TSDL ASSIGNMENTS

Assignment No.2

WAP to add modify delete and view following information(also store data in file and fetch next
time) vehicle information ,name,type,company name,capacity in cc, milage (CPP + File Handling)

```
#include <iostream>
#include <conio.h>
#include <fstream>
using namespace std;
class Vehicle
{
 public:
 char name[10];
 unsigned int capacity, milage, type;
}S[4];
int main()
{
 int i;
 ofstream file;
 file.open ("sample.txt");
 for (i = 0; i < 1; i++)
 {
 cout << "\nEnter your Vehicle's name : ";
 cin >> S[i].name;
 cout << "Enter your Vehicle's type (2 , 4) : ";
 cin >> S[i].type;
 cout << "Enter your Vehicle's capacity in cc : ";
 cin >> S[i].capacity;
 cout << "Enter your Vehicle's milage : ";
 cin >> S[i].milage;
 }
 for (i = 0; i < 1; i++)
 {
 file << "\n\nYour Vehicle's name : " << S[i].name;
 file << "\nYour Vehicle's type : " << S[i].type;
 file << "\nYour Vehicle's capacity in cc : " << S[i].capacity;
 file << "\nYour Vehicle's milage : " << S[i].milage;
 }
 file.close();
```

```
return 0;
}
```

Assignment No.3 -

WAP to Display Shopping Information in the which the contents are
Person_Name,Cloth_Type,
Cloth_Size, Cloth _Color, using Class and Object Concept of C++ Programmin

```
#include <iostream>
#include <conio>
#include <string.h>
int c[5]={0,0,0,0,0};
int d[5]={0,0,0,0,0};
class Cloth
{
   private:
   char name[20];
   char size[5];
   char type[15];
   char color[10];
   int cost;

   public:
   void setdata(char *n,char *s,char *t,char *c,int co)
   {
      strcpy(name,n);
      strcpy(size,s);
      strcpy(type,t);
      strcpy(color,c);
      cost=co;
   }
   char *getName()
```

```
    {
        return name;
    }
    char *getSize()
    {
        return size;
    }
    char *getType()
    {
        return type;
    }
    char *getColor()
    {
        return color;
    }
    int getCost()
    {
        return cost;
    }
};

void sizef(char *si)
{
    if(strcmp(si,"S")==0)
    {
        c[0]++;
    }
    else if(strcmp(si,"M")==0)
    {
        c[1]++;
```

```
    }
    else if(strcmp(si,"L")==0)
    {
        c[2]++;
    }
    else if(strcmp(si,"XL")==0)
    {
        c[3]++;
    }
    else if(strcmp(si,"XXL")==0)
    {
        c[4]++;
    }
}

void colorf(char *ci)
{
    if(strcmp(ci,"Red")==0)
    {
        d[0]++;
    }
    else if(strcmp(ci,"Black")==0)
    {
        d[1]++;
    }
    else if(strcmp(ci,"Blue")==0)
    {
        d[2]++;
    }
    else if(strcmp(ci,"White")==0)
```

```
    {
        d[3]++;
    }
    else if(strcmp(ci,"Green")==0)
    {
        d[4]++;
    }
}

void main()
{
    clrscr();
    Cloth obj[5];
    char name[20],size[5],type[15],color[10];
    int cost,i;
    for(i=0;i<2;i++)
    {
        cout<<"\nEnter your name: ";
        cin>>name;
        cout<<"\nEnter size of cloth: ";
        cin>>size;
        sizef(size);
        cout<<"\nEnter type of cloth: ";
        cin>>type;
        cout<<"\nEnter color of cloth: ";
        cin>>color;
        colorf(color);
        cout<<"\nEnter cost of cloth: ";
        cin>>cost;
        obj[i].setdata(name,size,type,color,cost);
```

```
    }

    for(i=0;i<2;i++)
    {
       cout<<"\nName  : "<<obj[i].getName();
       cout<<"\nSize  : "<<obj[i].getSize();
       cout<<"\nType  : "<<obj[i].getType();
       cout<<"\nColor : "<<obj[i].getColor();
       cout<<"\nCost  : "<<obj[i].getCost();
    }
    cout<<"\nSale of size S: "<<(c[0]);
    cout<<"\nSale of size M: "<<(c[1]);
    cout<<"\nSale of size L: "<<(c[2]);
    cout<<"\nSale of size XL: "<<(c[3]);
    cout<<"\nSale of size XXL: "<<(c[4]);

    cout<<"\nSale of color Red: "<<(d[0]);
    cout<<"\nSale of color Black: "<<(d[1]);
    cout<<"\nSale of color Blue: "<<(d[2]);
    cout<<"\nSale of color White: "<<(d[3]);
    cout<<"\nSale of color Green: "<<(d[4]);
    getch();
}
```

