INMANTEC
INSTITUTIONS
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C++ PROGRAMMING

LAB FILE

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Year	2nd
Semester	3rd
Section	A

Submitted By:

Submitted To:

Date of submission:

INDEX

NOTE:All the codes inside this file is written in Visual Studio Code v1.62.0 with MinGW GCC-6.3.0-1 on Windows 11 OS

// 1. WAP to find factorial of a given number using recursion.

```cpp
                        //Factorial of a Number Using Recursion
#include<iostream>

using namespace std;

int find_factorial(int n)
{
  if (n>=1)
        return n*find_factorial(n-1);
    else
        return 1;
}

int main()
{
  int input_no;// factorial=0;

  cout <<"Enter the no. you want to find factorial of: ";
  cin >>input_no;
  find_factorial(input_no);

  cout <<"Factorial of no. "<< input_no <<" is: "<<find_factorial(input_no);
}
```
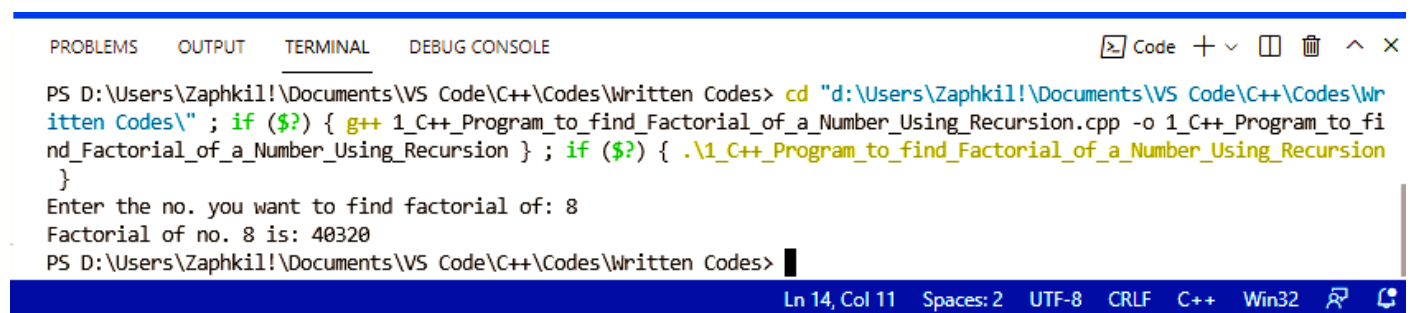
OUTPUT

```
PROBLEMS    OUTPUT    TERMINAL    DEBUG CONSOLE                                    Code  + ∨  ☐  🗑  ∧  ✕

PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> cd "d:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Wr
itten Codes\" ; if ($?) { g++ 1_C++_Program_to_find_Factorial_of_a_Number_Using_Recursion.cpp -o 1_C++_Program_to_fi
nd_Factorial_of_a_Number_Using_Recursion } ; if ($?) { .\1_C++_Program_to_find_Factorial_of_a_Number_Using_Recursion
 }
Enter the no. you want to find factorial of: 8
Factorial of no. 8 is: 40320
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> █
                                                 Ln 14, Col 11    Spaces: 2    UTF-8    CRLF    C++    Win32
```

// 2. WAP to find reverse of a given number.

```cpp
                    //WAP to find reverse of a given number
#include<iostream>

using namespace std;

int main()
{
  int input_no, rev=0, remainder,Original_no;

  cout <<"Enter the no. you want to reverse: ";
  cin >>input_no;
  Original_no = input_no;

  while(input_no != 0)
  {
    remainder = input_no % 10;
    rev= rev * 10 + remainder;
    input_no /= 10;
  }

  cout <<"Reverse of given no "<< Original_no <<" is: "<<rev;
  return 0;
}
```
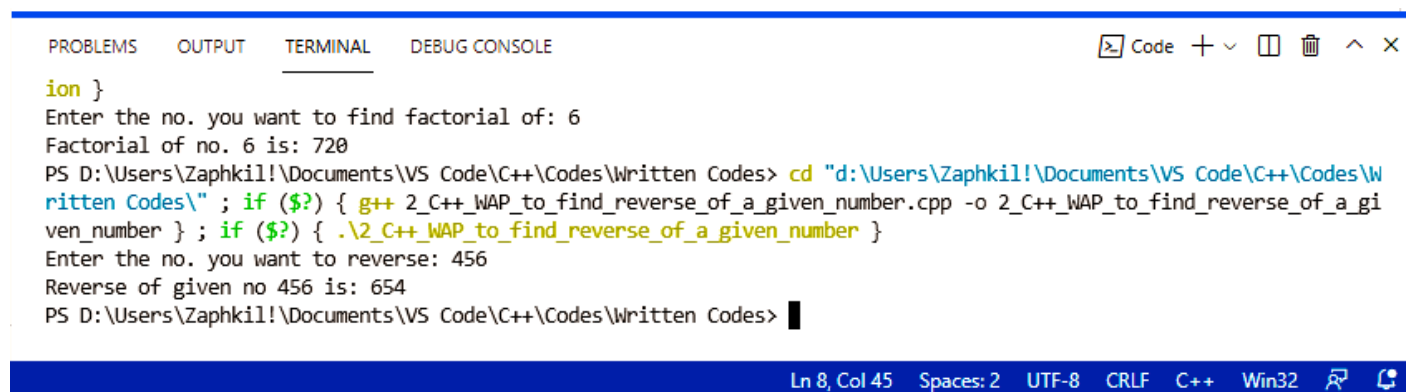
OUTPUT

```
PROBLEMS   OUTPUT   TERMINAL   DEBUG CONSOLE                                    Code + ∨  ⊓ 🗑  ^ ✕

ion }
Enter the no. you want to find factorial of: 6
Factorial of no. 6 is: 720
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> cd "d:\Users\Zaphkil!\Documents\VS Code\C++\Codes\W
ritten Codes\" ; if ($?) { g++ 2_C++_WAP_to_find_reverse_of_a_given_number.cpp -o 2_C++_WAP_to_find_reverse_of_a_gi
ven_number } ; if ($?) { .\2_C++_WAP_to_find_reverse_of_a_given_number }
Enter the no. you want to reverse: 456
Reverse of given no 456 is: 654
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> █

                                              Ln 8, Col 45   Spaces: 2   UTF-8   CRLF   C++   Win32  ⟲
```

//3. WAP to input name, rollno. & age of 3 students using a structure & displays them.

```cpp
//WAP_to_input_name_rollno._&_age_of_3_students_using_a_structure_&_displays_th
em
#include<iostream>
using namespace std;

struct bache
  {
    char name[20];
    int roll, age;
  };

int main()
{
  struct bache s[2];
  int i, n;

  cout <<"Enter the no. of students whose details you want to store: ";
  cin >>n;

  for(i=0;i<n;i++)
  {
    cout<<"\nEnter information of student "<<i+1;
    cout<<"\n Enter name: ";
    cin >> s[i].name;

    cout<<"\n Enter roll number: ";
    cin >>s[i].roll;

    cout<<"\n Enter ages: ";
    cin >>s[i].age;
  }

  cout <<"Displaying infomation of "<<n<<" Baches";

  for(i=0;i<n;i++)
  {
    cout<<"\n\nno. student info"<< i+1;
    cout<<"\nName: "<<s[i].name;
    cout<<"\nRoll number: "<<s[i].roll;
    cout<<"\nAge:"<< s[i].age;
  }
return 0;
}
```

