Assignment No: 1

Title: Student Database using constructor, destructor, static member functions, friend class, this pointer, inline code and dynamic memory allocation.

Problem Statement: Develop an object oriented program in C++ to create a database of student containing the following information: Roll No. Name, Date of Birth, Blood group, Class, Div, Contact address, telephone number, driving license no. etc Construct the database with suitable member functions for initializing and destroying the data viz constructor, default constructor, copy, destructor, static member functions.

Program:

#include <iostream>

#include <string.h>

#include <stdlib.h>

using namespace std;

class Student {

int roll;

char name[15];

char address[25];

char class\_name[12];

char dob[12];

char licno[15];

char blood\_gr[3];

char mobile\_no[12];

public:

// Constructor

Student() {

roll = 0;

strcpy(name, "");

strcpy(address, "");

strcpy(class\_name, "");

strcpy(dob, "");

strcpy(licno, "");

strcpy(blood\_gr, "");

strcpy(mobile\_no, "");

}

// Parameterized constructor

Student(int roll, const char\* name, const char\* address, const char\* class\_name, const char\* dob,

const char\* licno, const char\* blood\_gr, const char\* mobile\_no) {

this->roll = roll;

strcpy(this->name, name);

strcpy(this->address, address);

strcpy(this->class\_name, class\_name);

strcpy(this->dob, dob);

strcpy(this->licno, licno);

strcpy(this->blood\_gr, blood\_gr);

strcpy(this->mobile\_no, mobile\_no);

}

// Function to accept student details

void accept() {

cout << "\nEnter roll number: ";

cin >> roll;

cout << "Enter name: ";

cin.ignore(); // To clear the newline character from the input buffer

cin.getline(name, 15);

cout << "Enter address: ";

cin.getline(address, 25);

cout << "Enter class name: ";

cin.getline(class\_name, 12);

cout << "Enter DOB (dd/mm/yyyy): ";

cin.getline(dob, 12);

cout << "Enter license number: ";

cin.getline(licno, 15);

cout << "Enter blood group: ";

cin.getline(blood\_gr, 3);

cout << "Enter mobile number: ";

cin.getline(mobile\_no, 12);

}

// Function to display student details

void display() const {

cout << "\nRoll: " << roll;

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

cout << "\nAddress: " << address;

cout << "\nClass: " << class\_name;

cout << "\nDOB: " << dob;

cout << "\nLicense No: " << licno;

cout << "\nBlood Group: " << blood\_gr;

cout << "\nMobile No: " << mobile\_no << endl;

}

};

int main() {

int ch, n;

Student students[20]; // Array to store student records

while (true) {

cout << "\nMenu\n1. Accept Student Details\n2. Display All Students\n3. Exit\nEnter Choice: ";

cin >> ch;

switch (ch) {

case 1:

cout << "Enter number of students: ";

cin >> n;

if (n > 20) {

cout << "\nMaximum allowed students are 20. Please enter a smaller number.\n";

break;

}

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

cout << "\nEntering details for Student " << (i + 1) << ":\n";

students[i].accept();

}

break;

case 2:

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

cout << "\nDisplaying details of Student " << (i + 1) << ":\n";

students[i].display();

}

break;

case 3:

exit(0);

default:

cout << "\nInvalid choice. Please try again.";

}

}

return 0;

}