Name: Kaustubh S Kabra

Class: SE Comp-1

Roll no: 20

Develop an object oriented program in C++ to create a database of student information system containing

the following information: Name, Roll number, Class, division, Date of Birth, Blood group,

Contact address, telephone number, driving license no. and other.

Construct the database with suitable member functions for initializing and destroying the data

viz constructor, default constructor, Copy constructor, destructor, static member functions,

friend class, this pointer, inline code and dynamic memory allocation operators-new and delete.

**Code:-**

# include<iostream>

# include<conio.h>

# include<string.h>

using namespace std;

class students // Class created

{

public:

string name,cls,dob;

int rollno,marks;

float per;

char div;

static int c; // Static variable declared

// Personal Information variables declared

private:

long long telno;

string bg,address,divl;

friend class personal\_info; // Friend class declared

// Default constructor to initialise default values

public:

students()

{

name="";

dob="DD/MM/YYYY";

cls="";

bg="";

address="";

divl="";

rollno=0;

telno=0;

marks=0;

div=' ';

}

// Copy constructor

public:

students(students &obj)

{

this->name=obj.name;

this->rollno=obj.rollno;

this->cls=obj.cls;

this->dob=obj.dob;

this->div=obj.div;

this->telno=obj.telno;

this->address=obj.address;

this->bg=obj.bg;

this->divl=obj.divl;

this->marks=obj.marks;

this->per=obj.per;

}

// Destructor

public:

~students()

{

}

// Get details of student

public:

void getdetails()

{

cout<<"Enter name: ";

cin.ignore();

getline(cin,name);

cout<<"Enter class: ";

getline(cin,cls);

cout<<"Enter date of birth: ";

cin>>dob;

cout<<"Enter Roll no.: ";

cin>>rollno;

cout<<"Enter division: ";

cin>>div;

}

// Print all the details of student

public:

void printdetails()

{

cout<<endl<<"Name:"<<name<<endl;

cout<<"Roll No.: "<<rollno<<endl;

cout<<"Class: "<<cls<<endl;

cout<<"Date of birth: "<<dob<<endl;

cout<<"Division: "<<div<<endl;

}

// Inline function to calculate percentage of student

inline float getmarks()

{

cout<<"Enter marks out of 500: ";

cin>>marks;

per=((marks\*100)/500);

}

inline void displaymarks()

{

cout<<"Marks out of 500: "<<marks<<endl;

cout<<"Percentage: "<<per<<endl;

}

// Static function to count number of students in database

static void count()

{

c++;

}

// Static function to display number of students in database

static void showcount()

{

cout<<endl<<"Number of students are: "<<c;

}

}; // Class ends

int students::c; // Definition of static member

class personal\_info // Friend Class

{

public:

personal\_info()

{}

public:

personal\_info(personal\_info &obj)

{}

// Get personal details of students

public:

void getperdetails(students& obj)

{

cout<<"Enter Telephone number: ";

cin>>obj.telno;

cout<<"Enter address: ";

cin.ignore();

getline(cin,obj.address);

cout<<"Enter Blood Group: ";

getline(cin,obj.bg);

cout<<"Enter driving Liscence number: ";

getline(cin,obj.divl);

}

// Display personal details of student

public:

void showperdetails(students& obj)

{

cout<<"Telephone number: "<<obj.telno<<endl;

cout<<"Address: "<<obj.address<<endl;

cout<<"Blood Group: "<<obj.bg<<endl;

cout<<"Driving Liscence: "<<obj.divl<<endl;

}

// Destructor

public:

~personal\_info()

{

}

}; // Friend class ends

// Main function

int main()

{

int ch,n;

char c;

cout<<"Enter the total number of students: ";

cin>>n;

// Array of pointers of student class

students \*std=new students[n];

// Array of pointers of friend class

personal\_info \*pinfo=new personal\_info[n];

do // Do-while loop

{

cout<<endl<<"\*\*\*\*\*\*\*\*MENU\*\*\*\*\*\*\*\*"<<endl;

cout<<"Enter 1 to add new entry to student database"<<endl;

cout<<"Enter 2 to display database"<<endl;

cout<<"Enter 3 to call copy constructor"<<endl;

cout<<"Enter 4 to call default constructor"<<endl;

cout<<"Enter 5 to delete records"<<endl;

cout<<"Enter your choice: ";

cin>>ch;

switch(ch) // Switch Case

{

case 1:

{

for(int i=0;i<n;i++)

{

// Enter details

cout<<endl<<"Enter details of student "<<i+1<<endl;

std[i].getdetails();

pinfo[i].getperdetails(std[i]);

std[i].count();

std[i].getmarks();

}

}

break;

case 2:

{

// Display database

int i;

personal\_info obj1;

std[i].showcount();

for(int i=0;i<n;i++)

{

cout<<endl<<endl<<"STUDENT DETAILS-";

std[i].printdetails();

obj1.showperdetails(std[i]);

std[i].displaymarks();

}

}

break;

case 3:

{

// Copy constructor

students s1,s3;

personal\_info obj1,obj3;

cout<<endl<<"DEFAULT VALUES-";

s3.printdetails();

obj3.showperdetails(s3);

cout<<endl<<"Enter Details-"<<endl;

s1.getdetails();

obj1.getperdetails(s1);

s1.getmarks();

cout<<endl<<"COPY CONSTRUCTOR CALLED."<<endl;

students s2(s1);

personal\_info obj2(obj1);

cout<<endl<<"\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*"<<endl;

cout<<"COPIED DATA IS-"<<endl;

s2.printdetails();

obj2.showperdetails(s2);

s2.displaymarks();