OUTPUT

```
PROBLEMS   OUTPUT   TERMINAL   DEBUG CONSOLE                                    Code  + ∨  ⊞  🗑  ∧  ✕

PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> cd "d:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Wr
itten Codes\" ; if ($?) { g++ 3_WAP_to_input_name_rollno_And_age_of_3_students_using_a_structure_and_displays_them_M
ethod_2.cpp -o 3_WAP_to_input_name_rollno_And_age_of_3_students_using_a_structure_and_displays_them_Method_2 } ; if
($?) { .\3_WAP_to_input_name_rollno_And_age_of_3_students_using_a_structure_and_displays_them_Method_2 }
Enter the no. of students whose details you want to store: 2

 Enter ages: 19

Enter information of student 2
 Enter name: Sagar

 Enter roll number: 48

 Enter ages: 19
Displaying infomation of 2 Baches

no. student info1
Name: Prakash
Roll number: 28
Age:19

no. student info2
Name: Sagar
Roll number: 48
Age:19
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> █
```

Ln 37, Col 4   Spaces: 2   UTF-8   CRLF   C++   Win32

//4. WAP to show swapping of 2 no. using call by value method.

```cpp
                //WAP_to_Swapping_2_numbers_using_Call_by_Value_in_C++.cpp
#include<iostream>

using namespace std;

int swap_by_value(int x,int y)
{
  int temp;
  temp=x;
  x=y;
  y=temp;
  cout <<"\nvalues after swapping Call by value:\n x = "<< x <<" and y = "<<y;
};

int main()
{
  int x, y, temp;

  cout <<"Enter the value of x and y: ";
  cin >>x>>y;

  cout <<"\nvalues before swapping:\n x = "<< x <<" and y = "<< y;

  swap_by_value(x, y);


  return 0;
```
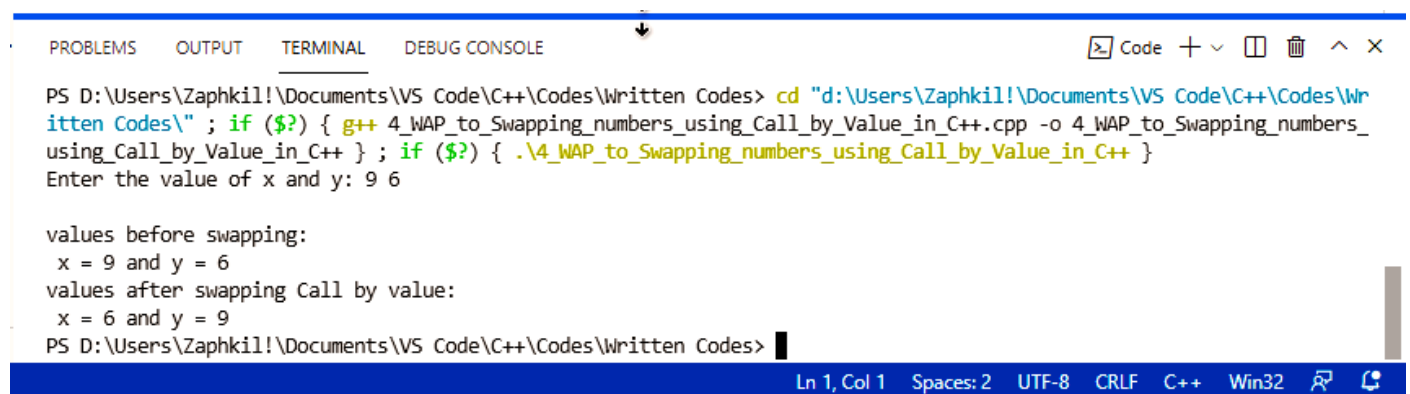
OUTPUT

//5. WAP to show swapping of 2 nos. using reference method.

```cpp
            //WAP_to_Swapping_2_numbers_using_Call_by_Reference_in_C++
#include<iostream>

using namespace std;

int swap_by_value(int *x,int *y)
{
   int temp;
   temp=*x;
   *x=*y;
   *y=temp;
};

int main()
{
   int x, y;

   cout <<"Enter the value of x and y: ";
   cin >>x>>y;

   cout <<"\nvalues before swapping:\n x = "<< x <<" and y = "<< y;

   swap_by_value(&x, &y);

   cout <<"\nvalues after swapping by Call by reference:\n x = "<< x <<" and y =
                                                              "<<y;


   return 0;
}
```
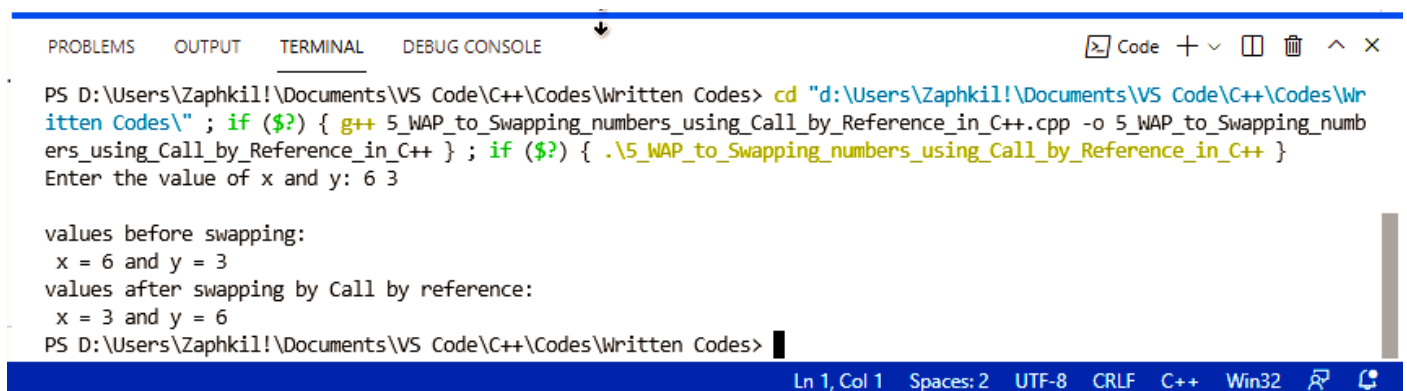
OUTPUT

PROBLEMS   OUTPUT   TERMINAL   DEBUG CONSOLE   Code + ∨ ⬚ 🗑 ∧ ✕

```
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> cd "d:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Wr
itten Codes\" ; if ($?) { g++ 5_WAP_to_Swapping_numbers_using_Call_by_Reference_in_C++.cpp -o 5_WAP_to_Swapping_numb
ers_using_Call_by_Reference_in_C++ } ; if ($?) { .\5_WAP_to_Swapping_numbers_using_Call_by_Reference_in_C++ }
Enter the value of x and y: 6 3

values before swapping:
 x = 6 and y = 3
values after swapping by Call by reference:
 x = 3 and y = 6
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> |
```

