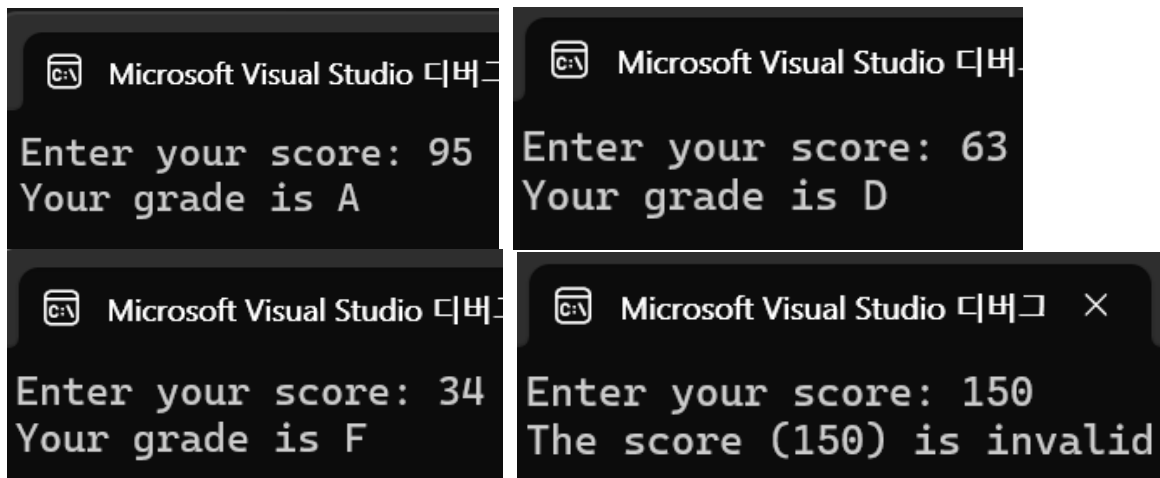


## 객체지향프로그래밍 LAB #05&06

<기초문제> \_\_\_\_\_

1.

```
#include<iostream>
using namespace std;
int main() {
    char grade = 'X';
    int score;
    cout << "Enter your score: ";
    cin >> score;
    if (score >= 0 && score <= 100) {
        if (score >= 90)
            grade = 'A';
        else if (score >= 80)
            grade = 'B';
        else if (score >= 70)
            grade = 'C';
        else if (score >= 60)
            grade = 'D';
        else
            grade = 'F';
        cout << "Your grade is " << grade << endl;
    }
    else {
        cout << "The score (" << score << ") is invalid" << endl;
    }
    return 0;
}
```



2.

```
#include<iostream>
#include<iomanip> // setw 등 cout 표현을 멋지게
#include<cmath>
using namespace std;
int main() {
    int num = 1;
    int count = 1;
    cout.imbue(locale("")); // 세 자리(1,000)마다 쉼표 찍기위함.
    while (count <= 20) {
        num = pow(2, count);
        cout << count << 'Wt' << setw(10) << fixed << setprecision(0) << num
        << endl;
        count++;
    }
    return 0;
}
```

```
Microsoft Visual Studio C++

1      2
2      4
3      8
4     16
5     32
6     64
7    128
8    256
9    512
10   1,024
11   2,048
12   4,096
13   8,192
14  16,384
15  32,768
16  65,536
17 131,072
18 262,144
19 524,288
20 1,048,576
```

3.

```
#include<iostream>
#include<iomanip>
using namespace std;
int main() {
    int column = 1, row = 1;
    while (row <= 10) {
        column = 1;
        while (column <= 10) {
            int num;
            if (row != column)
                num = 0;

            else
```

```

        num = 1;
        cout << setw(4) << num;
        column++;
    }
    cout << endl;
    row++;
}
return 0;
}

