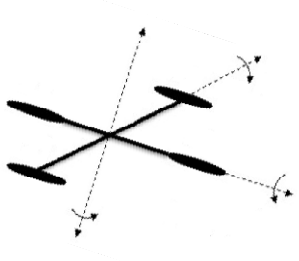
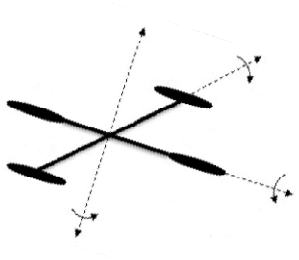
# 선 택 문



- Bool 데이터 유형

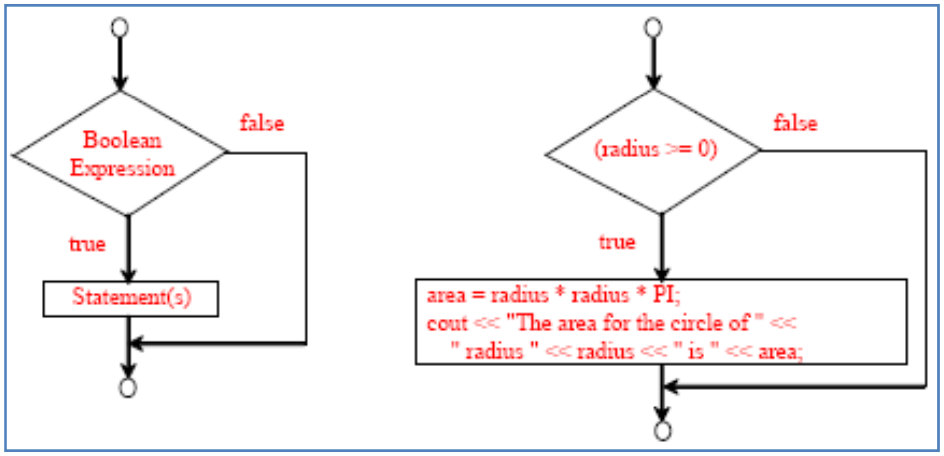
bool 데이터는 참(1) 혹은 거짓(0) 이라는 정보만 저장한다.

| Operator | Name | Example | Result |
|---|---|---|---|
| < | less than | 1 < 2 | true |
| <= | less than or equal to | 1 <= 2 | true |
| > | greater than | 1 > 2 | false |
| >= | greater than or equal to | 1 >= 2 | false |
| == | equal to | 1 == 2 | false |
| != | not equal to | 1 != 2 | true |

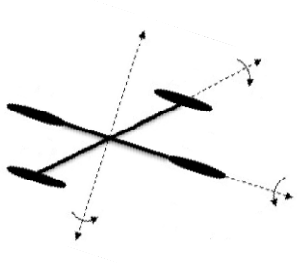


- if 문

```
if (booleanExpression)
{
        statement(s);
}
```




```
if (radius >= 0)
{
  area = radius * radius * PI;
  cout << "The area for the circle of " <<
    " radius " << radius << " is " << area;
}
```



Outer parentheses required

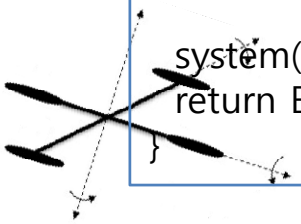
Braces can be omitted if the block contains a single statement

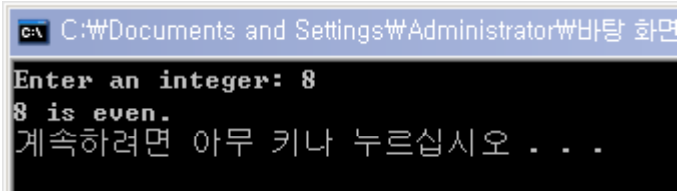
```
if ((i > 0) && (i < 10))
{
  cout << "i is an " <<
    "integer between 0 and 10";
}
```

Equivalent

```
if ((i > 0) && (i < 10))
  cout << "i is an " <<
    "integer between 0 and 10";
```

