

• Source Code

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/*
Practical - 6
Write C++ program using STL for sorting and searching with user
defined records
such as person record (Name, DOB, Telephone number) using vector
container.
*/

#include <iostream>
#include <vector>
#include <algorithm>
#include <iterator>
using namespace std;

class Person
{
    public:
        string name;
        int day, month, year;
        string dob;
        int telephone;
        Person()
        {
            name = "";
            telephone = 0;
            day = 1;
            month = 1;
            year = 2024;
        }
        bool operator==(Person p2)
        {
            return name == p2.name;
        }
        void input()
        {
            cout << "Enter name: ";
            cin >> name;
            cout << "Enter telephone: ";
            cin >> telephone;
            cout << "Enter Date of birth\n(first DD [ENTER], then MM

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        [ENTER], then YYYY [ENTER] format):\n";
        cin >> day >> month >> year;
        dob = "" + to_string(day) + "/" + to_string(month) + "/" +
        to_string(year);
    }
    void display()
    {
        cout << "(Name: " << name << ")(Telephone: " << telephone
        << ")(DOB: " << dob << ")\n" << endl;
    }
};

bool compareDate(Person p1, Person p2)
{
    return ((p1.year == p2.year) ? ((p1.month == p2.month) ? ((p1.day
    <= p2.day) ? true : false) : ((p1.month < p2.month) ? true : false))
    : ((p1.year < p2.year) ? true : false));
}

bool compareTelephone(Person p1, Person p2)
{
    return (p1.telephone < p2.telephone);
}

bool compareName(Person p1, Person p2)
{
    return (p1.name < p2.name);
}

Person return_obj()
{
    Person a;
    a.input();
    return a;
}

void srch(vector<Person> vs1)
{
    Person p1;
    cout << "Enter name of the person you want to find: " << endl;
    cin >> p1.name;
    vector<Person>::iterator ir;

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    ir = find(vs1.begin(), vs1.end(), p1);
    if (ir == vs1.end())
        cout << "The person with name " << p1.name << "is not in the
        vector." << endl;
    else
    {
        cout << "Person found!" << endl;
        ir->display();
        cout << endl;
    }
}

void deletevec(vector<Person> &vs1)
{
    Person p1;
    cout << "Enter name of the person you want to delete: " << endl;
    cin >> p1.name;
    vector<Person>::iterator ir;
    ir = find(vs1.begin(), vs1.end(), p1);
    if (ir == vs1.end())
        cout << "The person with name " << p1.name << "is not in the
        vector." << endl;
    else
    {
        ir->display();
        cout << "\n";
        vs1.erase(ir);
        cout << "Deleted\n";
    }
}

void vec_display(vector<Person> vs1)
{
    for (auto elem : vs1)
    {
        elem.display();
    }
    cout << "\n";
}

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int main()
{

    vector<Person> v1;

    cout << "Enter number of people: ";
    int n, ch, ch2;
    cin >> n;

    for (int i = 0; i < n; i++)
    {
        v1.push_back(return_obj());
    }

    while (1)
    {
        cout << "\t\tMenu\n1.Add Person\n";
        cout << "2.Delete Person\n";
        cout << "3.Sort\n";
        cout << "4.Search\n";
        cout << "5.Display\n";
        cout << "6. Exit\n";
        cout << "Choose an option (1-6): ";
        cin >> ch;
        switch (ch)
        {
            case 1:
                v1.push_back(return_obj());
                break;
            case 2:
                deletevec(v1);
                break;
            case 3:
                cout << "1.Sort by DOB , 2 Sort by Name , 3 Sort by
                Telephone no.\n";
                cin >> ch2;
                switch (ch2)
                {
                    case 1:
                        sort(v1.begin(), v1.end(), compareDate);
                        break;

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        case 2:
            sort(v1.begin(), v1.end(), compareName);
            break;
        case 3:
            sort(v1.begin(), v1.end(), compareTelephone);
            break;
    }
    vec_display(v1);
    break;
case 4:
    srch(v1);
    break;
case 5:
    vec_display(v1);
    break;
case 6:
    exit(1);
default:
    cout << "Please choose a valid option.\n";
}
}
```

- **Output**

Enter number of people: 2

Enter name: Ram_Sharma

Enter telephone: 0205820190

Enter Date of birth

(first DD [ENTER], then MM [ENTER], then YYYY [ENTER] format):

02

01

2006

Enter name: Rohan_Sen

Enter telephone: 0204829109

Enter Date of birth

(first DD [ENTER], then MM [ENTER], then YYYY [ENTER] format):

15

06

2005

Menu

- 1.Add Person
- 2.Delete Person
- 3.Sort
- 4.Search
- 5.Display
6. Exit

Choose an option (1-6): 1

Enter name: Puja_Shah

Enter telephone: 0205830196

Enter Date of birth

(first DD [ENTER], then MM [ENTER], then YYYY [ENTER] format):

05

04

2001

Menu

- 1.Add Person
- 2.Delete Person
- 3.Sort

- 4.Search
- 5.Display
6. Exit

Choose an option (1-6): 2

Enter name of the person you want to delete:

Rohan_Sen

(Name: Rohan_Sen)(Telephone: 204829109)(DOB: 15/6/2005)

Deleted

Menu

- 1.Add Person
- 2.Delete Person
- 3.Sort
- 4.Search
- 5.Display
6. Exit

Choose an option (1-6): 3

1.Sort by DOB , 2 Sort by Name , 3 Sort by Telephone no.

1

(Name: Puja_Shah)(Telephone: 205830196)(DOB: 5/4/2001)

(Name: Ram_Sharma)(Telephone: 205820190)(DOB: 2/1/2006)

Menu

- 1.Add Person
- 2.Delete Person
- 3.Sort
- 4.Search
- 5.Display
6. Exit

Choose an option (1-6): 3

1.Sort by DOB , 2 Sort by Name , 3 Sort by Telephone no.

2

(Name: Puja_Shah)(Telephone: 205830196)(DOB: 5/4/2001)

(Name: Ram_Sharma)(Telephone: 205820190)(DOB: 2/1/2006)

Menu

- 1.Add Person
- 2.Delete Person
- 3.Sort
- 4.Search
- 5.Display
6. Exit

Choose an option (1-6): 3

1.Sort by DOB , 2 Sort by Name , 3 Sort by Telephone no.

3

(Name: Ram_Sharma)(Telephone: 205820190)(DOB: 2/1/2006)

(Name: Puja_Shah)(Telephone: 205830196)(DOB: 5/4/2001)

Menu

- 1.Add Person
- 2.Delete Person
- 3.Sort
- 4.Search
- 5.Display
6. Exit

Choose an option (1-6): 2

Enter name of the person you want to delete:

Kia_Sen

The person with name Kia_Sen is not in the vector.

Menu

- 1.Add Person
- 2.Delete Person
- 3.Sort
- 4.Search
- 5.Display
6. Exit

Choose an option (1-6): 4

Enter name of the person you want to find:

Ram_Sharma

Person found!

(Name: Ram_Sharma)(Telephone: 205820190)(DOB: 2/1/2006)

Menu

- 1.Add Person
- 2.Delete Person
- 3.Sort
- 4.Search
- 5.Display
6. Exit

Choose an option (1-6): 5

(Name: Ram_Sharma)(Telephone: 205820190)(DOB: 2/1/2006)

(Name: Puja_Shah)(Telephone: 205830196)(DOB: 5/4/2001)

Menu

- 1.Add Person
- 2.Delete Person
- 3.Sort
- 4.Search
- 5.Display
6. Exit

Choose an option (1-6): 6