```
#define _CRT_SECURE_NO_WARNINGS
#include <iostream>
#include <cstring>
#define MAX_SIZE 1000
using namespace std;

class Contact {
private:
	char name[100];
	char phone[100];
	/*char* ptrname = name;
	char* ptrphone = phone;*/

public:
	Contact();
	Contact(char a[100], char b[100]);
	char* getName();
	char* getPhone();
};

Contact::Contact()
{}

Contact::Contact(char a[100], char b[100])
{
	strcpy(name, a);
	strcpy(phone, b);
}

char* Contact::getName() {
	return name;
}

char* Contact::getPhone() {
	return phone;
}

void Swap(char x[100], char y[100]) {
	//char *tmp = x;
	//x = y;
	//y = tmp;
	char tmp[100];
	strcpy(tmp, x);
	strcpy(x, y);
	strcpy(y, tmp);
}

void Search(Contact *list[MAX_SIZE], int n) {
	char keyword[100];
	char *ptrkeyword;
	ptrkeyword = keyword;
	cout << "Input the search keyword:" << endl;
	cin >> keyword;
	bool match;
	int p = 0;
	int q = 0;

	cout << "Search result:" << endl;
```

```
	for (int i = 0; i < n; i++) {
		// check if keyword matches name
		for (int s = 0; (list[i]->getName())[s] != '\0'; s++) {
			int z = 0;
			if ((list[i]->getName())[s] == keyword[z]) {
				int h = s;
				while ((list[i]->getName())[h] == keyword[z] && keyword[z] !=
'\0') {
					h++;
					z++;
				}

				if (keyword[z] == '\0') {
					match = true;
					printf(list[i]->getName());
					cout << " ";
					printf(list[i]->getPhone());
					cout << endl;
				}
			}
		}
	}


	// if keyword does not match name, check if keyword matches phone
	if (match != true) {
		for (int i = 0; i < n; i++) {
			for (int k = 0; (list[i]->getPhone())[k] != '\0'; k++) {
				int z = 0;
				if ((list[i]->getPhone())[k] == keyword[z]) {
					int h = k;
					while ((list[i]->getPhone())[h] == keyword[z] &&
keyword[z] != '\0') {
						h++;
						z++;
					}

					if (keyword[z] == '\0') {
						match = true;
						printf(list[i]->getName());
						cout << " ";
						printf(list[i]->getPhone());
						cout << endl;
					}
				}
			}
		}
	}

	if (match != true)
		cout << "No result." << endl;
}
```

```
int main() {
	int list_num;
	cout << "Input the number of contact people:" << endl;
	cin >> list_num;

	Contact *list[MAX_SIZE];
	char name[100];
	char phone[100];

	cout << "Input the contact list:" << endl;
	for (int i = 0; i < list_num; i++) {
		cin.ignore();
		cin >> name;
		cin >> phone;
		list[i] = new Contact(name, phone);
	}

	int q = 0;
	for (int i = 0; i < list_num; i++) {
		for (int b = 0; b < p - a - 1; b++) {
			if ((list[b]->getName())[q] >(list[b + 1]->getName())[q])
				Swap(list[b], list[b + 1]);
			if ((list[b]->getName())[q] == (list[b + 1]->getName())[q]) {
				while ((list[b]->getName())[q] == (list[b+1]->getName())[q])
					q++;
				if ((list[b]->getName())[q] >(list[b+1]->getName())[q + 1])
					Swap(list[b], list[b+1]);
			}
		}
	}



	Search(list, list_num);
	return 0;
}
```