ -◦ 乘法<ul style="list-style-type: none">■ *◦ 除法<ul style="list-style-type: none">■ /■ %	<ul style="list-style-type: none">• 位元處理<ul style="list-style-type: none">◦ AND<ul style="list-style-type: none">■ &◦ OR<ul style="list-style-type: none">■ ◦ XOR<ul style="list-style-type: none">■ ^◦ NOT<ul style="list-style-type: none">■ ~◦ SHIFT<ul style="list-style-type: none">■ >>■ <<	<ul style="list-style-type: none">• 運算後賦值<ul style="list-style-type: none">◦ +=◦ -=◦ *=◦ /=◦ &=◦ =◦ ^=◦ >>=◦ <<=	<ul style="list-style-type: none">• 比較<ul style="list-style-type: none">◦ 是否相等<ul style="list-style-type: none">■ ==◦ 是否不等<ul style="list-style-type: none">■ !=◦ 左小於右<ul style="list-style-type: none">■ <■ <=◦ 右小於左<ul style="list-style-type: none">■ >■ >=
---	---	---	---

22

第五題會用到，

Truth Table.

Variable declaration.

Scope. 不能在作用域以外.

4 Structured Programming

Tuesday, July 6, 2021 2:53 PM

- Function and function call
- nullptr, Null, 0 \rightarrow False.
- * $a=b$ 可視為 condition
a 的新值做為 condition.

switch case.

- conditional branch.
if / else.
- while loop.
 \rightarrow continue / break.

- 組合技巧.

```
int a, b;
while (cin >> a >> b) {

}
```

```
int a, b;
while (cin >> a) {
    if (!(cin >> b)) {
        b = 0;
    }
}
```