Ln 1, Col 1   Spaces: 2   UTF-8   CRLF   C++   Win32

//6. WAP to show overloading of area function.

```cpp
#include<iostream>

using namespace std;

int area(int s)
{
  return(s*s);
};

int area(int l, int b)
{
  return(l*b);
}

int main()
{
  int l,s,b;

  cout <<"Enter the value of l,s and b: ";
  cin >>l>>s>>b;

  cout<<"Area of square is "<<area(s);
  cout<<"\nArea of rectangle is "<<area(l,b);

return 0;
```
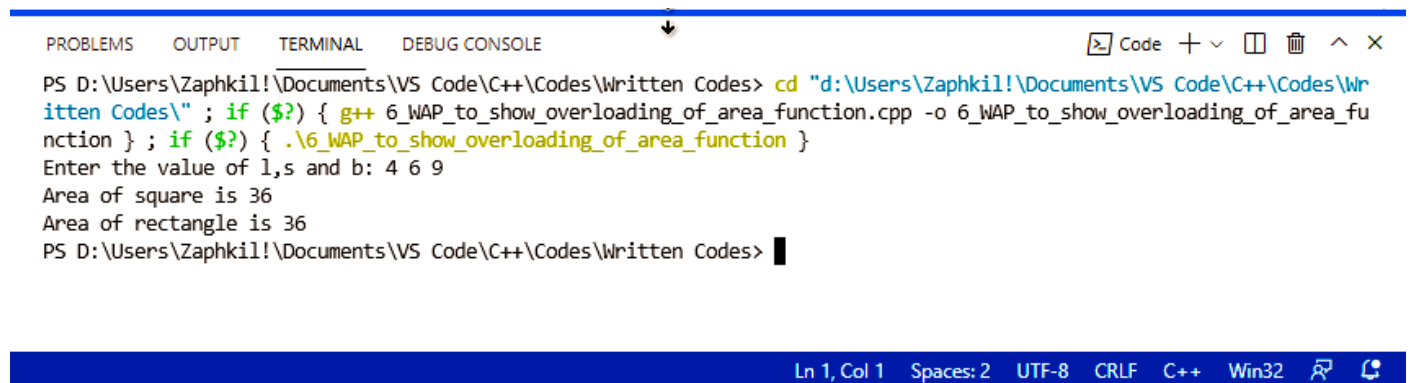
OUTPUT

```
PROBLEMS    OUTPUT    TERMINAL    DEBUG CONSOLE                                        Code + ∨  ☐  🗑  ∧ ✕

PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> cd "d:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Wr
itten Codes\" ; if ($?) { g++ 6_WAP_to_show_overloading_of_area_function.cpp -o 6_WAP_to_show_overloading_of_area_fu
nction } ; if ($?) { .\6_WAP_to_show_overloading_of_area_function }
Enter the value of l,s and b: 4 6 9
Area of square is 36
Area of rectangle is 36
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> █

                                                       Ln 1, Col 1   Spaces: 2   UTF-8   CRLF   C++   Win32  ⟳  ↻
```

//7. WAP to find largest no. of 5 nos. from an array.

```cpp
                    //WAP_to_show_Largest_Element_in_an_array_of_5_no
#include<iostream>

using namespace std;

int main()
{
  int l, arr[50];

  cout <<"Enter the size of array: ";
  cin >>l;

  cout<<"Enter array values:";
  for(int i=0; i<l;i++)
  {
    cin>>arr[i];
  }
  for(int i=1; i<l;i++)
  if(arr[0]<arr[i])
  {
    arr[0]=arr[i];

  }

  cout<<"Largest element: "<<arr[0];

  return 0;
}
```
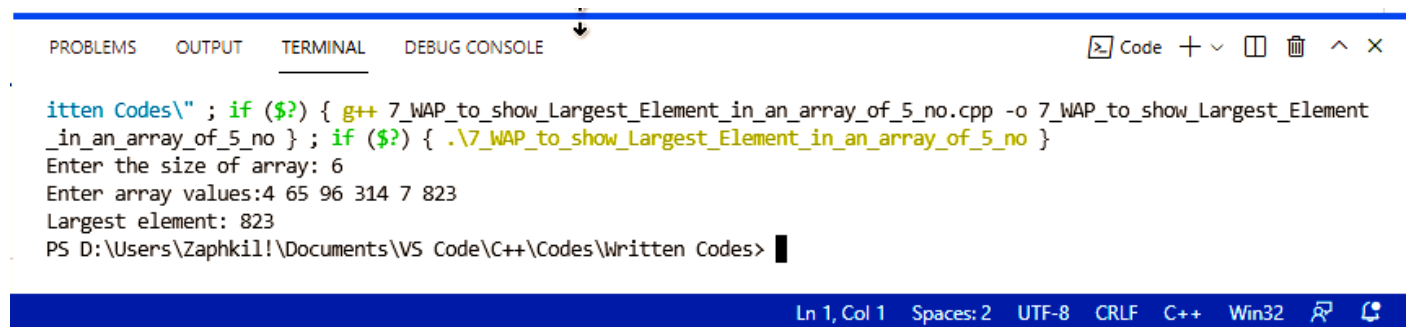
OUTPUT

PROBLEMS   OUTPUT   TERMINAL   DEBUG CONSOLE   Code + ∨ ⊟ 🗑   ∧ ✕

```
itten Codes\" ; if ($?) { g++ 7_WAP_to_show_Largest_Element_in_an_array_of_5_no.cpp -o 7_WAP_to_show_Largest_Element
_in_an_array_of_5_no } ; if ($?) { .\7_WAP_to_show_Largest_Element_in_an_array_of_5_no }
Enter the size of array: 6
Enter array values:4 65 96 314 7 823
Largest element: 823
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> █
```

Ln 1, Col 1   Spaces: 2   UTF-8   CRLF   C++   Win32

//8. WAP to show working of static variable using a function.
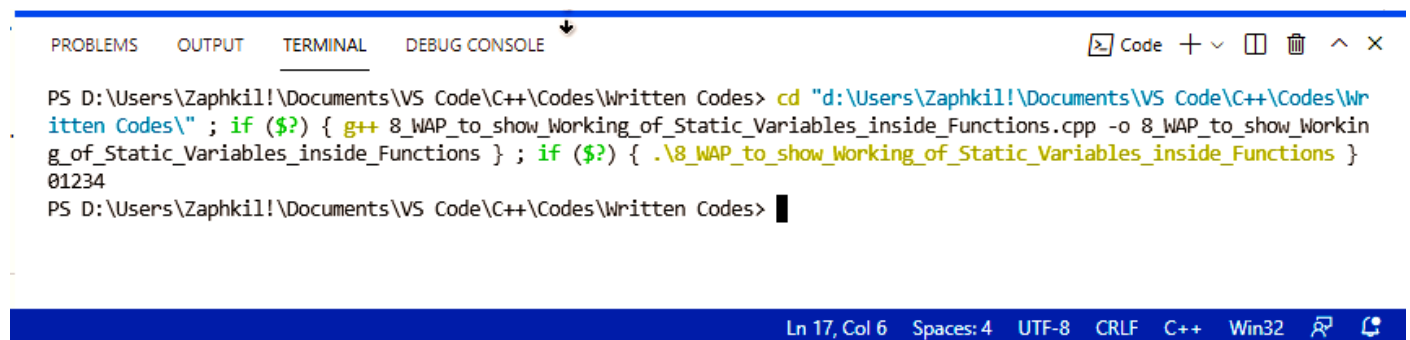
```cpp
                //WAP_to_show_Working_of_Static_Variables_inside_Functions
#include<iostream>

using namespace std;

void counter()
{
    static int count=0; //count is not getting intialized for each function
call due to it being static
    cout << count++;
}

int main()
{
    for(int i=0;i<5;i++)
    {
        counter();
    }
    return 0;
}
```

OUTPUT

```
PROBLEMS   OUTPUT   TERMINAL   DEBUG CONSOLE                                    >_ Code + v ⊞ 🗑 ^ X

PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> cd "d:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Wr
itten Codes\" ; if ($?) { g++ 8_WAP_to_show_Working_of_Static_Variables_inside_Functions.cpp -o 8_WAP_to_show_Workin
g_of_Static_Variables_inside_Functions } ; if ($?) { .\8_WAP_to_show_Working_of_Static_Variables_inside_Functions }
01234
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes>

                                          Ln 17, Col 6   Spaces: 4   UTF-8   CRLF   C++   Win32
```