Assignment No.4

WAP to add modify delete and view following information(also store data in file and fetch next
time)

Computer Details

Type:Desktop/Laptop,processor,RAM, harddisk ,usb port count,hdmi port count
battery backup time

```
#include <iostream>
```

```
#include <conio.h>
#include <fstream>
using namespace std;
class Info
{
 public:
 char comp_type[10], processor_type[10];
 unsigned int ram, hard_disk, USB_count, HDMI_count, Battery_time;
}S[4];
int main()
{
 int i;
 ofstream file;
 file.open ("codebind.txt");
 for (i = 0; i < 1; i++)
 {
 cout << "Enter your computer type : ";
 cin >> S[i].comp_type;
 cout << "Enter your processor type : ";
 cin >> S[i].processor_type;
 cout << "Enter your RAM : ";
 cin >> S[i].ram;
 cout << "Enter your Hard disk : ";
 cin >> S[i].hard_disk;
 cout << "Enter your USB port count : ";
 cin >> S[i].USB_count;
 cout << "Enter your HDMI port count : ";
 cin >> S[i].HDMI_count;
 cout << "Enter your Battery life time : ";
 cin >> S[i].Battery_time;
```

```
 }
 for (i = 0; i < 1; i++)
 {
 file << "\n\nEnter your computer type : " << S[i].comp_type;
 file << "\nEnter your processor type : " << S[i].processor_type;
 file << "\nEnter your RAM : " << S[i].ram;
 file << "\nEnter your Hard disk : " << S[i].hard_disk;
 file << "\nEnter your USB port count : " << S[i].USB_count;
file << "\nEnter your HDMI port count : " << S[i].HDMI_count;
 file << "\nEnter your Battery life time : " << S[i].Battery_time;
 }
 file.close();
 return 0;
}
```