```

```

Microsoft Visual Studio 디버깅
+
v
1  0  0  0  0  0  0  0  0  0
0  1  0  0  0  0  0  0  0  0
0  0  1  0  0  0  0  0  0  0
0  0  0  1  0  0  0  0  0  0
0  0  0  0  1  0  0  0  0  0
0  0  0  0  0  1  0  0  0  0
0  0  0  0  0  0  1  0  0  0
0  0  0  0  0  0  0  1  0  0
0  0  0  0  0  0  0  0  1  0
0  0  0  0  0  0  0  0  0  1

```

4-1.

```

#include<iostream>
using namespace std;
int main() {
    int num;
    while (true) {
        cout << "Enter the number (0, 10]: ";
        cin >> num;
        if (num > 0 && num <= 10)
            break;
    }
}

```

```

        cout << "Success!" << endl;
        return 0;
}

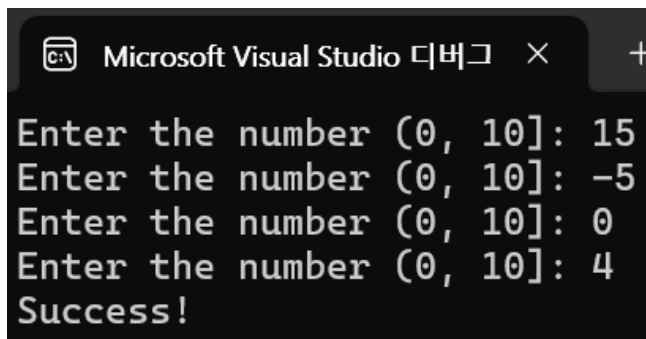
```

4-2.

```

#include<iostream>
using namespace std;
int main() {
    int num;
    do {
        cout << "Enter the number (0, 10]: ";
        cin >> num;
    }
    while (!(num > 0 && num <= 10)); //반드시 세미콜론 찍어줌
    cout << "Success!" << endl;
    return 0;
}

```



The screenshot shows the Microsoft Visual Studio Debug Console window. The title bar reads "Microsoft Visual Studio 디버그" with a close button (X) and a plus sign (+). The console output displays the following text:

```

Enter the number (0, 10]: 15
Enter the number (0, 10]: -5
Enter the number (0, 10]: 0
Enter the number (0, 10]: 4
Success!

```

5.

```

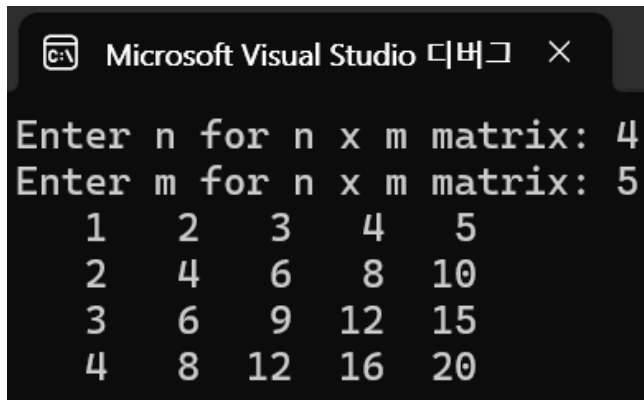
#include<iostream>
#include<iomanip>
using namespace std;
int main() {
    int n, m;

```

```

    cout << "Enter n for n x m matrix: ";
    cin >> n;
    cout << "Enter m for n x m matrix: ";
    cin >> m;
    int r = 1, c = 1;
    while (r <= n) {
        c = 1;
        while (c <= m) {
            int num = r * c;
            cout << setw(4) << num;
            c++;
        }
        cout << endl;
        r++;
    }
    return 0;
}

```



```

Microsoft Visual Studio 디버그
Enter n for n x m matrix: 4
Enter m for n x m matrix: 5
1   2   3   4   5
2   4   6   8  10
3   6   9  12  15
4   8  12  16  20

