

## 5. Write a C++ program to implement simple index on primary key for a file of student objects. Implement add(),search(),delete() using the index.

### Program Screenshots:

```
#include<iostream>
#include<fstream>
#include<string.h>
#include<sstream>

using namespace std;

class student
{
    public: char fn[20],ln[20],usn[11],sem[5],b[5];
};
student t,s[20];

int count=0;
fstream f,fi;
char buffer[100];

void pack(student t)
{
    f.open("std.txt",ios::out|ios::app);
    stringstream st;
    st<<count;
    string st2=st.str();
    char const *ch=st2.c_str();
    strcpy(buffer,ch);
    strcat(buffer,"|");
    strcat(buffer,t.fn);
    strcat(buffer,"|");
    strcat(buffer,t.ln);
    strcat(buffer,"|");
    strcat(buffer,t.usn);
    strcat(buffer,"|");
    strcat(buffer,t.sem);
    strcat(buffer,"|");
    strcat(buffer,t.b);
    strcat(buffer,"|");
    int l=strlen(buffer);
    for(int i=l;i<65;i++)
```

```

        strcat(buffer, "*");
f<<buffer<<endl;
f.close();
fi.open("index.txt",ios::out|ios::app);
fi<<t.usn<<"|"<<count<<"|"<<endl;
fi.close();
}

void write()
{
    cout<<"Enter First name\n";
    cin>>t.fn;
    cout<<"Enter Last name\n";
    cin>>t.ln;
    cout<<"Enter USN\n";
    cin>>t.usn;
    cout<<"Enter sem\n";
    cin>>t.sem;
    cout<<"Enter branch\n";
    cin>>t.b;
    pack(t);
}

void display()
{
    cout<<"Students records are\n";
    cout<<"FirstName\tLastName\tUSN\tSem\tBranch\n";
    for(int i=0;i<count;i++)
    {
        cout<<s[i].fn<<"\t\t"<<s[i].ln<<"\t\t"<<s[i].usn<<"\t"<<s[i].sem<<"\t"
<<s[i].b<<endl;
    }
}

void unpack()
{
    char temp[5];
    int i;
    f.open("std.txt",ios::in);
    for( i=0;i<count;i++)
    {
        f.getline(buffer,70);
        sscanf(buffer,"%[^]|%[^]|%[^]|%[^]|%[^]|%",temp,s[i].fn,s[i]
.ln,s[i].usn,s[i].sem,s[i].b);
    }
    f.close();
}

```

```

int search()
{
    char u[11],uf[11],temp[5];
    cin>>u;
    int flag=0,c=0;
    fi.open("index.txt",ios::in);
    for(int i=0;i<count;i++)
    {
        fi.getline(buffer,15);
        sscanf(buffer,"%[^]|%[^]|",uf,temp);
        if(strcmp(uf,u)==0)
        {
            stringstream ss;
            ss<<temp;
            ss>>c;
            f.open("std.txt",ios::in);
            f.seekg(65*(c-1),ios::beg);
            f.read(buffer,65);
            sscanf(buffer,"%[^]|%[^]|%[^]|%[^]|%[^]|%[^]|",temp,t.fn,t.l
n,t.usn,t.sem,t.b);
            cout<<"Match found\n";flag=1;
            cout<<t.fn<<"\t\t"<<t.ln<<"\t\t"<<t.usn<<"\t"<<t.sem<<"\t"<<t.b<<e
ndl;

            f.close();
            break;
        }
    }
    fi.close();
    if(flag==0)
    {
        cout<<"Match not found\n";
        c=-1;
    }
    return c;
}

void remove(int c)
{
    unpack();
    int d=remove("std.txt");
    d=remove("index.txt");
    f.open("std.txt",ios::out);
    fi.open("index.txt",ios::out);
    f.close();
    fi.close();
    int count2=count;
    count=0;
    for(int i=0;i<count2;i++)

```

```

    {
        if(c!=i+1)
        {
            count++;
            pack(s[i]);
        }
    }
}

int main()
{
    f.open("std.txt",ios::out);
    fi.open("index.txt",ios::out);
    fi.close();
    f.close();
    int c;
    while(1)
    {
        cout<<"1.Write\n2.Display\n3.Search\n4.Delete\n5.Exit\n";
        cout<<"Enter your choice\n";
        cin>>c;
        switch(c)
        {
            case 1:count++;
                    write();
                    break;
            case 2:cout<<"";
                    unpack();
                    display();
                    break;
            case 3:cout<<"Enter usn to search\n";
                    c=search();
                    break;
            case 4:cout<<"Enter usn to delete\n";
                    c=search();
                    if(c!=-1)
                        remove(c);
                    break;
            case 5:exit(0);
                    break;
            default:cout<<"Wrong choice\n";
        }
    }
    return 0;
}

```

## Output:

```
1.Write
2.Display
3.Search
4.Delete
5.Exit
Enter your choice
2
Students records are
FirstName      LastName      USN      Sem      Branch
sooraj         singh         1cr18is151  6        ise
```

```
sooraj@Asus-F-15:~/FS lab/program-5$ g++ program-5.cpp
sooraj@Asus-F-15:~/FS lab/program-5$ ./a.out
1.Write
2.Display
3.Search
4.Delete
5.Exit
Enter your choice
1
Enter First name
sooraj
Enter Last name
singh
Enter USN
1cr18is151
Enter sem
6
Enter branch
ise
```