**Experiment No 2.2**

**Student Name: Ayushi Aggarwal UID: 21MCA2806**

**Branch: UIC Section/Group: 8B**

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**Subject Name: Computing Aptitude Subject Code: 21CAP-654**

1. **Aim/Overview of the practical:**

Create a minor project on

Student Report Management System

For input take student Roll number, Name, marks in different subjects etc. Then you can print average marks and the grade of student based on the entered marks. Create a menu with the following options:

1. Create student record
2. Search student record
3. Display all students’ records
4. Delete student record
5. Modify student record
6. Exit

Through this project, students will learn a lot about input/output streams and the file management system of C++. Our program collects student details like name, roll number, marks in each subject, and calculates their grade.

1. **Code for experiment/practical:**

#include<iostream>

#include<fstream>

#include<iomanip>

using namespace std;

class student

{

int rollno;

char name[50];

int eng\_marks, math\_marks, sci\_marks, lang2\_marks, cs\_marks;

double average;

char grade;

public:

void getdata();

void showdata() const;

void calculate();

int retrollno() const;

};

void student::calculate()

{

average=(eng\_marks+math\_marks+sci\_marks+lang2\_marks+cs\_marks)/5.0;

if(average>=90)

grade='A';

else if(average>=75)

grade='B';

else if(average>=50)

grade='C';

else

grade='F';

}

void student::getdata()

{

cout<<"\n Enter student's roll number: ";

cin>>rollno;

cout<<"\n\n Enter student name: ";

cin.ignore();

cin.getline(name,50);

cout<<"\n All marks should be out of 100";

cout<<"\n Enter marks in English: ";

cin>>eng\_marks;

cout<<"\n Enter marks in Math: ";

cin>>math\_marks;

cout<<"\n Enter marks in Science: ";

cin>>sci\_marks;

cout<<"\n Enter marks in 2nd language: ";

cin>>lang2\_marks;

cout<<"\n Enter marks in Computer science: ";

cin>>cs\_marks;

calculate();

}

void student::showdata() const

{

cout<<"\nRoll number of student : "<<rollno;

cout<<"\nName of student : "<<name;

cout<<"\nEnglish : "<<eng\_marks;

cout<<"\nMaths : "<<math\_marks;

cout<<"\nScience : "<<sci\_marks;

cout<<"\nLanguage2 : "<<lang2\_marks;

cout<<"\nComputer Science :"<<cs\_marks;

cout<<"\nAverage Marks :"<<average;

cout<<"\nGrade of student is :"<<grade;

}

int student::retrollno() const

{

return rollno;

}

void create\_student();

void display\_sp(int);

void display\_all();

void delete\_student(int);

void change\_student(int);

int main()

{

char ch;

cout<<setprecision(2);

do

{

char ch;

int num;

cout<<"\n\n\n\tMENU";

cout<<"\n\n\t1.Create student record";

cout<<"\n\n\t2.Search student record";

cout<<"\n\n\t3.Display all students records ";

cout<<"\n\n\t4.Delete student record";

cout<<"\n\n\t5.Modify student record";

cout<<"\n\n\t6.Exit";

cout<<"\n\n\tWhat is your Choice (1/2/3/4/5/6) ";

cin>>ch;

switch(ch)

{

case '1': create\_student(); break;

case '2': cout<<"\n\n\tEnter The roll number ";

cin>>num;

display\_sp(num); break;

case '3': display\_all(); break;

case '4': cout<<"\n\n\tEnter The roll number: ";

cin>>num;

delete\_student(num);break;

case '5': cout<<"\n\n\tEnter The roll number "; cin>>num;

change\_student(num);break;

case '6': cout<<"Exiting, Thank you!";exit(0);

}

}while(ch!='6');

return 0;

}

void create\_student()

{

student stud;

ofstream oFile;

oFile.open("student.dat",ios::binary|ios::app);

stud.getdata();

oFile.write(reinterpret\_cast<char \*> (&stud), sizeof(student));

oFile.close();

cout<<"\n\nStudent record Has Been Created ";

cin.ignore();

cin.get();

}

void display\_all()

{

student stud;

ifstream inFile;

inFile.open("student.dat",ios::binary);

if(!inFile)

{

cout<<"File could not be opened !! Press any Key to exit";

cin.ignore();

cin.get();

return;

}

cout<<"\n\n\n\t\tDISPLAYING ALL RECORDS\n\n";

while(inFile.read(reinterpret\_cast<char \*> (&stud), sizeof(student)))

{

stud.showdata();

cout<<"\n\n====================================\n";

}

inFile.close();

cin.ignore();

cin.get();

}

void display\_sp(int n)

{

student stud;

ifstream iFile;

iFile.open("student.dat",ios::binary);

if(!iFile)

{

cout<<"File could not be opened... Press any Key to exit";

cin.ignore();

cin.get();

return;

}

bool flag=false;

while(iFile.read(reinterpret\_cast<char \*> (&stud), sizeof(student)))

{

if(stud.retrollno()==n)

{

stud.showdata();

flag=true;

}

}

iFile.close();

if(flag==false)

cout<<"\n\nrecord does not exist";

cin.ignore();

cin.get();

}

void change\_student(int n)

{

bool found=false;

student stud;

fstream fl;

fl.open("student.dat",ios::binary|ios::in|ios::out);

if(!fl)

{

cout<<"File could not be opened. Press any Key to exit...";

cin.ignore();

cin.get();

return;

}

while(!fl.eof() && found==false)

{

fl.read(reinterpret\_cast<char \*> (&stud), sizeof(student));

if(stud.retrollno()==n)

{

stud.showdata();

cout<<"\n\Enter new student details:"<<endl;

stud.getdata();

int pos=(-1)\*static\_cast<int>(sizeof(stud));

fl.seekp(pos,ios::cur);

fl.write(reinterpret\_cast<char \*> (&stud), sizeof(student));

cout<<"\n\n\t Record Updated";

found=true;

}

}

if(found==false)

cout<<"\n\n Record Not Found ";

cin.ignore();

cin.get();

}

void delete\_student(int n)

{

student stud;

ifstream iFile;

iFile.open("student.dat",ios::binary);

if(!iFile)

{

cout<<"File could not be opened... Press any Key to exit...";

cin.ignore();

cin.get();

return;

}

ofstream oFile;

oFile.open("Temp.dat",ios::out);

iFile.seekg(0,ios::beg);

while(iFile.read(reinterpret\_cast<char \*> (&stud), sizeof(student)))

{

if(stud.retrollno()!=n)

{

oFile.write(reinterpret\_cast<char \*> (&stud), sizeof(student));

}

}

oFile.close();

iFile.close();

remove("student.dat");

rename("Temp.dat","student.dat");

cout<<"\n\n\tRecord Deleted ..";

cin.ignore();

cin.get();

}

1. **Result/Output/Writing Summary:**

**Output: -Text

Description automatically generated**

**Text

Description automatically generated**

**Evaluation Grid:**

|  |  |  |  |
| --- | --- | --- | --- |
| Sr. No. | Parameters | Marks Obtained | Maximum Marks |
| 1. | Demonstration and Performance |  | 5 |
| 2. | Worksheet |  | 10 |
| 3. | Post Lab Quiz |  | 5 |