ASSIGNMENT NO. 11

```
#include<iostream>
#include<stdlib.h>
#include<fstream>
#include<string.h>
#include<iomanip>
using namespace std;
class EMP_CLASS
{
 typedef struct EMPLOYEE
 {
 char name[10];
 int emp_id;
 int salary;
 }Rec;
 typedef struct INDEX
 {
 int emp_id;
 int position;
 }Ind_Rec;
 Rec Records;
 Ind_Rec Ind_Records;
 public:

  EMP_CLASS()//constructor
  {
   strcpy(Records.name,"");
  }
  void Create();
  void Display();
  void Delete();
  void Add();
  void Search();
};

void EMP_CLASS::Create()
{
 int i,j;
 char ch='y';
 fstream seqfile;
 fstream indexfile;
 i=0;
 indexfile.open("IND.DAT",ios::out|ios::binary);
 seqfile.open("EMP.DAT",ios::out|ios::binary);
 do
 {
```

```
  cout<<"\n Enter Name: ";
  cin>>Records.name;
  cout<<"\n Enter Emp_ID: ";
  cin>>Records.emp_id;
  cout<<"\n Enter Salary: ";
  cin>>Records.salary;
  seqfile.write((char*)&Records,sizeof(Records))<<flush;
  Ind_Records.emp_id=Records.emp_id;
  Ind_Records.position=i;
  indexfile.write((char*)&Ind_Records,sizeof(Ind_Records))<<flush;
  i++;
  cout<<"\nDo you want to add more records?";
  cin>>ch;
  }while(ch=='y');
  seqfile.close();
  indexfile.close();
}
void EMP_CLASS::Display()
{
 fstream seqfile;
 fstream indexfile;
 int n,i,j;
 seqfile.open("EMP.DAT",ios::in|ios::binary);
 indexfile.open("IND.DAT",ios::in|ios::binary);
 indexfile.seekg(0,ios::beg);
 seqfile.seekg(0,ios::beg);
 cout<<"\n The Contents of file are ..."<<endl;
 i=0;
 while(indexfile.read((char *)&Ind_Records,sizeof(Ind_Records)))
 {

   i=Ind_Records.position*sizeof(Rec);//getting pos from index file
   seqfile.seekg(i,ios::beg);//seeking record of that pos from seq.file
   seqfile.read((char *)&Records,sizeof(Records));//reading record
   if(Records.emp_  id!=-1)//if rec. is not deleted logically
   {   //then display it
   cout<<"\nName: "<<Records.name<<flush;
   cout<<"\nEmp_ID: "<<Records.emp_id;
   cout<<"\nSalary: "<<Records.salary;
   cout<<"\n";
    }

 }
 seqfile.close();
 indexfile.close();
}

void EMP_CLASS::Delete()
{
 int id,pos;
```

```
 cout<<"\n For deletion,";
 cout<<"\n Enter the Emp_ID for for searching ";
 cin>>id;
 fstream seqfile;
 fstream indexfile;
 seqfile.open("EMP.DAT",ios::in|ios::out|ios::binary);
 indexfile.open("IND.DAT",ios::in|ios::out|ios::binary);
 seqfile.seekg(0,ios::beg);
 indexfile.seekg(0,ios::beg);
 pos=-1;
 //reading index file for getting the index
 while(indexfile.read((char *)&Ind_Records,sizeof(Ind_Records)))
 {
  if(id==Ind_Records.emp_id) //desired record is found
  {
   pos=Ind_Records.position;
   Ind_Records.emp_id=-1;
   break;
  }
 }
 if(pos==-1)
 {
  cout<<"\n The record is not present in the file";
  return;
 }
//calculating the position of record in seq. file using the pos of ind. file
 int offset=pos*sizeof(Rec);
 seqfile.seekp(offset);//seeking the desired record for deletion
 strcpy(Records.name,"");
 Records.emp_id=-1; //logical deletion
 Records.salary=-1; //logical deletion
 seqfile.write((char*)&Records,sizeof(Records))<<flush;//writing deleted status
    //From index file also the desired record gets deleted as follows
  offset=pos*sizeof(Ind_Rec);//getting position in index file
 indexfile.seekp(offset); //seeking that record
 Ind_Records.emp_id=-1; //logical deletion of emp_id