Assignment No. 5

WAP to Insert the Information from the User and Display the Student Information in the Library
using Multiple/ Multi-Level Inheritance Concept of C++ Programming. Book Information: Book_Name Author_Name Publication Number of Copies Library Information: Name Qualification Experience Students Information: Student_Name Department Class Division Book
Issue Information: Book_issue Book_details Student Information

```
#include<iostream>
#include<conio.h>
#include<fstream>
using namespace std;
class librarian_info
{
```

```
 public:
 char name[20];
 char qualification[10];
 unsigned int experience;
};
class student_info
{
 public:
 char student_name[20];
 char department[30];
 char std[10];
 char division;
};
class book_info
{
 public:
 char book_name[20];
 char author[20];
 char publication[20];
 unsigned int copies;
}B[10];
class student_book_info : public student_info, public book_info
{
 public:
 char date_taken[15], date_givenBack[15];
 char damage[30];
 student_book_info()
 {
 char damage[30] = {"N0"};
 }
};class library_info : public student_book_info, public librarian_info
```

```
{ }AL[4];
int main()
{
 int i,j;
 ofstream file;
 file.open ("ALL_INFO.txt");
 for (i = 0; i < 1; i++)
 {
 cout << "\n----------Librarian Info----------" << endl;
 cout << "Enter name of librarian : ";
 cin >> AL[i].name;
 cout << "Enter qualification of librarian : ";
 cin >> AL[i].qualification;
 cout << "Enter experience of librarian : ";
 cin >> AL[i].experience;
 cout << "\n----------Student Info----------" << endl;
 cout << "Enter name of student : ";
 cin >> AL[i].student_name;
 cout << "Enter department of student : ";
 cin >> AL[i].department;
 cout << "Enter class of student : ";
 cin >> AL[i].std;
 cout << "Enter division of student : ";
 cin >> AL[i].division;
 for (j = 0; j < 2; j++)
 {
 cout << "\n----------Book Info " << j + 1 <<"----------" << endl;
 cout << "Enter name of book : ";
 cin >> B[j].book_name;
 cout << "Enter author of book : ";
 cin >> B[j].author;
```

```
cout << "Enter publication of book : ";
cin >> B[j].publication;
cout << "Enter numner of copies : ";
cin >> B[j].copies;
}
cout << "\n----------------Student Book Info----------------" << endl;
cout << "Enter date of book take : ";
cin >> AL[i].date_taken;
cout << "Enter date of book given back : ";
cin >> AL[i].date_givenBack;
cout << "Enter YES for damage book or NO : ";
cin >> AL[i].damage;
}
for (i = 0; i < 1; i++){
file << "\n\n----------------Librarian Info----------------" << endl;
file << "\nName of librarian : " << AL[i].name;
file << "\nQualification of librarian : " << AL[i].qualification;
file << "\nExperience of librarian : " << AL[i].experience;
file << "\n----------------Student Info----------------" << endl;
file << "\nName of student : " << AL[i].student_name;
file << "\nDepartment of student : " << AL[i].department;
file << "\nClass of student : " << AL[i].std;
file << "\nDivision of student : " << AL[i].division;
for (j = 0; j < 2; j++)
{
file << "\n----------------Book Info----------------" << endl;
file << "\nName of book : " << B[j].book_name;
file << "\nAuthor of book : " << B[j].author;
file << "\nPublication of book : " << B[j].publication;
file << "\nNumner of copies : " << B[j].copies;
}
```

```
file << "\n\n----------------Student Book Info----------------" << endl;
file << "\nDate of book take : " << AL[i].date_taken;
file << "\nDate of book given back : " << AL[i].date_givenBack;;
file << "\nDamaged book : " << AL[i].damage;
}
file.close();
}
```

Assignment No. 6

List of 10 Programs for Practice.

1. **C++ Program To Find Area And Circumference Of Circle**

```
#include <iostream>
#define PI 3.14159
using namespace std;

  void main()
  {
        float radius, area, circum;
              cout << "\n\n Find the area and circumference of any circle :\n";
              cout << "--------------------------------------------------\n";
    cout<<" Input the radius(1/2 of diameter) of a circle : ";
        cin>>radius;

              circum = 2*PI*radius;
              area = PI*(radius*radius);
    cout<<" The area of the circle is : "<< area << endl;
    cout<<" The circumference of the circle is : "<< circum << endl;

    cout << endl;
    getch();
  }
```

2. C++ Program To Print Ascii Value Of Character

```
// CPP program to print
// ASCII Value of Character
#include <iostream>
using namespace std;
int main()
{
   char c;
   cout<<"Enter the character whose ASCII value want to know"<<endl;
   cin>>c;
   cout << "The ASCII value of " << c << " is " << int(c);
   return 0;
}
```

3. C++ Program To Find Area Of Triangle

```
#include<iostream>
#include<conio.h>
#include<math.h>
 using namespace std;
 class Triangle
 {
  private:
     float a,b,c;
    public:
   void input()//HERONS FORMULA
    {
       cout<<"Enter three sides of a triangle:-";
       cin>>a>>b>>c;
    }
      void Area()
       {
         float s=(a+b+c)/2;
         float area=sqrt(s*(s-a)*(s-b)*(s-c));
         cout<<"\nArea of Triangle ="<<area;
       }
 };
   void main()
    {
       Triangle t1;
       t1.input();
       t1.Area();
       getch();
    }
```

4. C++ Program to Convert a person's name in Abbreviated

```
#include<iostream.h>
using namespace std;
void main()
{
  char fname[20], mname[20], lname[20];
  cout<<"Enter The First Name Middle Name & Last Name \n";
  cin>>fname >>mname >>lname;
  if(fname[0]!=" "&& mname[0]!=" ")
{
 cout<<"Abbreviated Name: ";
 cout<<fname[0]<<"."<<" "<<mname[0]<<"."<<" "; cout<<lname<<endl;
 }
getch();
}
```

