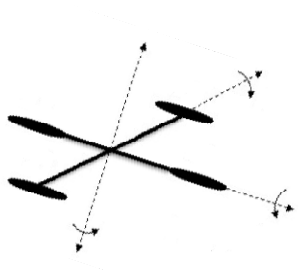


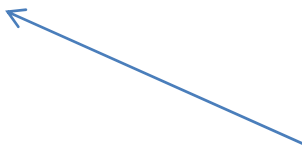
---

# 함 수 화 2

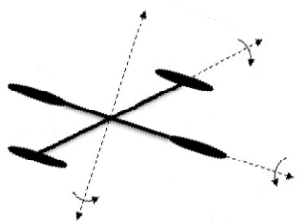


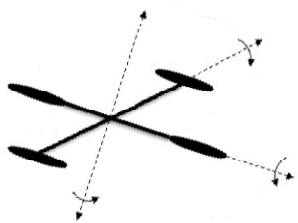
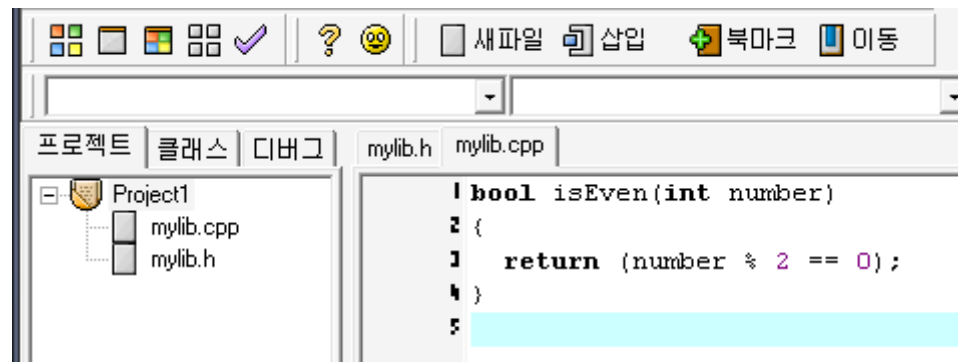
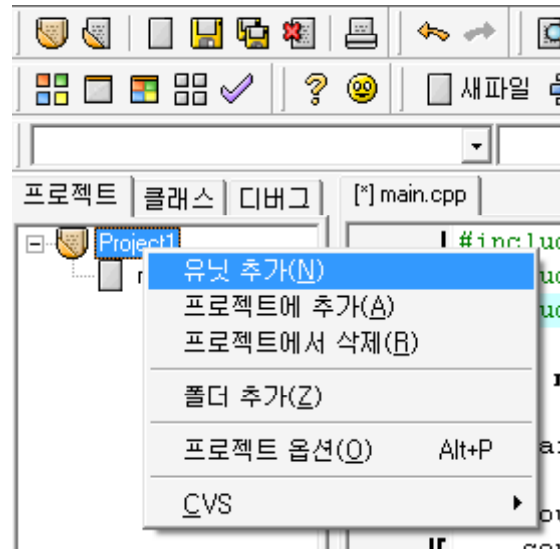
- 다른 프로그램에서 함수의 재사용

```
0          10          20          30
|-----|-----|-----|-----|
1 #include <iostream>
2 #include "MyLib.h"
3
4 using namespace std;
5
6 int main()
7 {
8     cout << isEven(4) << endl;
9     cout << isEven(5) << endl;
10
11     return 0;
12 }
13 [EOF]
```



```
0          10          20          30
|-----|-----|-----|-----|
1 bool isEven(int number)
2 {
3     return (number % 2 == 0);
4 }
5 [EOF]
```





- 임의의 문자 생성

#include <cstdlib>

`rand() % 10`



Returns a random integer between 0 and 9.

`50 + rand() % 50`

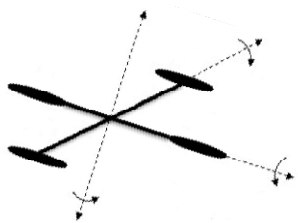


Returns a random integer between 50 and 99.

