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#include <conio.h>
#include <iostream>
#include <string>
#include <fstream>
#include <cstdlib>
#include <math.h>
using namespace std;

class Student{
   int ID;
   string name;
   static string file;
   int marks;
public:
   Student(){
      ID=marks=0;
      name="";
   }
   Student(int ID, string name, int marks){
      this->ID=(ID>0)?ID:0;
      this->name=name;
      this->marks=(marks>=0)?marks:0;
   }
   void setID(int ID){this->ID=(ID>0)?ID:0;}
   void setName(string name){this->name=name;}
   void setMarks(int marks){
      this->marks=(marks>=0)?marks:0;
   }
   void setFile(string file){this->file=file;}
   int getID(){return ID;}
   int getMarks(){return marks;}
   string getName(){return name;}
   static string getFile(){return file;}
   void print(){
      cout<<ID<<"\t"<<name<<"\t"<<marks<<endl;
   }
};
string Student::file="result.dat";

void print();
Student search(int ID);
void add(Student);
void update(int ID);
void del(int ID);

int main(){
   int choice=1;
   do{
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        cout<<"Enter 1 to display all records.\n";
        cout<<"Enter 2 to search in records.\n";
        cout<<"Enter 3 to add a record.\n";
        cout<<"Enter 4 to update a record.\n";
        cout<<"Enter 5 to delete a record.\n";
        cout<<"Enter 0 to exit the program.\n";
        cout<<"Choice: "; cin>>choice;
        if(choice==1){print(); cout<<endl;}
        else if(choice==2){
            int ID=0;
            cout<<"Enter ID: "; cin>>ID;
            search(ID).print();
            cout<<endl;
         }
        else if(choice==3){
            int ID=0, marks=0;
            string name="";
            cout<<"Enter ID, Name and Marks: ";
            cin>>ID>>name>>marks;
            add(Student(ID,name,marks));
            cout<<endl;
        }
        else if(choice==4){
            int old=0;
            cout<<"[OLD] Enter ID: "; cin>>old;
            update(old);
            cout<<endl;
        }
        else if(choice==5){
            int ID=0;
            cout<<"Enter ID: "; cin>>ID;
            del(ID);
            cout<<endl;
         }
        else if(choice!=0){
        cout<<"[WARNING] Enter Correct Number.\n\n";
        }

    }while(choice!=0);
}

void print(){
    ifstream f(Student::getFile(),ios::binary);
    while(!f.eof()){
        Student temp(0,"bb",9);
        f.read((char *)&temp,sizeof(temp));
        temp.print();
    }
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   f.close();
}
Student search(int ID){
   ifstream f(Student::getFile(),ios::binary);
   Student temp;
   while(!f.eof()){
      f.read((char *)&temp,sizeof(temp));
      if(temp.getID()==ID) break;
   }
   f.close();
   return temp;
}
void add(Student data){
   ofstream f(Student::getFile(),ios::binary|ios::app);
   f.write((char*)&data,sizeof(data));
   f.close();
}
void update(int ID){
   ifstream input(Student::getFile(), ios::binary);
   ofstream output(Student::getFile(), ios::binary | ios::app);
          int size = sizeof(Student);
          while (!input.eof()) {
                    Student temp;
                    input.read((char*)&temp, sizeof(temp));
                    if(temp.getID()==ID){
                    int ID, marks; string name;
      cout<<"[NEW] Enter ID, Name and Marks: ";
           cin>>ID>>name>>marks;
           temp=Student(ID,name,marks);
                    output.seekp(-size, ios::cur);
          output.write((char*)&temp,sizeof(temp));
                    break;
                    }
          }
          input.close();
          output.close();

}
void del(int ID){
   ifstream input(Student::getFile(), ios::binary);
          ofstream output("temp.dat", ios::binary | ios::app);
            //transefer data  to temp.dat from customer.dat except object with ID
            while(!input.eof()){
               Student temp;
               input.read((char *)&temp,sizeof(temp));
               if(temp.getID()==ID) continue;
               output.write((char *)&temp,sizeof(temp));
            }
```

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            input.close();
            output.close();
            //over-write data back to original file from temp file
            ifstream fin("temp.dat", ios::binary);
            ofstream fout(Student::getFile(),ios::binary|ios::trunc);
            while(!fin.eof()){
               Student temp;
               fin.read((char *)&temp,sizeof(temp));
               fout.write((char *)&temp,sizeof(temp));
            }
            fin.close();
            fout.close();
}
```

