Lesson 3 Function

LECTURER: HARVARD TSENG

Concept

input → function (black box) → output
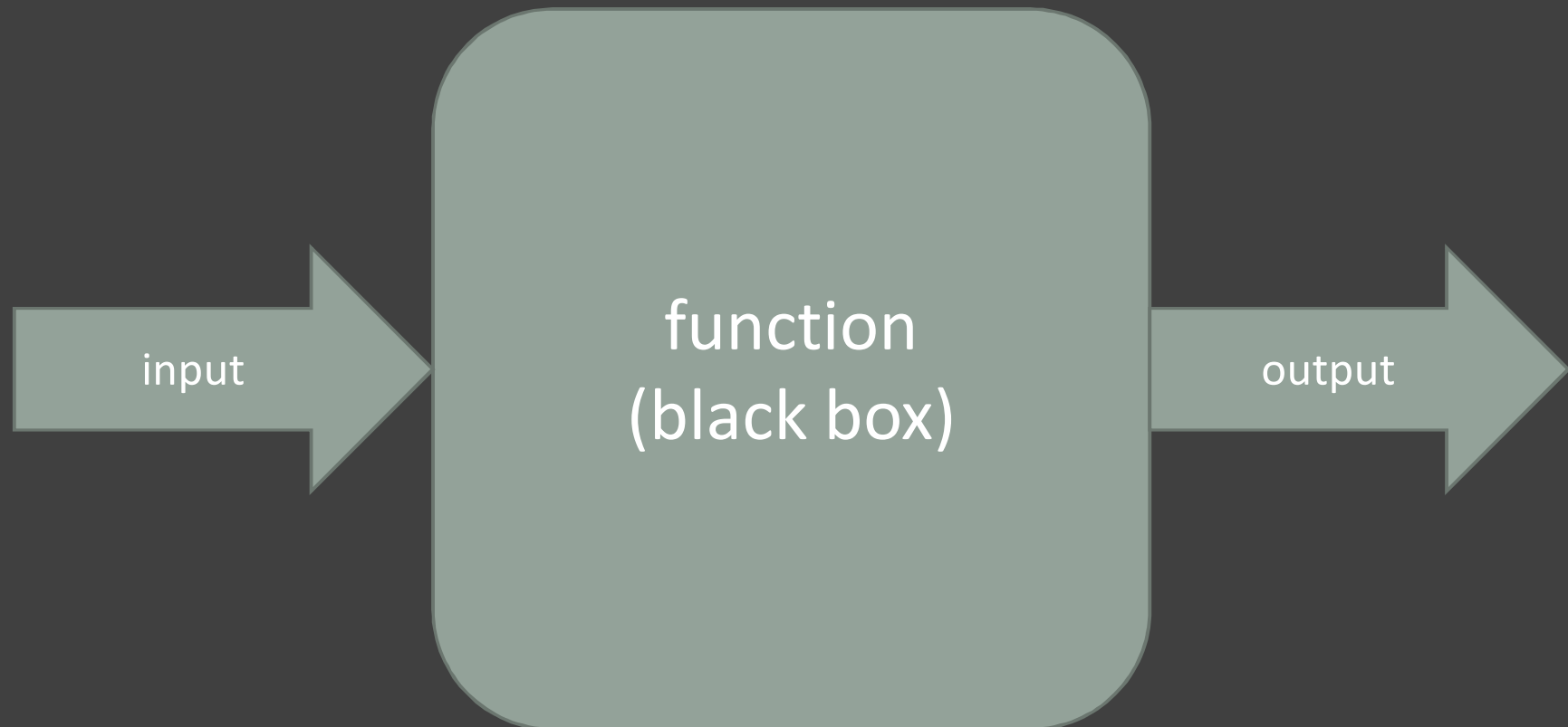
Mathematic

e.g. $f(x) = x^3$, $f(2) = 8$

e.g. $g(a, b) = \sqrt{a^2 + b^2}$, $g(3, 4) = 5$

Advantage

1. More readable.

2. Can be used again and again.

3. More efficiency(效率) for memory(記憶體).

Function Declaration 宣告

Just like declare variables.

float num_f;

void max_Sort(void);

int max2(int a, int b);   //remember the semicolon

Function Implementation 定義

Or someone says Definition.

Use braces(大括號) to contain the implementation.

```
int max2(int a, int b){
    if(a >= b) return a;
    else return b;
}
```

return 回傳

If function prototype(原型) is not void, compiler(編譯器) will check whether there is "return" in function implementation.

Exercise 1

Write two functions, max2 max3, to find the maximum(最大) number. Both functions need to return integer value.

Local Variables 區域變數

As so far, we are all using the local variables. Local variables cannot be accessed out of their function.

Global Variables 全域變數

Global variables are accessible(可存讀取) for all functions. Global variables need to be declared out of braces.

Global/Local Variables

```
int x, y, z;          //global variables

int main(){

    int a, b, c;      //local variables

}

void max_Sort(void){

    if(x > y){

        //do something

    }

}
```

Exercise 2

Write a function, max_Sort, that will sort(排序) three numbers big to small.

<Tips>

Use max3 & max2 functions that you wrote above.