5. C++ Program For Calculate A Simple Interest

```
/*#include <iostream>
using namespace std;
float si(int p, int n, int r=5)
{
        return (p*n*r)/100;
}
int main()
{
        int p, n, r;
        cout<<"Enter principal amount: ";
        cin>>p;
        cout<<"Enter duration (in years): ";
        cin>>n;
```

```
        cout<<"Enter rate of interest: ";
        cin>>r;
        cout<<"Simple interest = "<<si(p, n, r);
        cout<<"Simple interest = "<<si(p, n);
        return 0;
}*/

#include<iostream>

using namespace std;
int main()
{
  float p, r, t, si;
  char ch;
  cout<<"Enter Principle Amount: ";
  cin>>p;
  cout<<"Enter Rate of Interest: ";
  cin>>r;
  cout<<"Time Period in Year or Month ? (y for year, m for month): ";
  cin>>ch;
  if(ch=='y')
  {
    cout<<"Enter Time Period (in Years): ";
    cin>>t;
    si = (p*r*t)/100;
  }
  else
  {
    cout<<"Enter Time Period (in Months): ";
    cin>>t;
    t = t/12;
```

```
    si = (p*r*t)/100;
  }
  cout<<"\nSimple Interest Amount: "<<si;
  cout<<endl;
  return 0;
}
```

6. C++ Program To Find Greater No. Among given Three Number

```
#include <iostream>
using namespace std;
int main()
{
float n1, n2, n3;
cout << "Enter three numbers: ";
cin >> n1 >> n2 >> n3;
if(n1 >= n2 && n1 >= n3)
{
cout << "Largest number: " << n1;
}
if(n2 >= n1 && n2 >= n3)
{
cout << "Largest number: " << n2;
}
if(n3 >= n1 && n3 >= n2) {
cout << "Largest number: " << n3;
}
return 0;
}
```

7. C++ Program To Find The Gross Salary Of An Employee

```
#include <iostream>
using namespace std;
int main()
{
double Basic_Salary, DA, HRA, Gross_Salary;
cout << "Enter Basic Salary : ";
cin >> Basic_Salary;
DA = (Basic_Salary * 40) / 100;
HRA = (Basic_Salary * 20) / 100;
Gross_Salary = Basic_Salary + DA + HRA;
cout << "\n\nDearness Allowance 40 % of Basic Salary : " << DA;
cout << "\nHouse Rent 20 % of Basic Salary : " << HRA;
cout << "\nGross Salary : " << Gross_Salary;
```

```
return 0;
}
```

8. C++ Program For Calculate Percentage Of 5 Subjects

```
#include<iostream>
using namespace std;
int main()
{
int sub,marks,n,i,sum=0,tmp=0,arr[10],Percentage;
cout<<"\nEnter number of subject : \n";
cin>>n;
tmp=n*100;
cout<<"\nEnter The Marks: \n";
for(i=0;i<n;i++)
{
cin>>arr[i];
}
for(i=0;i<n;i++)
{
sum=sum+arr[i];
}
Percentage = ( sum * 100 ) / tmp;
cout<<"\nPercentage Of Student : \n"<< Percentage<<endl;
return (0);
}
```

9. C++ Program For Converting Temperature Celsius Into Fahrenheit

```
#include<iostream>
using namespace std;
int main()
{
float celsius, fahrenheit;
cout<<"Enter the Temperature in Celsius: ";
cin>>celsius;
fahrenheit = (celsius*1.8)+32;
cout<<"\nEquivalent Temperature in Fahrenheit: "<<fahrenheit;
cout<<endl;
return 0;
}
```

10. C++ Program To Display Size Of Different Data Type

```
#include <iostream>
```

```
using namespace std;
int main()
{
cout << "Size of char: " << sizeof(char) << " byte" << endl;
cout << "Size of int: " << sizeof(int) << " bytes" << endl;
cout << "Size of float: " << sizeof(float) << " bytes" << endl;
cout << "Size of double: " << sizeof(double) << " bytes" << endl;
return 0;
}
```