 Ind_Records.position=pos;//position remain unchanged
 indexfile.write((char*)&Ind_Records,sizeof(Ind_Records))<<flush;
 seqfile.seekg(0);
 indexfile.close();
 seqfile.close();
 cout<<"\n The record is Deleted!!!";
}
void EMP_CLASS::Add()
{
 fstream seqfile;
 fstream indexfile;
 int pos;
 indexfile.open("IND.DAT",ios::in|ios::binary);
 indexfile.seekg(0,ios::end);
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 pos=indexfile.tellg()/sizeof(Ind_Records);
 indexfile.close();

 indexfile.open("IND.DAT",ios::app|ios::binary);
 seqfile.open("EMP.DAT",ios::app|ios::binary);

 cout<<"\n Enter the record for appending";
 cout<<"\nName: ";cin>>Records.name;
 cout<<"\nEmp_ID: ";cin>>Records.emp_id;
 cout<<"\nSalary: ";cin>>Records.salary;
 seqfile.write((char*)&Records,sizeof(Records));//inserting rec at end in seq. file
 Ind_Records.emp_id=Records.emp_id;          //inserting rec at end in ind. file
Ind_Records.position=pos;                    //at calculated pos
 indexfile.write((char*)&Ind_Records,sizeof(Ind_Records))<<flush;
 seqfile.close();
 indexfile.close();
 cout<<"\n The record is Appended!!!";
}
void EMP_CLASS::Search()
{
 fstream seqfile;
 fstream indexfile;
 int id,pos,offset;
 cout<<"\n Enter the Emp_ID for searching the record ";
 cin>>id;
 indexfile.open("IND.DAT",ios::in|ios::binary);
 pos=-1;
 //reading index file to obtain the index of desired record
 while(indexfile.read((char *)&Ind_Records,sizeof(Ind_Records)))
 {
  if(id==Ind_Records.emp_id)//desired record found
  {
   pos=Ind_Records.position;//seeking the position
   break;
  }
 }
  if(pos==-1)
  {
  cout<<"\n Record is not present in the file";
  return;
  }
//calculate offset using position obtained from ind. file
  offset=pos*sizeof(Records);
  seqfile.open("EMP.DAT",ios::in|ios::binary);
//seeking the record from seq. file using calculated offset
  seqfile.seekg(offset,ios::beg);//seeking for reading purpose
  seqfile.read((char *)&Records,sizeof(Records));
  if(Records.emp_id==-1)
  {
  cout<<"\n Record is not present in the file";
```

```
 return;
 }
 else //emp_id=desired record's id
 {
 cout<<"\n The Record is present in the file and it is...";
 cout<<"\n Name: "<<Records.name;
 cout<<"\n Emp_ID: "<<Records.emp_id;
 cout<<"\n Salary: "<<Records.salary;
 }
 seqfile.close();
 indexfile.close();
}
int main()
{
 EMP_CLASS List;
 char ans='y';
 int choice,key;

 do
 {
 cout<<"\n            Main Menu            "<<endl;
 cout<<"\n 1.Create";
 cout<<"\n 2.Display";
 cout<<"\n 3.Delete";
 cout<<"\n 4.Add";
 cout<<"\n 5.Search";
 cout<<"\n 6.Exit";
 cout<<"\n Enter your choice: ";
 cin>>choice;
 switch(choice)
 {
 case 1:List.Create();
    break;
 case 2:List.Display();
    break;
 case 3:List.Delete();
    break;
 case 4:List.Add();
    break;
 case 5:List.Search();
    break;
 case 6:exit(0);
 }
 cout<<"\n\t Do you want to go back to Main Menu?";
 cin>>ans;
 }while(ans=='y');
 return 0;
}
```

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Output:-

Main Menu

1.Create
2.Display
3.Delete
4.Add
5.Search
6.Exit
Enter your choice: 1

Enter Name: nikita

Enter Emp_ID: 12

Enter Salary: 85000

Do you want to add more records?y

Enter Name: siddhi

Enter Emp_ID: 28

Enter Salary: 88000