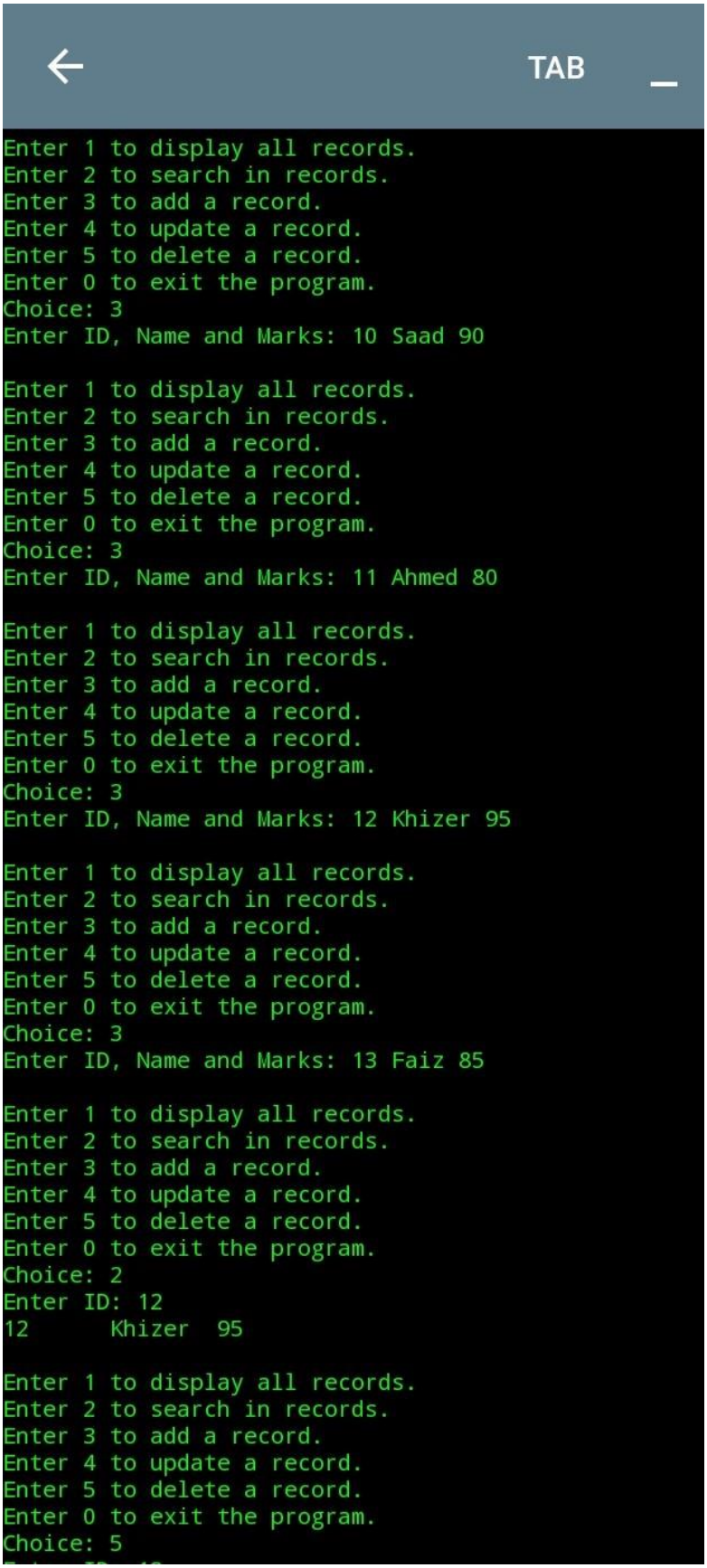
TAB
Enter 1 to display all records.
Enter 2 to search in records.
Enter 3 to add a record.
Enter 4 to update a record.
Enter 5 to delete a record.
Enter 0 to exit the program.
Choice: 3
Enter ID, Name and Marks: 10 Saad 90
Enter 1 to display all records.
Enter 2 to search in records.
Enter 3 to add a record.
Enter 4 to update a record.
Enter 5 to delete a record.
Enter 0 to exit the program.
Choice: 3
Enter ID, Name and Marks: 11 Ahmed 80
Enter 1 to display all records.
Enter 2 to search in records.
Enter 3 to add a record.
Enter 4 to update a record.
Enter 5 to delete a record.
Enter 0 to exit the program.
Choice: 3
Enter ID, Name and Marks: 12 Khizer 95
Enter 1 to display all records.
Enter 2 to search in records.
Enter 3 to add a record.
Enter 4 to update a record.
Enter 5 to delete a record.
Enter 0 to exit the program.
Choice: 3
Enter ID, Name and Marks: 13 Faiz 85
Enter 1 to display all records.
Enter 2 to search in records.
Enter 3 to add a record.
Enter 4 to update a record.
Enter 5 to delete a record.
Enter 0 to exit the program.
Choice: 2
Enter ID: 12
12 Khizer 95
Enter 1 to display all records.
Enter 2 to search in records.
Enter 3 to add a record.
Enter 4 to update a record.
Enter 5 to delete a record.
Enter 0 to exit the program.
Choice: 5