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

using namespace std;

int main(int argc, char *argv[])
{
  // Prompt the user to enter an integer
  int number;
  cout << "Enter an integer: ";
  cin >> number;

  if (number % 2 == 0)
  cout << number << " is even." <<endl;

  if (number % 2 != 0)
  cout << number << " is odd." <<endl;

  system("PAUSE");
  return EXIT_SUCCESS;
}
```





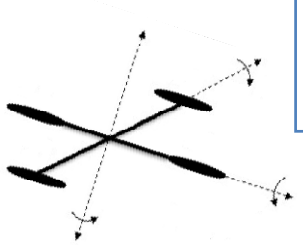
## - 논리 연산자

| 연산자 | 이름 |
|---|---|
| ! | not |
| && | and |
| \|\| | or |

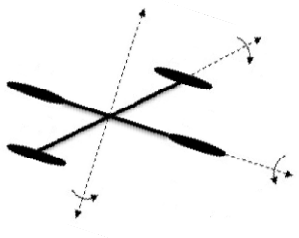
| p | !p | Example |
|---|---|---|
| true | false | !(1 > 2) is true, because (1 > 2) is false. |
| false | true | !(1 > 0) is false, because (1 > 0) is true. |

| p1 | p2 | p1 && p2 | Example |
|---|---|---|---|
| false | false | false | (3 > 2) && (5 >= 5) is true, because (3 > 2) and (5 >= 5) are both true. |
| false | true | false | |
| true | false | false | (3 > 2) && (5 > 5) is false, because (5 > 5) is false. |
| true | true | true | |

| p1 | p2 | p1 \|\| p2 | Example |
|---|---|---|---|
| false | false | false | (2 > 3) \|\| (5 > 5) is false, because (2 > 3) and (5 > 5) are both false. |
| false | true | true | |
| true | false | true | (3 > 2) \|\| (5 > 5) is true, because (3 > 2) is true. |
| true | true | true | |



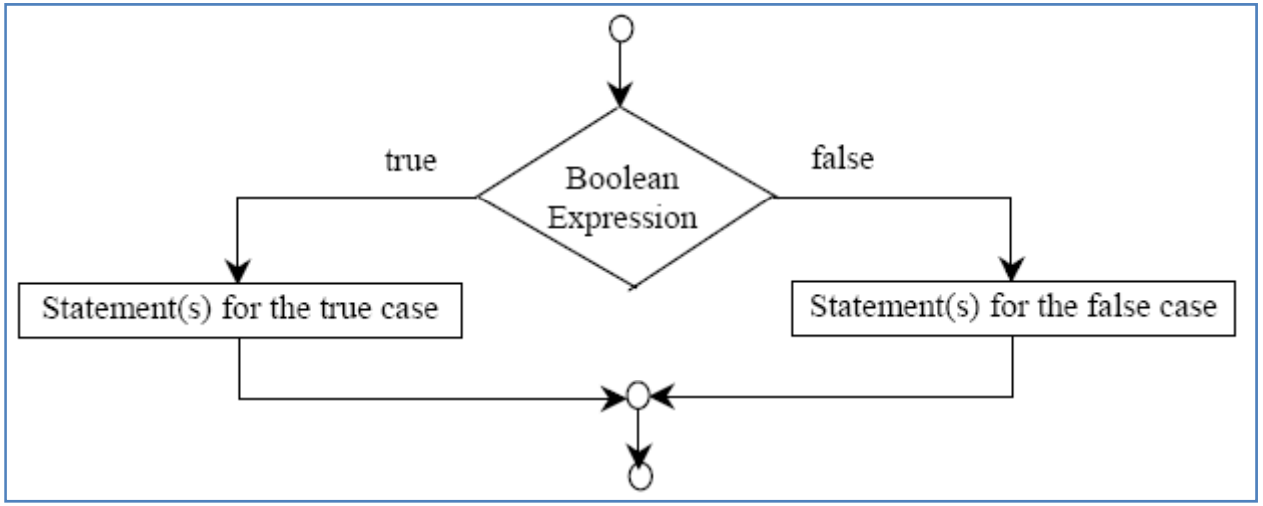
```
#include <iostream>
using namespace std;

int main()
{
  int number;
  cout << "Enter an integer: ";
  cin >> number;

  if (number % 2 == 0 && number % 3 == 0)
    cout << number << " is divisible by 2 and 3." << endl;

  if (number % 2 == 0 || number % 3 == 0)
    cout << number << " is divisible by 2 or 3." << endl;

  if ((number % 2 == 0 || number % 3 == 0) &&
       !(number % 2 == 0 && number % 3 == 0))
    cout << number << " divisible by 2 or 3, but not both." << endl;