//9. WAP to create a class employee having data members empid, empname, age; use member functions getdata() &displaydata() to read & display the data. Keep data members as private.

```cpp
/*
WAP to create a class employee having data members empid, empname, age; use
member functions getdata() &displaydata()
to read & display the data. Keep data members as private.
*/

#include<iostream>
#include<string>

using std::cout;
using std::cin;
using std::string;

class employee
{
    private:

        int empid;
        string empname;
        int age;

    public:

    void getdata()
    {
        cout << "Enter employee ID: ";
        cin >> empid;
        cout << "Enter employee Name: ";
        cin >> empname;
        cout << "Enter employee Age: ";
        cin >> age;
    }

    void displaydata()
    {
        cout <<"\n\n\t\tPrinting Data\nEmployee ID: "<< empid <<"\nEmployee
Name: "<<empname<<"\nEmployee Age: "<<age;
    }

};
int main()
{
    employee one;
    one.getdata();
    one.displaydata();

    return 0;
}
```

OUTPUT

PROBLEMS   OUTPUT   TERMINAL   DEBUG CONSOLE

PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> cd "d:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes\" ; if ($?) { g++ 9_WAP_to_get_data_to_private_class_members_and_display_them.cpp -o 9_WAP_to_get_data_to_private_class_members_and_display_them } ; if ($?) { .\9_WAP_to_get_data_to_private_class_members_and_display_them }
Enter employee ID: 48
Enter employee Name: Prakash
Enter employee Age: 19

                Printing Data
Employee ID: 48
Employee Name: Prakash
Employee Age: 19
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes>

Ln 36, Col 40   Spaces: 4   UTF-8   CRLF   C++   Win32

//10. WAP create a class student take public data members rollno, name & age and enter these data from main function.

```cpp
/*
    WAP create a class student take public data members rollno, name and age
    and enter these data from main function.
*/
#include<iostream>
#include<string>
// using namespace std;

using std::cout;
using std::cin;
using std::string;

class students
{
    public:
    string Name;
    int rollno;
    int age;

    void displaydata()
    {
        cout <<"Student Rollno.: "<< rollno <<"\nStudent Name:
                                    "<<Name<<"\nStduent Age: "<<age;
    }
};
int main()
{
    students one;
    cout << "Enter stduent Roll no.: ";
    cin >> one.rollno;
    cout << "Enter Student Name: ";
    cin >> one.Name;
    cout << "Enter student Age: ";
    cin >> one.age;
    // one.getdata();
    one.displaydata();

    return 0;
}
```

OUTPUT

PROBLEMS   OUTPUT   TERMINAL   DEBUG CONSOLE

```
PS D:\Users\Zaphkil!\Documents\VS Code\C++> cd "d:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Writte
n Codes\" ; if ($?) { g++ 10_WAP_to_get_data_to_from_main_fun_into_class_and_display_them.cpp -o 10_
WAP_to_get_data_to_from_main_fun_into_class_and_display_them } ; if ($?) { .\10_WAP_to_get_data_to_f
rom_main_fun_into_class_and_display_them }
Enter stduent Roll no.: 48
Enter Student Name: Prakash
Enter student Age: 19
Student Rollno.: 48
Student Name: Prakash
Stduent Age: 19
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes>
```

powershell
Code

Ln 39, Col 5   Spaces: 4   UTF-8   CRLF   C++   Win32

//11. WAP to show working of parameterized constructor.
```cpp
/*
    WAP_to_show_working_of_parameterized_constructor.
*/
#include<iostream>
#include<string>
// using namespace std;

using std::cout;
using std::cin;
using std::string;

class students
{
    public:

    string Name;
    int rollno;
    int age;

    students(string x, int y, int z);


    void displaydata()
    {
        cout <<"\nStudent Rollno.: "<< rollno <<"\nStudent Name:
                                    "<<Name<<"\nStduent Age: "<<age;
    }
};

students::students(string x, int y, int z)
{
    Name= x;
    rollno= y;
    age = z;
}

int main()
{
    students one("Prakash", 28, 19 ),two("kavya", 47, 18 );
    // cout << "Enter stduent Roll no.: ";
    // cin >> one.rollno;
    // cout << "Enter Student Name: ";
    // cin >> one.Name;
    // cout << "Enter student Age: ";
    // cin >> one.age;

    one.displaydata();
    two.displaydata();

    return 0;
}
```
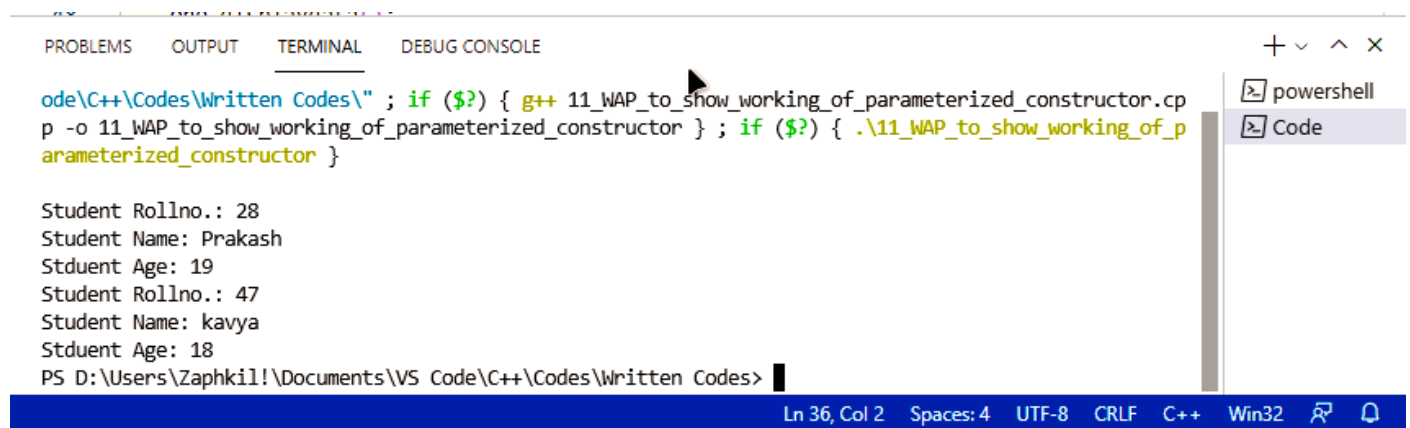
OUTPUT

```
ode\C++\Codes\Written Codes\" ; if ($?) { g++ 11_WAP_to_show_working_of_parameterized_constructor.cp
p -o 11_WAP_to_show_working_of_parameterized_constructor } ; if ($?) { .\11_WAP_to_show_working_of_p
arameterized_constructor }

Student Rollno.: 28
Student Name: Prakash
Stduent Age: 19
Student Rollno.: 47
Student Name: kavya
Stduent Age: 18
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes>
```