11. C++ Program To Check Number Is Positive Or Negative

```
#include <iostream>
using namespace std;
int main()
{
signed long num1 = 0;
cout << "\n\n Check whether a number is positive, negative or zero :\n";
cout << "-------------------------------------------------------\n";
cout << " Input a number : ";
cin >> num1;
if(num1 > 0)
{
cout << " The entered number is positive.\n\n";
}
else if(num1 < 0)
{
cout << " The entered number is negative.\n\n";
}
else
{
std::cout << " The number is zero.\n\n";
}
return 0;
}
```

12. C++ Program To Find Character Is Vowel Or Not

```
#include<iostream>
using namespace std;
int main()
{
char ch;
```

```
cout<<"Enter an Alphabet: ";
cin>>ch;
if(ch=='a' || ch=='e' || ch=='i' || ch=='o' || ch=='u')
cout<<"\nIt is a Vowel";
else if(ch=='A' || ch=='E' || ch=='I' || ch=='O' || ch=='U')
cout<<"\nIt is a Vowel";
else
cout<<"\nIt is a Consonant";
cout<<endl;
return 0;
}
```

13. C++ Program To Calculate Factorial Of A Given Number

```
#include <iostream>
using namespace std;
int main() {
int n;
long double factorial = 1.0;
cout << "Enter a positive integer: ";

if (n < 0)
cout << "Error! Factorial of a negative number doesn't exist.";
else {
for(int i = 1; i <= n; ++i) {
factorial *= i;
}
cout << "Factorial of " << n << " = " << factorial;
}
return 0;
}
```

14. C++ Program To Read Integer (N) And Print First Three Powers (N^1, N^2, N^3)

```
#include<bits/stdc++.h>
using namespace std;
int main()
{
int num;
cout<<"\nEnter The Number .\n";
cin>>num;
cout<<"\nOutput is \n";
cout<<num<<" ,"<<num*num<<" ,"<<num*num*num<<endl;
return 0;
```

```
}
/*#include<bits/stdc++.h>
using namespace std;
int main()
{
 int num,a,b,c;
 cout<<"\nEnter The Number .\n";
 cin>>num;
 a=pow(num,1);
 b=pow(num,2);
 c=pow(num,3);
 cout<<"\nOutpout is \n";
 cout<<a<<"  ,"<<b<<"  ,"<<c<<endl;
 return 0;
}*/
```

15. C++ Program To Swap Two Number Without Using Third Variable

```
#include <iostream>
using namespace std;
int main()
{
int a = 5, b = 10, temp;
cout << "Before swapping." << endl;
cout << "a = " << a << ", b = " << b << endl;
temp = a;
a = b;
b = temp;
cout << "\nAfter swapping." << endl;
cout << "a = " << a << ", b = " << b << endl;
return 0;
}
```

16. C++ Program To Find The Address Of Variable

```
#include <iostream>
using namespace std;
int main ()
{
int first,sec;
cout<<"Enter The Value Of First and Second Variable \n\n";
cin>>first>>sec;
cout << "Address Of First Variable :\n\n";
```

```
cout << &first <<"\n";

cout << "\nAddress Of Second Variable :\n\n";
cout << &sec << endl;
return 0;
}
```

Assignment No. 7 Write a C++ program to calculate the area of triangle, rectangle and circle using function overloading. The program should be menu driven.

```
#include <iostream>

using namespace std;


int area (int a, int b)

{

   int area = a*b;

   return area;

}

float area (float a, float b)

{

   float area = 0.5*a*b;

   return area;

}

float area (int r)

{

   float area = 3.14*r*r;

   return area;

}

int main()

{

   int ch;

   cout << "Enter : \n1. Rectangle \n2.Triangle \n3. Circle \n : ";

   cin >> ch;

   switch(ch)

   {
```