`a + rand() % b`



Returns a random number between a and a + b, excluding a + b.



```
#include <cstdlib>
using namespace std;

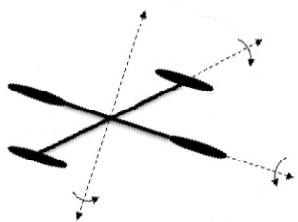
// Generate a random character between ch1 and ch2
char getRandomCharacter(char ch1, char ch2)
{
    return static_cast<char>(ch1 + std::rand() % (ch2 - ch1 + 1));
}

// Generate a random lowercase letter
char getRandomLowerCaseLetter()
{
    return getRandomCharacter('a', 'z');
}

// Generate a random uppercase letter
char getRandomUpperCaseLetter()
{
    return getRandomCharacter('A', 'Z');
}

// Generate a random digit character
char getRandomDigitCharacter()
{
    return getRandomCharacter('0', '9');
}

// Generate a random character
char getRandomCharacter()
{
    return getRandomCharacter(0, 127);
}
```



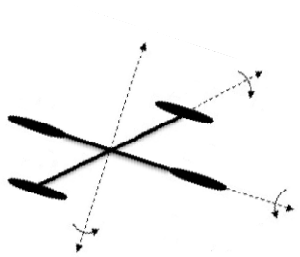
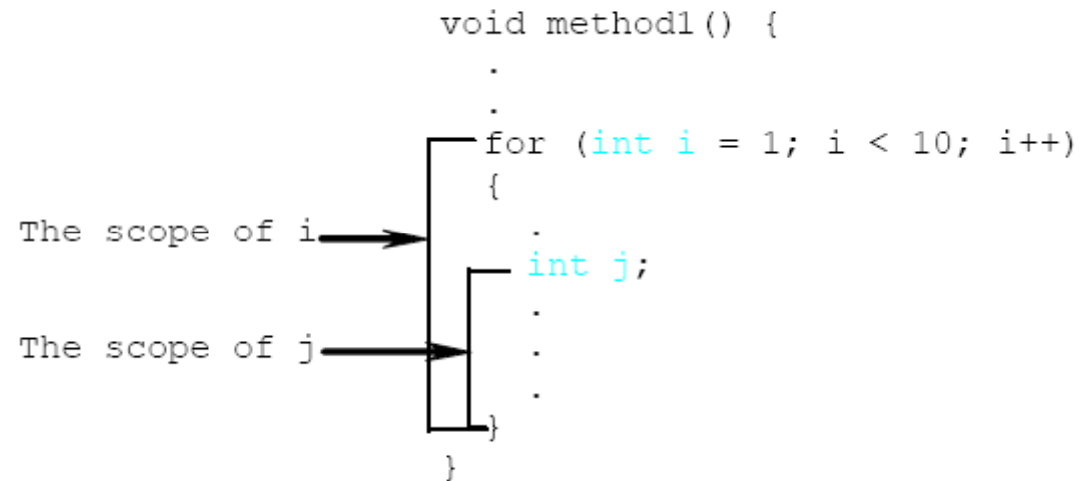
---

- 변수의 범위

```
void method1() {  
    .  
    .  
    for (int i = 1; i < 10; i++)  
    {  
        .  
        int j;  
        .  
        .  
        .  
    }  
}
```

The scope of i →

The scope of j →



It is fine to declare `i` in two non-nesting blocks

```
void function1()
{
    int x = 1;
    int y = 1;

    for (int i = 1; i < 10; i++)
    {
        x += i;
    }

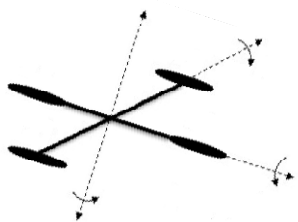
    for (int i = 1; i < 10; i++)
    {
        y += i;
    }
}
```

It is illegal to declare `i` in two nesting blocks

```
void function2()
{
    int i = 1;
    int sum = 0;

    for (int i = 1; i < 10; i++)
    {
        sum += i;
    }

    cout << i << endl;
    cout << sum << endl;
}
```