```

6.

```

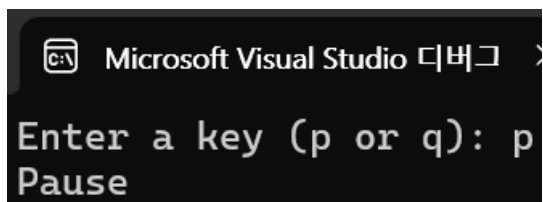
#include <iostream>
using namespace std;
int main() {

```

```

char key;
cout << "Enter a key (p or q): ";
cin >> key;
switch (key) {
    case 'p':
        cout << "Pause";
        break;
    case 'P':
        cout << "Pause";
        break;
    case 'q':
        cout << "Quit";
        break;
    case 'Q':
        cout << "Quit";
        break;
    default:
        cout << "Default";
        break;
}
return 0;
}

```

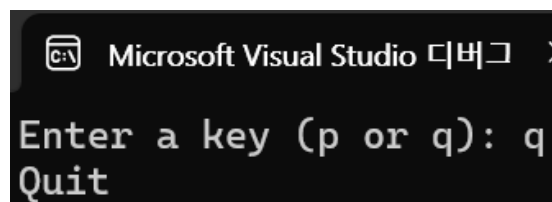


Microsoft Visual Studio 디버그 콘솔

```

Enter a key (p or q): p
Pause

```

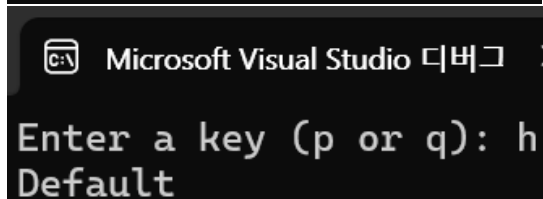


Microsoft Visual Studio 디버그 콘솔

```

Enter a key (p or q): q
Quit

```

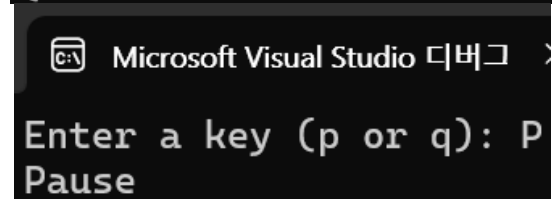


Microsoft Visual Studio 디버그 콘솔

```

Enter a key (p or q): h
Default

```



Microsoft Visual Studio 디버그 콘솔

```

Enter a key (p or q): P
Pause

```

```
Microsoft Visual Studio 디버그 콘솔
Enter a key (p or q): Q
Quit
```

```
Microsoft Visual Studio 디버그 콘솔
Enter a key (p or q): 5
Default
```

<응용문제> \_\_\_\_\_

1.

```
#include <iostream>
using namespace std;
int main() {
    int num;
    for (int a = 1; a <= 5; a++) {
        cout << a << "번째 정수 : ";
        cin >> num;
        if (num % 2)
            cout << num << "은(는) 홀수입니다." << endl;
        else
            cout << num << "은(는) 짝수입니다." << endl;
    }
}
```



```
Microsoft Visual Studio 디버그 콘솔

1번째 정수 : 10
10은(는) 짝수입니다.
2번째 정수 : 15
15은(는) 홀수입니다.
3번째 정수 : -4
-4은(는) 짝수입니다.
4번째 정수 : -7
-7은(는) 홀수입니다.
5번째 정수 : 150
150은(는) 짝수입니다.
```

2.