  system("PAUSE");
  return(0);
}
```

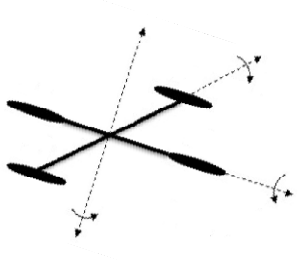


```
C:₩Documents and Settings₩Administrator₩바탕 화
Enter an integer: 9
9 is divisible by 2 or 3.
9 divisible by 2 or 3, but not both.
계속하려면 아무 키나 누르십시오 . . .
```

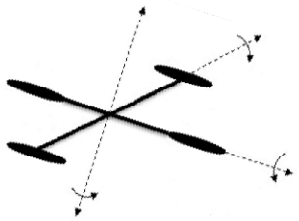
- if … else 문

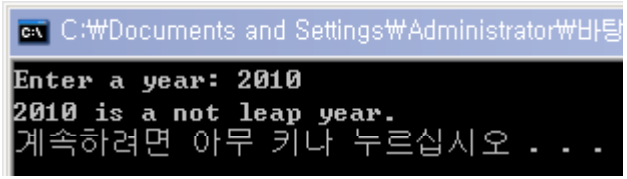
```
if (booleanExpression) {
  statement(s)-for-the-true-case;
}
else {
  statement(s)-for-the-false-case;
}
```



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

int main()
{
  cout << "Enter a year: ";
  int year;
  cin >> year;

  // Check if the year is a leap year
  bool isLeapYear =
    (year % 4 == 0 && year % 100 != 0) || (year % 400 == 0);

  // Display the result in a message dialog box
  if (isLeapYear)
    cout << year << " is a leap year." <<endl;
  else
    cout << year << " is a not leap year." <<endl;

  system("PAUSE");
  return(0);
}
```



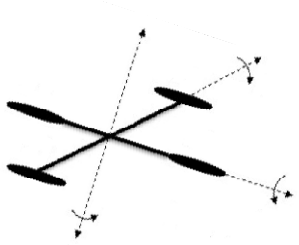


```
if (i > k)
{
 if (j > k)
   cout << "i and j are greater than k";
}
else
  cout << "i is less than or equal to k";
```

```
if (score >= 90.0)
  grade = 'A';
else
  if (score >= 80.0)
    grade = 'B';
  else
    if (score >= 70.0)
      grade = 'C';
    else
      if (score >= 60.0)
        grade = 'D';
      else
        grade = 'F';
```

Equivalent

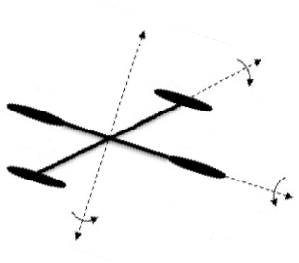
```
if (score >= 90.0)
  grade = 'A';
else if (score >= 80.0)
  grade = 'B';
else if (score >= 70.0)
  grade = 'C';
else if (score >= 60.0)
  grade = 'D';
else
  grade = 'F';
```



score는 70.0

조건이 false

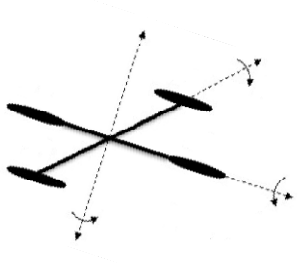
```
if (score >= 90.0)
  grade = 'A';
else if (score >= 80.0)
  grade = 'B';
else if (score >= 70.0)
  grade = 'C';
else if (score >= 60.0)
  grade = 'D';
else
  grade = 'F';
```



score는 70.0

조건이 false

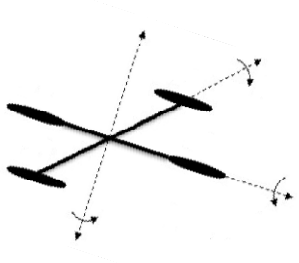
```
if (score >= 90.0)
  grade = 'A';
else if (score >= 80.0)
  grade = 'B';
else if (score >= 70.0)
  grade = 'C';
else if (score >= 60.0)
  grade = 'D';
else
  grade = 'F';
```