}

break;

case 4:

{

// Default constructor

cout<<endl<<"DEFAULT VALUES-"<<endl;

students s1;

personal\_info obj1;

s1.printdetails();

obj1.showperdetails(s1);

s1.displaymarks();

}

break;

case 5:

{

// Destructor

cout<<endl<<"!!!!!!!!!!!!!!!!!!!!"<<endl;

cout<<"DATA DESTROYED"<<endl<<"THANK YOU"<<endl;

delete [] std;

delete [] pinfo;

}

break;

default:

{

cout<<"WRONG INPUT";

}

}

cout<<endl<<"Want to continue(y/n)"<<endl;

cin>>c;

}while(c=='y' || c=='Y');

return 0;

getch();

}

**Output:-**

Enter the total number of students: 2

\*\*\*\*\*\*\*\*MENU\*\*\*\*\*\*\*\*

Enter 1 to add new entry to student database

Enter 2 to display database

Enter 3 to call copy constructor

Enter 4 to call default constructor

Enter 5 to delete records

Enter your choice: 1

Enter details of student 1

Enter name: Kaustubh S Kabra

Enter class: SE Comp-1

Enter date of birth: 29/05/2001

Enter Roll no.: 20

Enter division: A

Enter Telephone number: 9168100204

Enter address: 1234567890

Enter Blood Group: B+

Enter driving Liscence number: 0123456789

Enter marks out of 500: 437

Enter details of student 2

Enter name: KK

Enter class: SE

Enter date of birth: 29/05/2001

Enter Roll no.: 34

Enter division: A

Enter Telephone number: 7418529630

Enter address: 0147258369

Enter Blood Group: B-

Enter driving Liscence number: 014702580369

Enter marks out of 500: 500

Want to continue(y/n)

y

\*\*\*\*\*\*\*\*MENU\*\*\*\*\*\*\*\*

Enter 1 to add new entry to student database

Enter 2 to display database

Enter 3 to call copy constructor

Enter 4 to call default constructor

Enter 5 to delete records

Enter your choice: 2

Number of students are: 2

STUDENT DETAILS-

Name:Kaustubh S Kabra

Roll No.: 20

Class: SE Comp-1

Date of birth: 29/05/2001

Division: A

Telephone number: 9168100204

Address: 1234567890

Blood Group: B+

Driving Liscence: 0123456789

Marks out of 500: 437

Percentage: 87

STUDENT DETAILS-

Name:KK

Roll No.: 34

Class: SE

Date of birth: 29/05/2001

Division: A

Telephone number: 7418529630

Address: 0147258369

Blood Group: B-

Driving Liscence: 014702580369

Marks out of 500: 500

Percentage: 100

Want to continue(y/n)

y

\*\*\*\*\*\*\*\*MENU\*\*\*\*\*\*\*\*

Enter 1 to add new entry to student database

Enter 2 to display database

Enter 3 to call copy constructor

Enter 4 to call default constructor

Enter 5 to delete records

Enter your choice: 3

DEFAULT VALUES-

Name:

Roll No.: 0

Class:

Date of birth: DD/MM/YYYY

Division:

Telephone number: 0

Address:

Blood Group:

Driving Liscence:

Enter Details-

Enter name: KSK

Enter class: SE

Enter date of birth: 29/05/2001

Enter Roll no.: 23

Enter division: A

Enter Telephone number: 75395184620

Enter address: 9516238470

Enter Blood Group: O+

Enter driving Liscence number: 9518476230

Enter marks out of 500: 497

COPY CONSTRUCTOR CALLED.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

COPIED DATA IS-

Name:KSK

Roll No.: 23

Class: SE

Date of birth: 29/05/2001

Division: A

Telephone number: 75395184620

Address: 9516238470

Blood Group: O+

Driving Liscence: 9518476230

Marks out of 500: 497

Percentage: 99

Want to continue(y/n)

y

\*\*\*\*\*\*\*\*MENU\*\*\*\*\*\*\*\*

Enter 1 to add new entry to student database

Enter 2 to display database

Enter 3 to call copy constructor

Enter 4 to call default constructor

Enter 5 to delete records

Enter your choice: 4

DEFAULT VALUES-

Name:

Roll No.: 0

Class:

Date of birth: DD/MM/YYYY

Division:

Telephone number: 0

Address:

Blood Group:

Driving Liscence:

Marks out of 500: 0

Percentage: 99

Want to continue(y/n)

y

\*\*\*\*\*\*\*\*MENU\*\*\*\*\*\*\*\*

Enter 1 to add new entry to student database

Enter 2 to display database

Enter 3 to call copy constructor

Enter 4 to call default constructor

Enter 5 to delete records

Enter your choice: 5

!!!!!!!!!!!!!!!!!!!!

DATA DESTROYED

THANK YOU

Want to continue(y/n)

y

\*\*\*\*\*\*\*\*MENU\*\*\*\*\*\*\*\*

Enter 1 to add new entry to student database

Enter 2 to display database

Enter 3 to call copy constructor

Enter 4 to call default constructor

Enter 5 to delete records

Enter your choice: 5

!!!!!!!!!!!!!!!!!!!!

DATA DESTROYED

THANK YOU