

// Mögliche Lösung zu Aufgabe 4

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

```
bool maj5 (bool a, bool b, bool c, bool d, bool f) {
    return    !a&&!b&&c&&d&&f
           || !a&&b&&!c&&d&&f
           || !a&&b&&c&&!d&&f
           || !a&&b&&c&&d&&!f
           || !a&&b&&c&&d&&f
           || a&&!b&&!c&&d&&f
           || a&&!b&&c&&!d&&f
           || a&&!b&&c&&d&&!f
           || a&&!b&&c&&d&&f
           || a&&b&&!c&&!d&&f
           || a&&b&&!c&&d&&!f
           || a&&b&&c&&!d&&!f
           || a&&b&&c&&!d&&f
           || a&&b&&c&&d&&!f
           || a&&b&&c&&d&&f;
} //maj5
```

// Mögliche Vereinfachung von maj5

```
bool maj5v (bool a, bool b, bool c, bool d, bool f) {
    return    a&&b&&(c||d||f)
           || (a||b)&&c&&(d||f)
           || (a||b||c)&&d&&f;
} //maj5v
```

```
int main () {
```

```
    // Diese umständliche Schleifenprogrammierung dient
    // dient nur der Ruhigstellung des verwendeten
    // Compilers.
    bool  a = false, b = false, c = false, d = false, f = false;
    for (int a1 = 0; a1 < 2; ++a1) {
        for (int b1 = 0; b1 < 2; ++b1) {
            for (int c1 = 0; c1 < 2; ++c1) {
                for (int d1 = 0; d1 < 2; ++d1) {
                    for (int f1 = 0; f1 < 2; ++f1) {
                        cout << a << " " << b << " " << c
                             << " " << d << " " << f << ": ";
                        cout << maj5 (a, b, c, d, f) <<
                             " ?= " << maj5v (a, b, c, d, f)
                             << endl;
                        f = !f;
                    }
                    d = !d;
                }
                c = !c;
            }
            b = !b;
        }
        a = !a;
    }
}
```

```
return 0;
} //main
```

/* Ausgabe:

**0 0 0 0 0: 0 ?= 0
0 0 0 0 1: 0 ?= 0
0 0 0 1 0: 0 ?= 0
0 0 0 1 1: 0 ?= 0
0 0 1 0 0: 0 ?= 0
0 0 1 0 1: 0 ?= 0
0 0 1 1 0: 0 ?= 0
0 0 1 1 1: 1 ?= 1
0 1 0 0 0: 0 ?= 0
0 1 0 0 1: 0 ?= 0
0 1 0 1 0: 0 ?= 0
0 1 0 1 1: 1 ?= 1
0 1 1 0 0: 0 ?= 0
0 1 1 0 1: 1 ?= 1
0 1 1 1 0: 1 ?= 1
0 1 1 1 1: 1 ?= 1
1 0 0 0 0: 0 ?= 0
1 0 0 0 1: 0 ?= 0
1 0 0 1 0: 0 ?= 0
1 0 0 1 1: 1 ?= 1
1 0 1 0 0: 0 ?= 0
1 0 1 0 1: 1 ?= 1
1 0 1 1 0: 1 ?= 1
1 0 1 1 1: 1 ?= 1
1 1 0 0 0: 0 ?= 0
1 1 0 0 1: 1 ?= 1
1 1 0 1 0: 1 ?= 1
1 1 0 1 1: 1 ?= 1
1 1 1 0 0: 1 ?= 1
1 1 1 0 1: 1 ?= 1
1 1 1 1 0: 1 ?= 1
1 1 1 1 1: 1 ?= 1**

***/**