score는 70.0

조건이 true

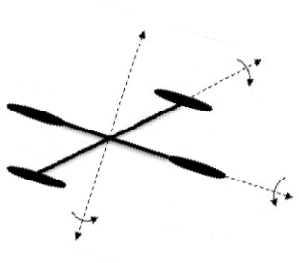
```
if (score >= 90.0)
  grade = 'A';
else if (score >= 80.0)
  grade = 'B';
else if (score >= 70.0)
  grade = 'C';
else if (score >= 60.0)
  grade = 'D';
else
  grade = 'F';
```



score는 70.0

grade는 C

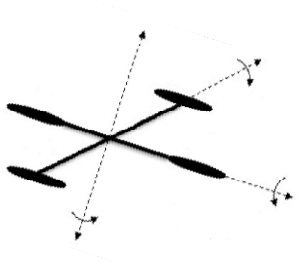
```
if (score >= 90.0)
  grade = 'A';
else if (score >= 80.0)
  grade = 'B';
else if (score >= 70.0)
  grade = 'C';
else if (score >= 60.0)
  grade = 'D';
else
  grade = 'F';
```



score는 70.0

```
if (score >= 90.0)
  grade = 'A';
else if (score >= 80.0)
  grade = 'B';
else if (score >= 70.0)
  grade = 'C';
else if (score >= 60.0)
  grade = 'D';
else
  grade = 'F';
```

if 문 종료

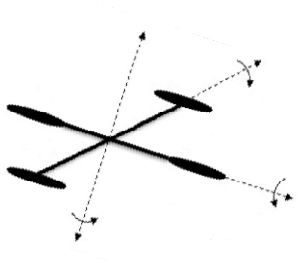


```
int i = 1;
int j = 2;
int k = 3;

if (i > j)
  if (i > k)
    cout << "A";
else
    cout << "B";
```

Equivalent

This is better with correct indentation

```
int i = 1;
int j = 2;
int k = 3;

if (i > j)
  if (i > k)
    cout << "A";
  else
    cout << "B";
```



```
int i = 1; int j = 2; int k = 3;

if (i > j)
{
 if (i > k)
   cout << "A";
}
else
  cout << "B";
```

이 문장은 B를 출력한다.

```
if (number % 2 == 0)
  even = true;
else
  even = false;
```

Equivalent

This is better

```
bool even
  = number % 2 == 0;
```

```
if (even == true)
  cout <<"It is even.";
```

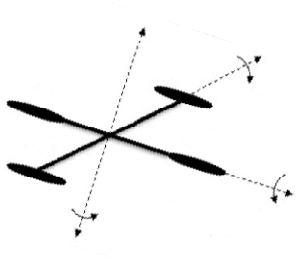
(a)

Equivalent

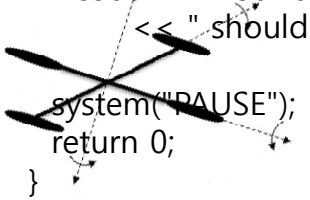
This is better

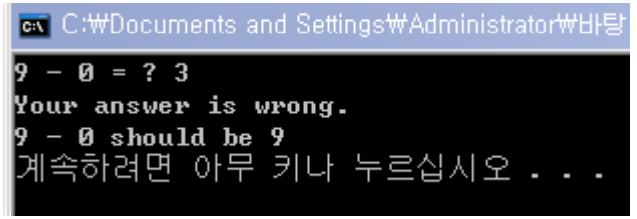
```
if (even)
  cout << "It is even.";
```

(b)