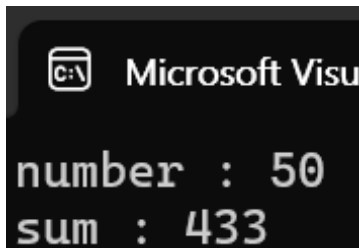
```
#include <iostream>
using namespace std;
int main() {
    int n;
    int s = 0;
    cout << "number : ";
    cin >> n;
    for (int a = 1; a <= n; a++) {
        s += a;
    }
    cout << "Sum of 1 to " << n << " = " << s;
}
```

```
Microsoft Visual Studio 디버그 콘솔

number : 100
Sum of 1 to 100 = 5050
```

3.

```
#include <iostream>
using namespace std;
int main() {
    int n;
    int s = 0;
    cout << "number : ";
    cin >> n;
    for (int a = 1; a <= n; a++) {
        if ((a % 2 != 0) && (a % 3 != 0))
            s += a;
    }
    cout << "sum : " << s;
}
```



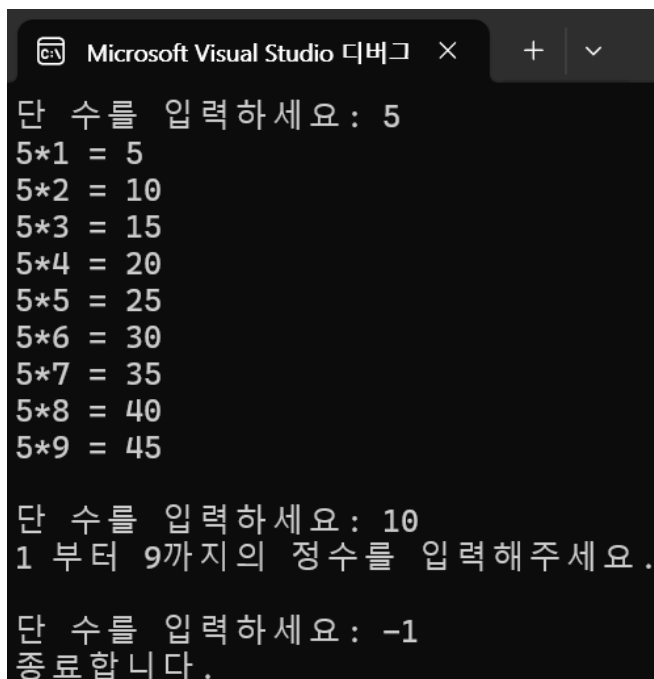
4.

```
#include <iostream>
using namespace std;
int main() {
    int n;
    int s = 0;
    while (true) {
        cout << "단 수를 입력하세요: ";
        cin >> n;
```

```

    if (n == -1) {
        cout << "종료합니다.";
        break;
    }
    else if ((n < 1) || (n > 9)) {
        cout << "1 부터 9까지의 정수를 입력해주세요." << endl << endl;
        continue;
    }
    for (int a = 1; a <= 9; a++) {
        cout << n << '*' << a << " = " << n * a << endl;
    }
    cout << endl;
}
}

```



The screenshot shows the Microsoft Visual Studio debugger window. The output pane displays the following text:

```

단 수를 입력하세요 : 5
5*1 = 5
5*2 = 10
5*3 = 15
5*4 = 20
5*5 = 25
5*6 = 30
5*7 = 35
5*8 = 40
5*9 = 45

단 수를 입력하세요 : 10
1 부터 9까지의 정수를 입력해주세요.

단 수를 입력하세요 : -1
종료합니다.

```

5.

```
#include <iostream>
using namespace std;
int gcd(int a, int b) {
    if (b == 0)
        return a;
    else {
        if (b > a) {
            int t;
            t = a;
            a = b;
            b = t;
        }
        return gcd(b, a % b);
    }
}

int main() {
    int x, y;
    cout << "x = ";
    cin >> x;
    cout << "y = ";
    cin >> y;
    if (y > x) {
        int t;
        t = x;
        x = y;
        y = t;
    }
    int g = gcd(x, y);
    cout << "gcd(" << x << ', ' << y << ") = " << g;
}
```



Microsoft Visual Stu

```
x = 85
```

```
y = 51
```

```
gcd(85, 51) = 17
```