powershell
Code

Ln 36, Col 2   Spaces: 4   UTF-8   CRLF   C++   Win32

//12. WAP to copy value of 2 parameters from one constructor to another using copy constructor.

```cpp
/*
    WAP_to_copy_2_parameters_from_one_constructor_to_another_using_copy_constru
ctor.
*/
#include<iostream>
#include<string>
// using namespace std;

using std::cout;
using std::cin;
using std::string;

class students
{

    public:

    int a,b;

    students() //default constructor
    {
        a=0;
        b=0;
    }
    students(int x, int y) //1st constructor
    {
        a=x;
        b=y;
    }
    students(students &objext) //Copy constructor
    {
        cout << "Copy condtructor called!" ;
        a=objext.a;
        b=objext.b;
    }


    void displaydata()
    {
        cout <<"\na: "<< a <<"\nb: "<<b<<"\n";
    }

};


int main()
{
    students one;
    students two(2, 3);
```
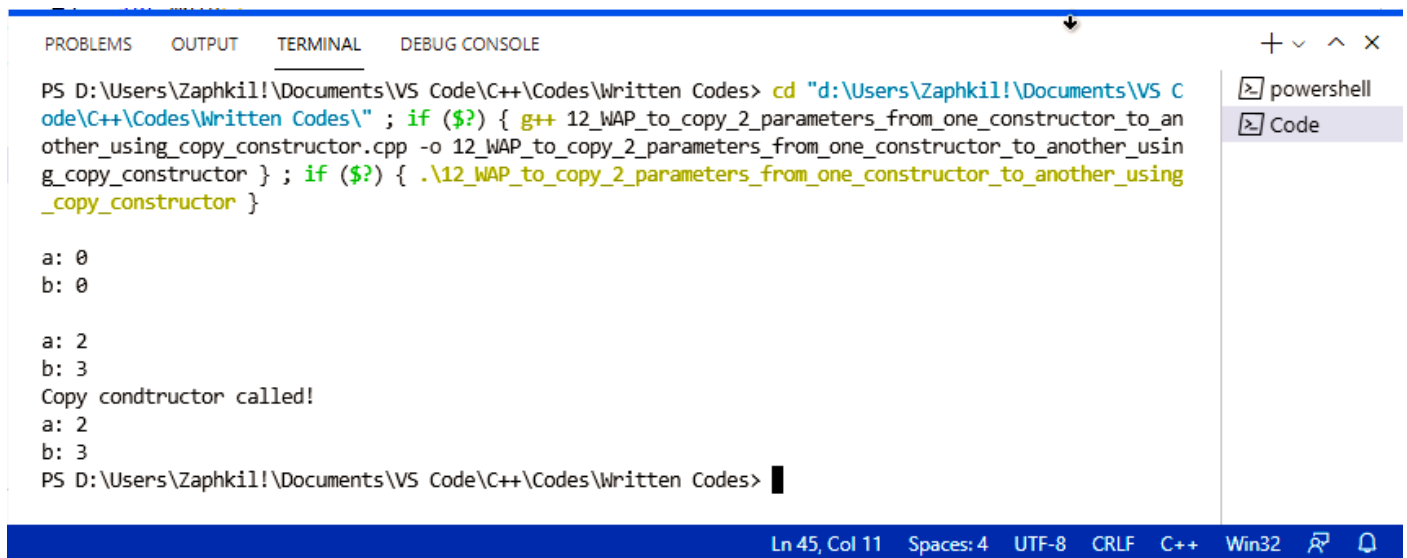
```cpp
    one.displaydata();
    two.displaydata();

    students s1(two);
    s1.displaydata();
     return 0;
}
```

OUTPUT

```
PROBLEMS    OUTPUT    TERMINAL    DEBUG CONSOLE                                          + v  ^  X

PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> cd "d:\Users\Zaphkil!\Documents\VS C   >_ powershell
ode\C++\Codes\Written Codes\" ; if ($?) { g++ 12_WAP_to_copy_2_parameters_from_one_constructor_to_an   >_ Code
other_using_copy_constructor.cpp -o 12_WAP_to_copy_2_parameters_from_one_constructor_to_another_usin
g_copy_constructor } ; if ($?) { .\12_WAP_to_copy_2_parameters_from_one_constructor_to_another_using
_copy_constructor }

a: 0
b: 0

a: 2
b: 3
Copy condtructor called!
a: 2
b: 3
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> █

                                        Ln 45, Col 11    Spaces: 4   UTF-8   CRLF   C++   Win32   R   Q
```

//13. WAP to implementing an array of objects in a class using member functions to input & display data.

```cpp
 //WAP to implementing an array of objects in a class using member functions to
input and display data.

#include<iostream>
//using namespace std;
using std::cout;
using std::cin;

class employee
{
    private:
    int id;
    int age;
    int salary;

    public:
    void displaydata(int i);
    void setdata(int i)
    {
        cout<<"\nEnter "<<i<<" employee ID: ";
        cin>>id;
        cout<<"\nEnter "<<i<<" employee Age: ";
        cin>>age;
        cout<<"\nEnter employee "<<i<<" Salary: ";
        cin>>salary;
    }

};

void employee::displaydata(int i)
{
    cout<<"\nEmployee "<<i<<" ID: "<<id<<"\nEmployee "<<i<<" Age:
"<<age<<"\nEmployee "<<i<<" Salary: "<<salary<<"\n\n";

}


int main()
{
    int i;
    employee one[3];

    for(i=0;i<=3;i++)
    {
        one[i].setdata(i);
        one[i].displaydata(i);
    }
    return 0;
}
```

OUTPUT

```
^
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> cd "d:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Wr
itten Codes\" ; if ($?) { g++ 13_array_of_objects_in_a_class_using_member_functions_to_input_and_display_data.cpp -o
 13_array_of_objects_in_a_class_using_member_functions_to_input_and_display_data } ; if ($?) { .\13_array_of_objects
_in_a_class_using_member_functions_to_input_and_display_data }

Enter 0 employee ID: 14

Enter 0 employee Age: 31

Enter employee 0 Salary: 64166

Employee 0 ID: 14
Employee 0 Age: 31
Employee 0 Salary: 64166


Enter 1 employee ID: 445

Enter 1 employee Age: 42

Enter employee 1 Salary: 75652

Employee 1 ID: 445
Employee 1 Age: 42
Employee 1 Salary: 75652


Enter 2 employee ID: 45

Enter 2 employee Age: 30

Enter employee 2 Salary: 63264

Employee 2 ID: 45
Employee 2 Age: 30
Employee 2 Salary: 63264


Enter 3 employee ID: 48

Enter 3 employee Age: 45

Enter employee 3 Salary: 1544515

Employee 48 ID: -2147483647
Employee 48 Age: 66304
Employee 48 Salary: 33588226

PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> ▮
```

//14. WAP to print sum of elements above the diagonal elements in a matrix of 3*3 elements.

```cpp
/*
WAP_to_print_sum_of_elements_above_and_including_the_diagonal_matrix_of_3*3_ele
ments(with_Antifeature).
*/
#include<iostream>

using std::cout;
using std::cin;

int main()
{
    int i,j,sumofdiagonal;

    int a[3][3]={1,2,3,
                 4,5,6,
                 7,8,9};

    sumofdiagonal=0;

    for(i=0;i<3;i++)
    {
        cout<<'\n';
    for(j=0;j<3;j++)
    {
        if(i==0&&j==0)
        {
            sumofdiagonal=a[0][0];
        }
        else if(j >= i)
            {
                sumofdiagonal=sumofdiagonal+a[i][j];

                a[i][j]=a[i][j+1];
            }
    }
    }
    cout<<"Sum of upper diagonal elements are: ";
    cout<<sumofdiagonal;
}
```