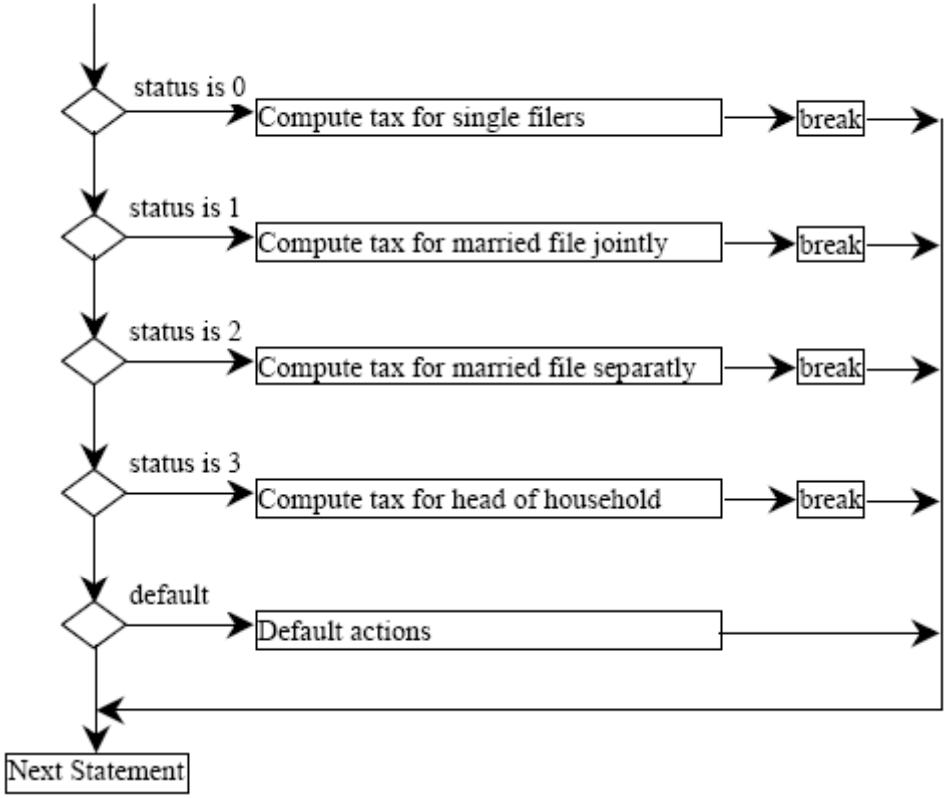


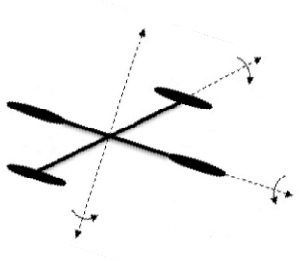
```
#include <iostream>
#include <ctime> // for time function
#include <cstdlib> // for rand and srand functions
using namespace std;

int main()
{
  // 1. Generate two random single-digit integers
  srand(time(0));
  int number1 = rand() % 10;
  int number2 = rand() % 10;

  // 2. If number1 < number2, swap number1 with number2
  if (number1 < number2)
  {
    int temp = number1;
    number1 = number2;
    number2 = temp;
  }

  // 3. Prompt the student to answer
  int answer;
  cout << number1 << " - " << number2 << " = ? ";
  cin >> answer;

  // 4. Grade the answer and display the result
  if (number1 - number2 == answer)
    cout << "You are correct!";
  else
    cout << "Your answer is wrong.₩n" << number1 << " - " << number2
         << " should be " << (number1 - number2) << endl;

  system("PAUSE");
  return 0;
}
```





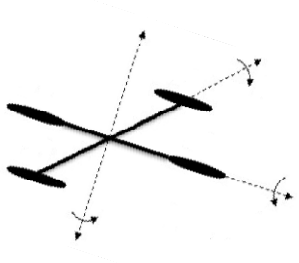
- switch 문


status is 0
Compute tax for single filers
break
status is 1
Compute tax for married file jointly
break
status is 2
Compute tax for married file separatly
break
status is 3
Compute tax for head of household
break
default
Default actions
Next Statement



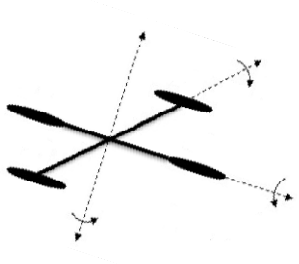
ch는 is 'a':

```
switch (ch) {
  case 'a': cout << ch;
  case 'b': cout << ch;
  case 'c': cout << ch;
}
```



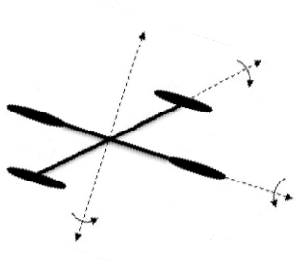
ch는 is 'a':

```
switch (ch) {
  case 'a': cout << ch;
  case 'b': cout << ch;
  case 'c': cout << ch;
}
```



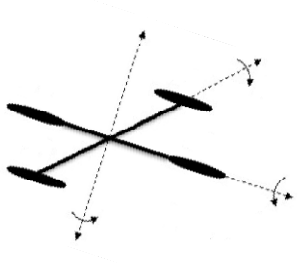
이 줄 실행

```
switch (ch) {
  case 'a': cout << ch;
  case 'b': cout << ch;
  case 'c': cout << ch;
}
```