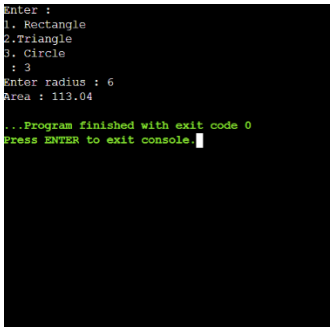
```
        case 1:
            int lenght, breath, a;
            cout << "Enter lenght and breath : ";
            cin >> lenght >> breath;
            a = area(lenght,breath);
            cout << "Area : " << a;
        break;

        case 2:
            float base, height, b;
            cout << "Enter base and height : ";
            cin >> base, height;
            b = area(base, height);
            cout << "Area : " << b;
        break;

        case 3:
            int radius;
            float c;
            cout << "Enter radius : ";
            cin >> radius;
            c = area(radius);
            cout << "Area : " << c;
        break;

        default :
            cout << "Wrong intput : ";
        break;
    }
}
```

OUTPUT –



Assignment No. 8 Write a C++ program to calculate the area of triangle, rectangle and circle using Constructor overloading. The program should be menu driven.

```
#include <iostream>

#include <math.h>


using namespace std;


class AreaShape

{

   float area;


  public:

   AreaShape(float radius)

   {

      area = 3.14 * radius * radius;

   }

   AreaShape(int length, int breadth)

   {

      area = length * breadth;

   }

   AreaShape(float base, float height)

   {

      area = 0.5 * (base * height);
```

```
    }
    void display()
    {
        cout << "Area:\t" << area << endl;
    }
};
int main()
{
    int ch;
    float radius, height, base;
    int length, breadth;
    do
    {
        cout << "1. Area of Circle" << endl;
        cout << "2. Area of Rectangle" << endl;
        cout << "3. Area of Triangle" << endl;
        cout << "4. Exit" << endl;
        cout << "Enter Your Choice:\t";
        cin >> ch;

        switch (ch)
        {
        case 1:
        {
            cout << "Enter Radius of the Circle:\t";
            cin >> radius;
            AreaShape area(radius);
            area.display();
        }
        break;
```

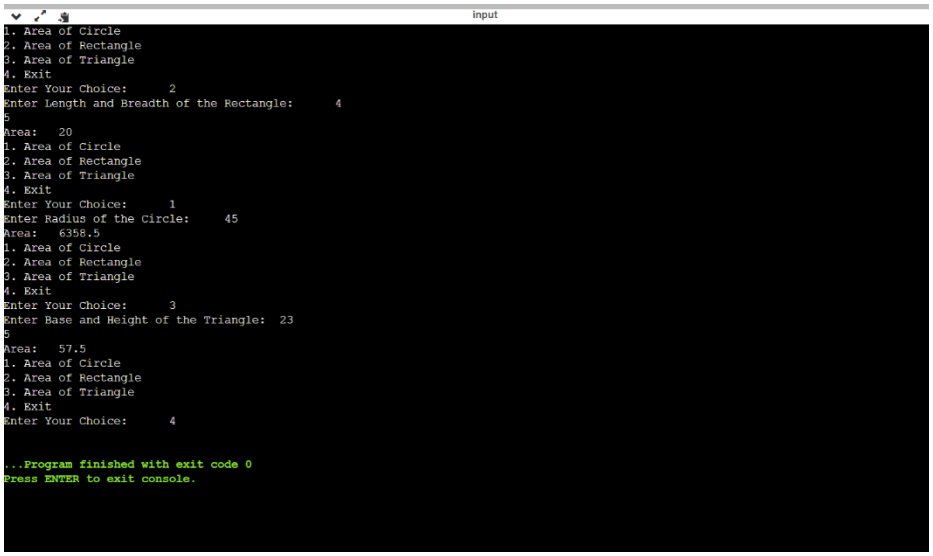
```
        case 2:
        {
           cout << "Enter Length and Breadth of the Rectangle:\t";
           cin >> length >> breadth;
           AreaShape area(length, breadth);
           area.display();
        }
        break;

        case 3:
        {
           cout << "Enter Base and Height of the Triangle:\t";
           cin >> base >> height;
           AreaShape area(base, height);
           area.display();
        }
        break;

        case 4:
           exit(0);

        default:
           cout << "Invalid Choice";
        }
    } while (ch != 4);
    return 0;
}
```