OUTPUT

//15. WAP to show one class students having data member rollno, name & age. Inherits some features of teacher, when inherited publically.

```cpp
/*
    WAP to show one class students having data member rollno, name & age.
Inherits some features of teacher,
    when inherited publically.
*/
#include<iostream>
#include<string>
// using namespace std;

using std::cout;
using std::cin;
using std::string;

class teacher
{
public:
    char theirintial(char fletter)
    {

        cout << "\nEnter Teacher's intials: ";
        cin >> fletter;
        cout << "\nTeacher's intials: ";
        cout<<fletter;
    }
};

class students: teacher
{

    public:

    string Name;
    int rollno;
    int age;


    void displaydata(char fletter)
    {
        cout <<"Student Rollno.: "<< rollno <<"\nStudent Name:
"<<Name<<"\nStduent Age: "<<age;
        theirintial(fletter);
    }

};

int main()
{
    char fletter;

    students one;
```

```cpp
    cout << "Enter stduent Roll no.: ";
    cin >> one.rollno;
    cout << "Enter Student Name: ";
    cin >> one.Name;
    cout << "Enter student Age: ";
    cin >> one.age;

    one.displaydata(fletter);

    return 0;
}
```
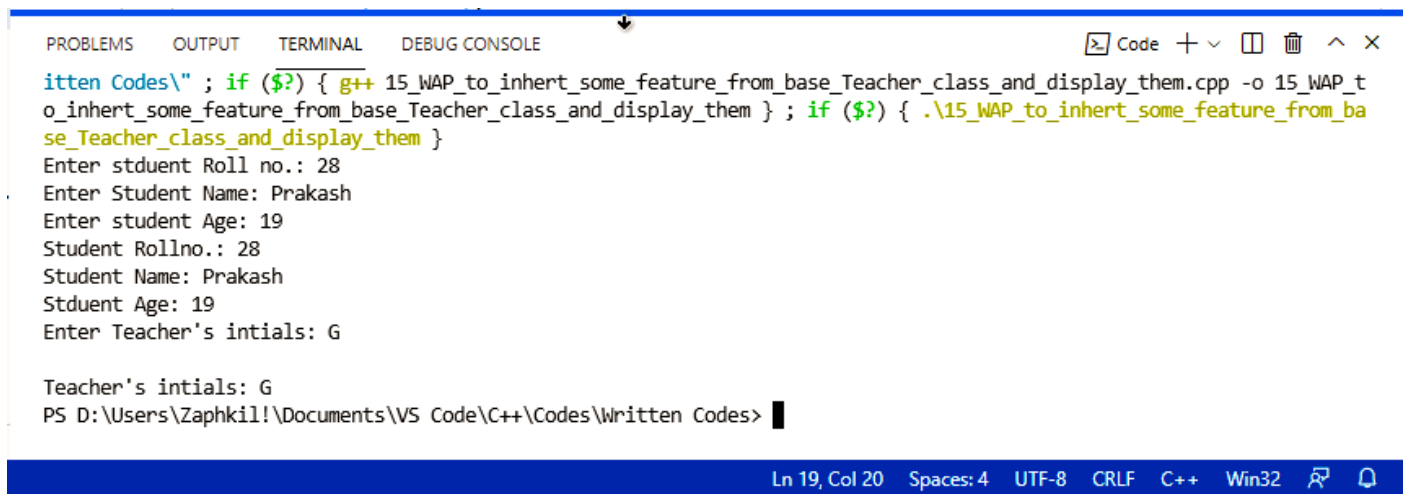
OUTPUT

//16. WAP for implementing multiple inheritance concept using classes.

```cpp
/*
    WAP_for_implementing_multiple_inheritance_concept_using_classes.
*/
#include<iostream>
#include<string>
// using namespace std;

using std::cout;
using std::cin;
using std::string;

class teacher
{
public:
    char theirintial(char fletter)
    {

        cout << "\nEnter Teacher's intials: ";
        cin >> fletter;
        cout << "\nTeacher's intials: ";
        cout<<fletter;
    }
};

class chor
{
    public:
    void chorinstincts()
    {
        cout << "\nOh Shoot!!,Someone stole all the pens!";
    }

};

class students: teacher, chor
{

    public:

    string Name;
    int rollno;
    int age;


    void displaydata(char fletter)
    {
        cout <<"Student Rollno.: "<< rollno <<"\nStudent Name:
"<<Name<<"\nStduent Age: "<<age;
        theirintial(fletter);
        chorinstincts();
    }
```

```cpp
};

int main()
{
    char fletter;

    students one;
    cout << "Enter stduent Roll no.: ";
    cin >> one.rollno;
    cout << "Enter Student Name: ";
    cin >> one.Name;
    cout << "Enter student Age: ";
    cin >> one.age;

    one.displaydata(fletter);

    return 0;
}
```

OUTPUT

//17. WAP to overload a binary operator '+' to add two values using objects.

```cpp
#include<iostream>
using std::cout;
using std::cin;
class imaginary
{
private:
    int b;
    int a;

public:
    imaginary(int v1)
    {
        b=v1;
    }
    void operator+(imaginary obj1)
    {
        a = b + obj1.b;
    }
    void printdata(int i)
    {
        cout<<"Your imaginary no."<<i<<" "<<b<<"i\n";
    }
    void printcomplexsum()
        {
            cout<<"Sum of Your Complex no. "<<a<<"i\n";
        }
};
int main()
{
    imaginary obj0(2),obj1(4);

    obj0.printdata(0);

    obj1.printdata(1);

    obj0+obj1;
    obj0.printcomplexsum();

    return 0;
}
```
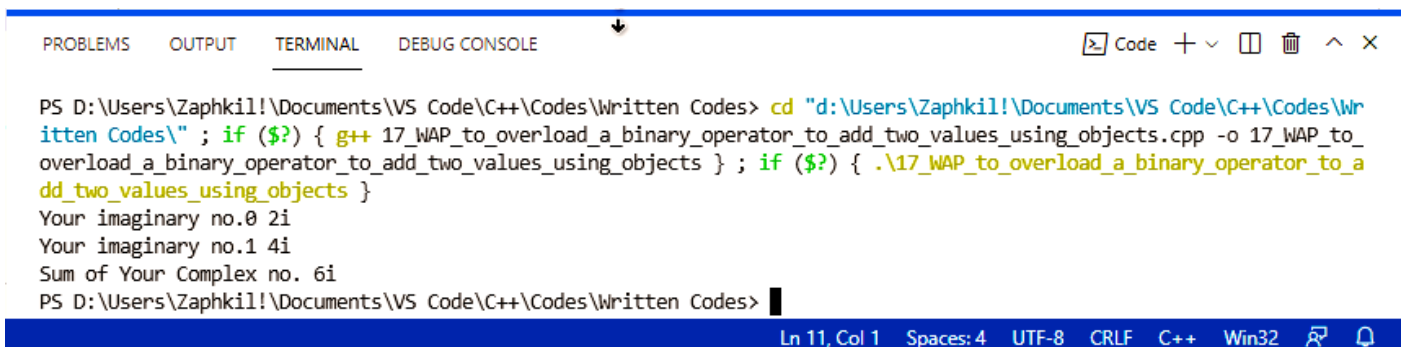
OUTPUT

PROBLEMS   OUTPUT   TERMINAL   DEBUG CONSOLE   Code + ∨ ⊡ 🗑 ∧ ✕

PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> cd "d:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Wr
itten Codes\" ; if ($?) { g++ 17_WAP_to_overload_a_binary_operator_to_add_two_values_using_objects.cpp -o 17_WAP_to_
overload_a_binary_operator_to_add_two_values_using_objects } ; if ($?) { .\17_WAP_to_overload_a_binary_operator_to_a
dd_two_values_using_objects }
Your imaginary no.0 2i
Your imaginary no.1 4i
Sum of Your Complex no. 6i
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> ▋