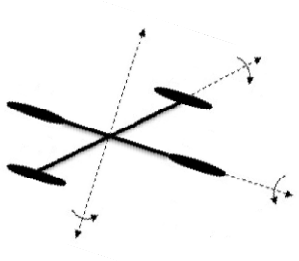
이 줄 실행

```
switch (ch) {
  case 'a': cout << ch;
  case 'b': cout << ch;
  case 'c': cout << ch;
}
```



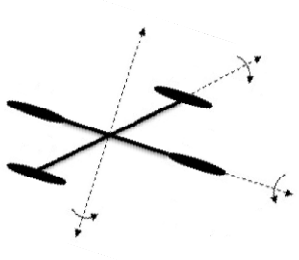
이 줄 실행

```
switch (ch) {
  case 'a': cout << ch;
  case 'b': cout << ch;
  case 'c': cout << ch;
}
```



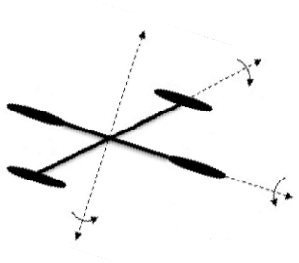
다음 줄 실행

```
switch (ch) {
  case 'a': cout << ch;
  case 'b': cout << ch;
  case 'c': cout << ch;
}

Next statement;
```



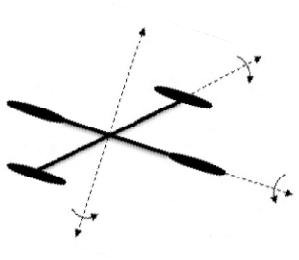
ch는 is 'a':

```
switch (ch) {
  case 'a': cout << ch;
            break;
  case 'b': cout << ch;
            break;
  case 'c': cout << ch;
}
```



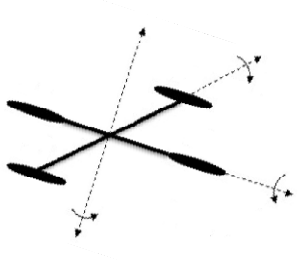
ch는 is 'a':

```
switch (ch) {
   case 'a' : cout << ch;
              break;
   case 'b' : cout << ch;
              break;
   case 'c' : cout << ch;
}
```



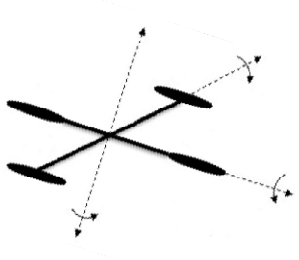
이 줄 실행

```
switch (ch) {
   case 'a': cout << ch;
             break;
   case 'b': cout << ch;
             break;
   case 'c': cout << ch;
}
```



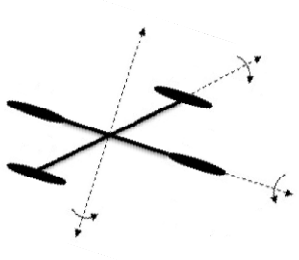
이 줄 실행

```
switch (ch) {
   case 'a': cout << ch;
             break;
   case 'b': cout << ch;
             break;
   case 'c': cout << ch;
}
```



다음 줄 실행

```
switch (ch)
   case 'a':  out << ch;
              break;
   case 'b':  cout << ch;
              break;
   case 'c':  cout << ch;
}

Next statement;
```

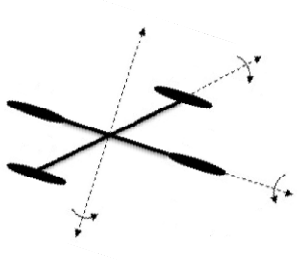


- 삼항 연산자

```
if (x > 0)
  y = 1
else
  y = -1;
```

```
y = (x > 0) ? 1 : -1;
```

(booleanExpression) ? expression1 : expression2;



- 나열형

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

int main()
{
  enum Day {MONDAY = 1, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY} day;

  cout << "Enter a day (1 for Monday, 2 for Tuesday, etc): ";
  int dayNumber;
  cin >> dayNumber;

  switch (dayNumber) {
    case MONDAY:
      cout << "Play soccer" << endl;
      break;
    case TUESDAY:
      cout << "Piano lesson" << endl;
      break;
    case WEDNESDAY:
      cout << "Math team" << endl;
      break;
    default:
      cout << "Go home" << endl;
  }

  return 0;
}
```