## - 정적 지역 변수

```
#include <cstdlib>
#include <iostream>

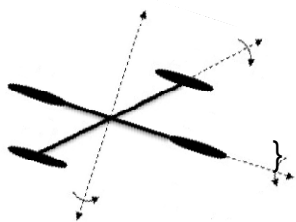
using namespace std;

void t1(); // function prototype

int main(int argc, char *argv[])
{
    t1();
    t1();

    system("PAUSE");
    return EXIT_SUCCESS;
}

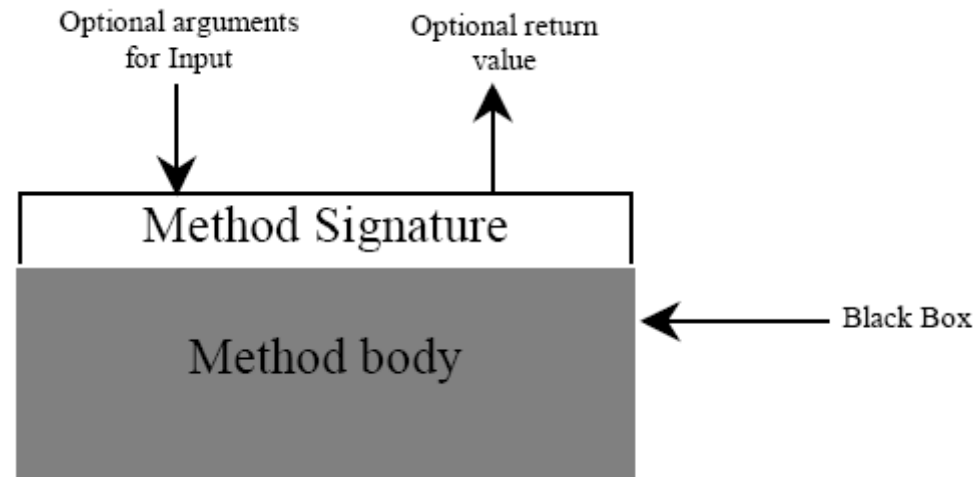
void t1()
{
    static int x = 1;
    int y = 1;
    x++;
    y++;
    cout << "x is " << x << endl;
    cout << "y is " << y << endl;
}
```



```
C:\Dev-Cpp\Project1.exe
x is 2
y is 2
x is 3
y is 2
계속하려면 아무 키나 누르십시오 . . .
```

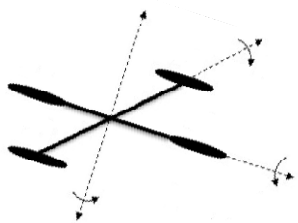


## - 함수의 추상화



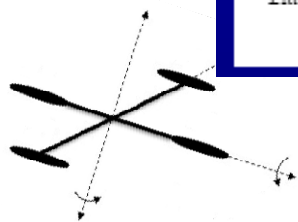
### 함수 사용의 장점

- 함수를 한 번 작성하면, 재사용이 편하다
- 구현사항을 사용자로부터 은닉시킬 수 있다.
- 프로그램 작성을 단순화시킬 수 있다.



# Math 함수

Function	Description	Example
<code>abs(x)</code>	Returns the absolute value of the argument	<code>abs(-2)</code> is 2
<code>ceil(x)</code>	<code>x</code> is rounded up to its nearest integer and returns this integer	<code>ceil(2.1)</code> is 3 <code>ceil(-2.1)</code> is -2
<code>floor(x)</code>	<code>x</code> is rounded down to its nearest integer and returns this integer	<code>floor(2.1)</code> is 2 <code>floor(-2.1)</code> is -3
<code>exp(x)</code>	Returns the exponential function of <code>x</code>	<code>exp(1)</code> is 2.71828
<code>pow(x, y)</code>	Returns <code>x</code> raised to power <code>y</code> ( $x^y$ )	<code>pow(2.0, 3)</code> is 8
<code>log(x)</code>	Returns the natural logarithm of <code>x</code>	<code>log(2.71828)</code> is 1.0
<code>log10(x)</code>	Returns the base-10 logarithm of <code>x</code>	<code>log10(10.0)</code> is 1
<code>sqrt(x)</code>	Returns the square root of <code>x</code>	<code>sqrt(4.0)</code> is 2
<code>sin(x)</code>	Returns the sine of <code>x</code> . <code>x</code> represents an angle in radians	<code>sin(3.14159 / 2)</code> is 1 <code>sin(3.14159)</code> is 0
<code>cos(x)</code>	Returns the cosine of <code>x</code> . <code>x</code> represents an angle in radians	<code>cos(3.14159 / 2)</code> is 0 <code>cos(3.14159)</code> is -1
<code>tan(x)</code>	Returns the tangent of <code>x</code> . <code>x</code> represents an angle in radians	<code>tan(3.14159 / 4)</code> is 1 <code>tan(0.0)</code> is 0
<code>fmod(x, y)</code>	Returns the remainder of <code>x/y</code> as double	<code>fmod(2.4, 1.3)</code> is 1.1



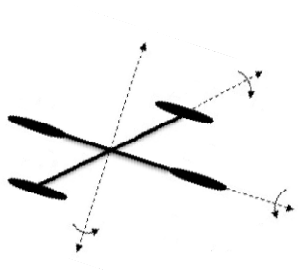
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- 달력만들기

December 2005

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Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31



# 설계 다이어그램