Ln 11, Col 1   Spaces: 4   UTF-8   CRLF   C++   Win32

//18. WAP showing implementation of a nested structure & access the data members of both structures.

```cpp
//18_WAP_showing_implementation_of_a_nested_structure_&_access_the_data_members
_of_both_structures.cpp

#include<iostream>
using std::cout;
using std::cin;

struct college//Put identifier name after struct
{
  char college_name[50];
  int college_ID;
};
struct students      //Put identifier name after struct
{
  char student_name[50];
  int student_rollno;
  struct college coll;
};
int main()
{
  students s;

  cout<<"Enter Student's Name: ";
  cin>>s.student_name;
  cout<<"Enter Student's Rollno.: ";
  cin>>s.student_rollno;
  cout<<"Enter College Name: ";
  cin>>s.coll.college_name;
  cout<<"Enter College ID: ";
  cin>>s.coll.college_ID;

  cout<<"\nCollege Name: "<<s.coll.college_name;
  cout<<"\nCollege ID: "<<s.coll.college_ID;
  cout<<"\nStudent Name: "<<s.student_name;
  cout<<"\nStudent Rollno.: "<<s.student_rollno;
  return 0;
}
```

OUTPUT

PROBLEMS   OUTPUT   TERMINAL   DEBUG CONSOLE   >_ Code + ∨ ⊞ 🗑 ∧ ⨯

PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> cd "d:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Wr
itten Codes\" ; if ($?) { g++ 18_WAP_showing_implementation_of_a_nested_structure_And_access_the_data_members_of_bot
h_structures.cpp -o 18_WAP_showing_implementation_of_a_nested_structure_And_access_the_data_members_of_both_structur
es } ; if ($?) { .\18_WAP_showing_implementation_of_a_nested_structure_And_access_the_data_members_of_both_structure
s }
Enter Student's Name: Prakash
Enter Student's Rollno.: 28
Enter College Name: INMANTEC
Enter College ID: 4881

College Name: INMANTEC
College ID: 4881
Student Name: Prakash
Student Rollno.: 28
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> █

Ln 16, Col 25   Spaces: 2   UTF-8   CRLF   C++   Win32

//19. WAP to read & write file objects using read & write functions from the file.

```cpp
#include<iostream>
#include<fstream>

using namespace std;
//using std::cout;
//using std::cin;

int main()
{
  //opening MyWritingFile.txt using constructor and Writing in it.
  string st = "Text to be written in MyFile.txt";
  string st2;

  ofstream out("MyWritingFile.txt");
  cout<<"Written in MyWriting.txt\n";

  out<<st;

  //opening MyWritingFile.txt using constructor and Reading it.

  ifstream in("MyReadingFile.txt");
  getline(in, st2);

  cout<<st2;
  return 0;
}
```
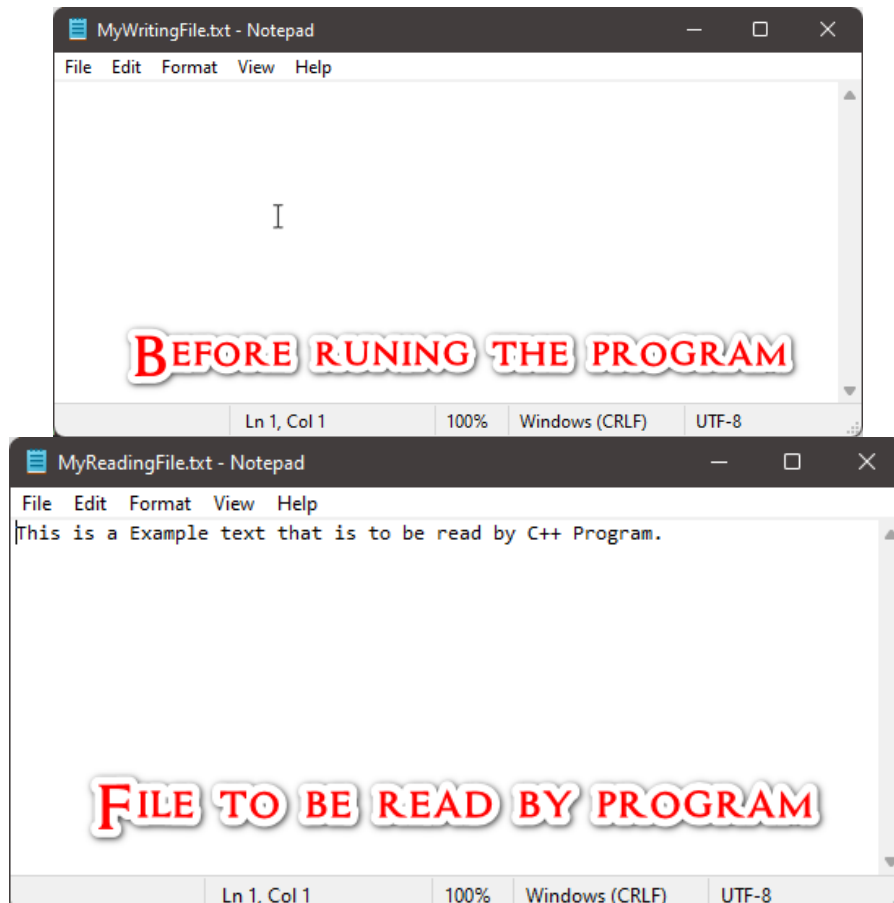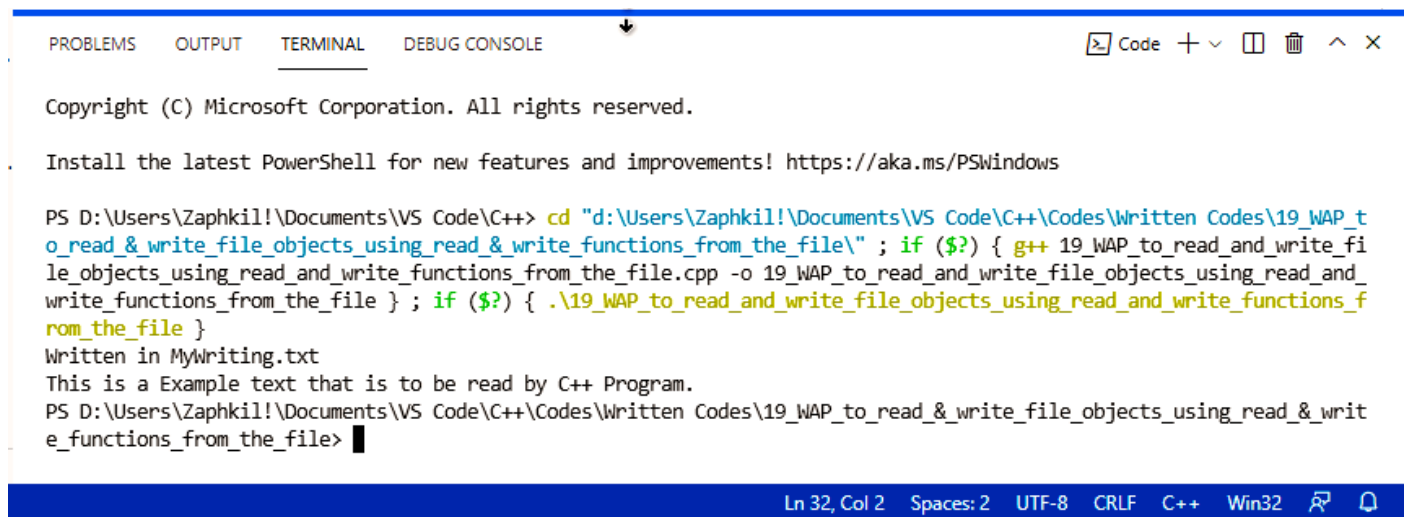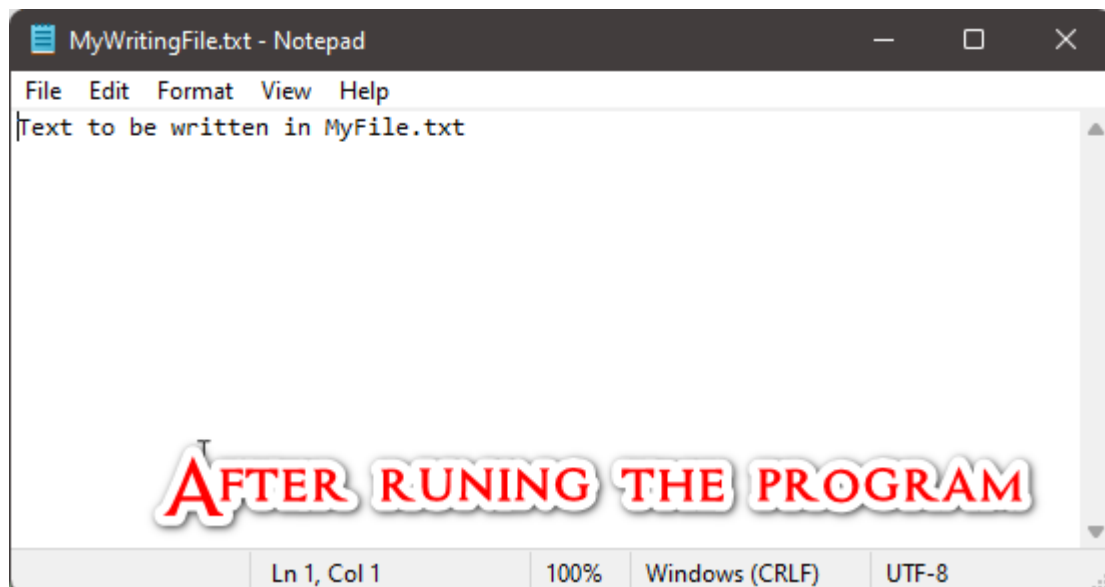
OUTPUT