OUTPUT –



Assignment No. 9 WAP to Implement the Operator Overloading Concept of C++ Programming to take the Information from the User and Display Er. First_Name and Last_Name

```
#include <iostream>
#include <string.h>
using namespace std;

class AddString
{
   public:
      char s1[25], s2[25], s3[25];

   AddString(char str1[], char str2[], char str3[])
   {
      strcpy(this->s1, str1);
      strcpy(this->s2, str2);
      strcpy(this->s3, str3);
   }

   void operator+()
   {
```

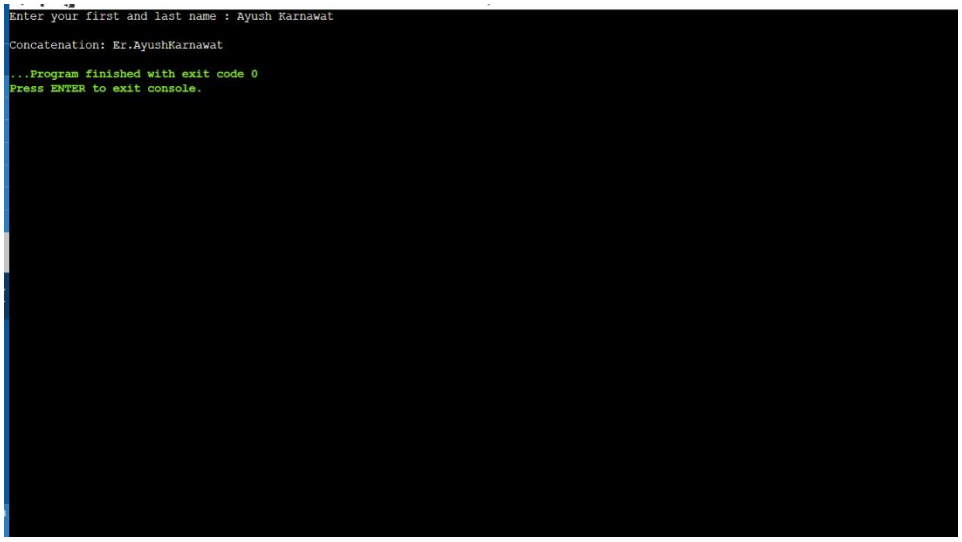
```
        strcat(s3, s1);
        cout << "\nConcatenation: " << strcat(s3, s2);
    }
};

int main()
{
            char str1[20], str2[20], str3[] = "Er.";

    cout << "Enter your first and last name : ";
    cin >> str1 >> str2;

            AddString a1(str1, str2, str3);
            +a1;
          return 0;
}
```

OUTPUT –



Assignment No. 10

Write a Program to Demonstrate Friend Function and Friend Class.

A] Working of friend Function

```
#include <iostream>
using namespace std;

class Distance {
   private:
      int meter;

      // friend function
      friend int addFive(Distance);

   public:
      Distance() : meter(0) {}

};

// friend function definition
int addFive(Distance d) {

   //accessing private members from the friend function
   d.meter += 5;
   return d.meter;
}

int main() {
   Distance D;
   cout << "Distance: " << addFive(D);
   return 0;
}
```

B] Examples of Friend Class in C++

```
#include <iostream>
using namespace std;
class Exmp_A{
   private:
   int A_value;
   public:
   // Default Constructor
   Exmp_A(){
      A_value = 20;
   }
   friend class Exmp_B; // Friend Class
};
class Exmp_B{
   private:
   int B_value;
   public:
   // Accessing private members
   void display(Exmp_A& i) {
      cout<<"The private member's value accessed using friend class is: " << i.A_value<<endl;
   }
};
int main(){
cout<<"Welcome to Simplilearn!"<<endl<<endl;
Exmp_A A_value;
Exmp_B B_value;
B_value.display(A_value);
return 0;
}
```

(OR USING GLOBAL FUNCTION THIS CAN BE DONE TOO)