Problem statement: Write a program to implement a simple contact list. The program should allow the user to add, search, and delete contacts. Each contact should have a name and phone number, and the contacts should be stored in an array.

#include <stdio.h>

#include <string.h>

#define MAX\_CONTACTS 100

struct contact {

    char name[50];

    char phone\_num[20];

};

int main() {

    struct contact contacts[MAX\_CONTACTS];

    int num\_contacts = 0;

    while (1) {

        printf("Choose an option:\n");

        printf("1. Add a contact\n");

        printf("2. Search for a contact\n");

        printf("3. Delete a contact\n");

        printf("4. Quit\n");

        int option;

        scanf("%d", &option);

        if (option == 1) {

            if (num\_contacts >= MAX\_CONTACTS) {

                printf("Error: Contact list is full\n");

                continue;

            }

            struct contact new\_contact;

            printf("Enter the contact name: ");

            scanf("%s", new\_contact.name);

            printf("Enter the phone number: ");

            scanf("%s", new\_contact.phone\_num);

            contacts[num\_contacts++] = new\_contact;

            printf("Contact added\n");

        } else if (option == 2) {

            char search\_name[50];

            printf("Enter the name to search for: ");

            scanf("%s", search\_name);

            int found = 0;

            for (int i = 0; i < num\_contacts; i++) {

                if (strcmp(contacts[i].name, search\_name) == 0) {

                    printf("Name: %s\nPhone number: %s\n", contacts[i].name, contacts[i].phone\_num);

                    found = 1;

                    break;

                }

            }

            if (!found) {

                printf("Contact not found\n");

            }

        } else if (option == 3) {

            char delete\_name[50];

            printf("Enter the name to delete: ");

            scanf("%s", delete\_name);

            int found = 0;

            for (int i = 0; i < num\_contacts; i++) {

                if (strcmp(contacts[i].name, delete\_name) == 0) {

                    for (int j = i; j < num\_contacts - 1; j++) {

                        contacts[j] = contacts[j + 1];

                    }

                    num\_contacts--;

                    found = 1;

                    printf("Contact deleted\n");

                    break;

                }

            }

            if (!found) {

                printf("Contact not found\n");

            }

        } else if (option == 4) {

            break;

        } else {

            printf("Invalid option\n");

        }

    }

    return 0;

}

***Explanation***

In this program, we define a **struct contact** that contains a name and phone number for a contact. We then define an array of **contacts** with a maximum size of 100.

We use a **while** loop to prompt the user to choose an option (add a contact, search for a contact, delete a contact, or quit). Depending on the option chosen, we either add a new contact to the array, search for a contact by name and display their phone number, delete a contact by name, or quit the program.

The program uses string comparison functions **strcmp()** to compare the entered name with the names in the contact list. If a matching contact is found, the program either displays the contact information or deletes the contact by shifting the remaining elements in the array down by one index and decrementing the **num\_contacts** variable.

Overall, this program provides a simple implementation of a contact list using an array of structures. It allows the user to add, search, and delete contacts, and provides error messages for cases such as trying to add a contact when the list is full, or searching for or deleting a contact that does not exist. With less than 100 lines of code, it provides a good example of how C can be used to implement a basic data management system.