MyWritingFile.txt - Notepad

File   Edit   Format   View   Help

Text to be written in MyFile.txt

AFTER RUNING THE PROGRAM

Ln 1, Col 1   100%   Windows (CRLF)   UTF-8

//20. WAP to implement template class using function.

```cpp
#include<iostream>
//using namespace std;
using std::cout;
using std::cin;

template<class No>

void swap(No &x, No &y)
{
    No temp = x;
    x = y;
    y = temp;
}

void fun(int a, int b, float c, float d)
{
    cout << "\na and b before swaping :" << a << "\t" << b;
    swap(a, b);
    cout << "\na and b after swaping  :" << a << "\t" << b;
    cout << "\n\nc and d before swaping :" << c << "\t" << d;
    swap(c, d);
    cout << "\nc and d after swaping  :" << c << "\t" << d;
}

int main()
{
    int a, b;
    float c, d;

    cout << "Enter A,B values(integer):";
    cin >> a>>b;

    cout << "Enter C,D values(float):";
    cin >> c>>d;

    fun(a, b, c, d);

    return 0;
}
```
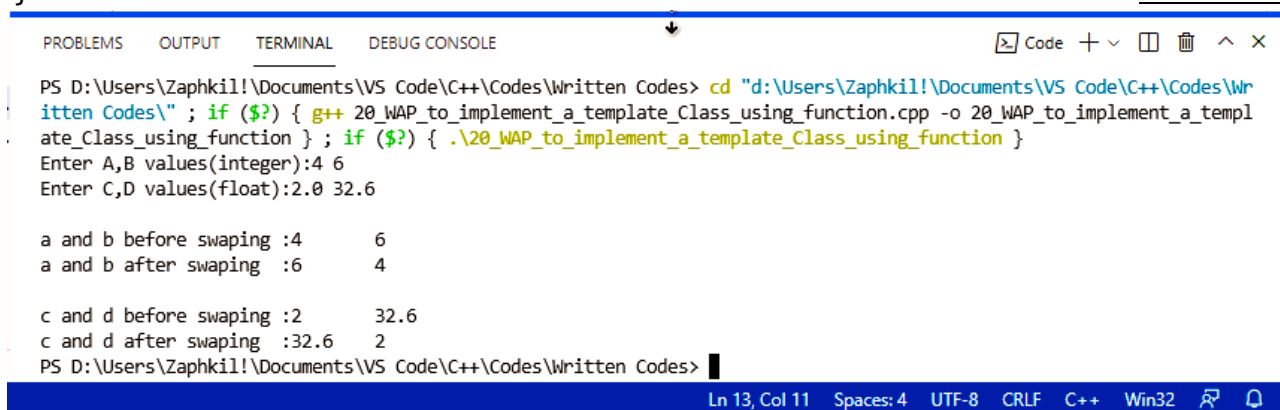
OUTPUT

PROBLEMS   OUTPUT   TERMINAL   DEBUG CONSOLE   Code + ∨ ⊓ 🗑 ∧ ✕

```
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> cd "d:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Wr
itten Codes\" ; if ($?) { g++ 20_WAP_to_implement_a_template_Class_using_function.cpp -o 20_WAP_to_implement_a_templ
ate_Class_using_function } ; if ($?) { .\20_WAP_to_implement_a_template_Class_using_function }
Enter A,B values(integer):4 6
Enter C,D values(float):2.0 32.6

a and b before swaping :4       6
a and b after swaping  :6       4

c and d before swaping :2       32.6
c and d after swaping  :32.6    2
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> |
```

Ln 13, Col 11   Spaces: 4   UTF-8   CRLF   C++   Win32

//21. WAP to create a friend function & use it to access public & private dates members of class.

```cpp
#include<iostream>
//using namespace std;
using std::cout;
using std::cin;

class myclass
{
    private:
    int a;

    public:
    int b;

    myclass(int A, int B)
    {
        a=A;
        b=B;
    }

    friend myclass Sum(myclass o1);

};

myclass Sum(myclass o1)
{
    int c;
    c = o1.a+o1.b;
    cout<<"Sum is: "<<c;
}

int main()
{
    myclass obj1(4, 5);

    Sum(obj1);

    return 0;
}
```

OUTPUT

PROBLEMS   OUTPUT   TERMINAL   DEBUG CONSOLE   Code + ∨ ⊓ 🗑 ∧ ✕

PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> cd "d:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Wr
itten Codes\" ; if ($?) { g++ 21_WAP_to_create_friend_function_and_use_it_to_access_public_and_private_data_members_
of_class.cpp -o 21_WAP_to_create_friend_function_and_use_it_to_access_public_and_private_data_members_of_class } ; i
f ($?) { .\21_WAP_to_create_friend_function_and_use_it_to_access_public_and_private_data_members_of_class }
Sum is: 9
PS D:\Users\Zaphkil!\Documents\VS Code\C++\Codes\Written Codes> ▌

Ln 40, Col 1   Spaces: 4   UTF-8   CRLF   C++   Win32   ⌨ 🔔