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## Bug Squashing

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### Problem Description

You're working at a company and a junior developer has come to you for help with a task. They've been asked to find people in a list of client data (names, phone numbers, email addresses, and the like). They've attempted the task and have given you the code attached (a digital copy is also provided).

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### Task

Fix the problems with the code and construct a list of the things you've fixed (and a brief explanation of the problem) so that the other developer can learn.

To focus on the problem at hand, you can assume that the input is correct and valid.

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### Relates to Objectives

1.1-4 2.1 2.2 2.5 2.6 2.8 2.9 3.2 3.4-6 4.4 4.5 4.7 4.8

(1 point, Individual)

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### main.c

```
#include <stdio.h>
#include <math.h>
#include <stdlib.h>
#include <string.h>
#include <stdio.h>

struct S{
    char *firstName;
    char* lastName;
    int phone;
    char* emialAddress;
};

static int i, j;
static int count;
```

```
void sfm(struct S** ss){
    for(i = 0; i < count; i++)
        for (j = 0; j < count; j++)
            if (ss[i]->firstName > ss[j]->firstName)
                ss[i] = ss[j];
                ss[j] = ss[i];
}

int ffm(struct S** ss, char* s){
    while(++i < count)
        if(ss[i]->firstName == s)
            return 1;
    return 0;
}

void sln(struct S** ss){
    for(i = 0; i < count; i++)
        for (j = 0; j < count; j++)
            if (ss[i]->lastName > ss[j]->lastName)
                ss[i] = ss[j];
                ss[j] = ss[i];
}

int fln(struct S** ss, char* s){
    while(++i < count){
        if(ss[i]->lastName == s)
            return 1;
    }
    return 0;
}

void sem(struct S** ss){
    for(i = 0; i < count; i++) {
        for (j = 0; j < count; j++) {
            if (ss[i]->emialAddress > ss[j]->emialAddress) {
                struct S *s = ss[i];
                ss[j] = ss[i];
                ss[i] = s;
            }
        }
    }
}

int fem(struct S** ss, char* s){
    while(++i < count){
        if(ss[i]->emialAddress == s)
            return 1;
    }
    return 0;
}

void sph(struct S** ss){
    for(; i < count; i++) {
```

```
        for (; j < count; j++) {
            if (ss[i]->phone > ss[j]->phone) {
                struct S *s = ss[i];
                ss[i] = ss[j];
                ss[j] = s;
            }
        }
    }
}

int fph(struct S** ss, int s){
    while(++i < count){
        if(ss[i]->phone == s)
            return 1;
    }
    return 0;
}

int main(int argc, char ** argv) {
    int i;
    int count = 0;
    char buffer[10];

    struct S** ss = (struct S**) malloc(100*sizeof(struct S**));
    struct S* s = malloc(sizeof(*s));

    FILE *f = fopen(argv[1], "r");

    for(i = 0; i < 50; i++){

        s->firstName = (char*) malloc(80 * sizeof(s->firstName[0]));
        s->lastName = (char*) malloc(80 * sizeof(s->firstName[0]));
        s->emialAddress = (char*) malloc(80 * sizeof(s->firstName[0]));

        fscanf(f, "%s %s %d %s", &s->firstName, &s->lastName, &s->phone, &s->
emialAddress);

        ss[count] = s;
        count += 1;
    }

    int command = 10;
    while(command != 0){
        char* val = malloc(100*sizeof(val[0]));
        gets(buffer);
        command = atoi(buffer);
        gets(buffer);
        strcpy(val, buffer);
        switch(command){
            case 1:
                printf("looking for email %s\n", val);
                sem(ss);
                printf("found it? %d\n", fem(ss, val));
                break;
        }
    }
}
```

```
        case 2:
            printf("looking for firstname %s\n", val);
            sfn(ss);
            printf("found it? %d\n", ffn(ss, val));
            break;
        case 3:
            printf("looking for lasname %s\n", val);
            sln(ss);
            printf("found it? %d\n", fln(ss, val));
            break;
        case 4:
            printf("looking for email %s\n", val);
            sph(ss);
            printf("found it? %d\n", fph(ss, atoi(val)));
        default:
            break;
    }
}
}}
```

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### makefile

```
main: main.c
    gcc -o main main.c -lm 2> /dev/null
```

(1 point, Individual)