

*Departement Informatik**5. Januar 2004**Dr. R. Peikert - Christian Sigg***37-847 Informatik****Musterlösung 7****WS03/04****1) Binäre Suche**

```
bool search(int q, int a[], int s, int t)
{
    if(s == t)
        return q==a[s]

    int m = (s + t)/2;

    if(q < a[m])
        return search(q, a, s, m);
    if(q > a[m])
        return search(q, a, m+1, t);

    return true;
}
```

## 2) Postleitzahlen

```
#include <iostream>
#include <fstream>
#include <cstring>

struct Entry {
    int plz;
    char kanton[3];
    char ort[30];
};

void search(char ort[], Entry entries[], int s, int t) {
    int m = (s + t)/2;
    int c = strcmp(ort, entries[m].ort);

    if(c == 0) {
        std::cout << ort << " gefunden:\n"
            << entries[m].ort << " "
            << entries[m].kanton << " "
            << entries[m].plz << std::endl;
        return;
    }

    if(s == t) {
        std::cout << ort << " nicht gefunden.\n";
        return;
    }

    if(c < 0)
        return search(ort, entries, s, m);
    else
        return search(ort, entries, m+1, t);
}

int main() {
    Entry entries[5000];
    char ort[30];
    int size = 0;

    std::ifstream f("plz.txt");
    while(f) {
        f >> entries[size].plz >> entries[size].kanton
            >> entries[size].ort;
        ++size;
    }
    f.close();

    while(true) {
        std::cout << "Ort eingeben: ";
        std::cin.getline(ort, 30);
        if(strlen(ort) == 0)
            break;
        search(ort, entries, 0, size);
    }

    return 0;
}
```