**Term work**

**on**

**OOPs with C++**

**(PCS 307)**

**2021-22**

**Submitted to: Submitted by:**

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**GRAPHIC ERA HILL UNIVERSITY, DEHRADUN**

**ACKNOWLEDGMENT**

I would like to particularly thank my Data Science using OOPs with C++Lab Faculty **Mr Akash Chauhan** for his patience, support and encouragement throughout the completion of this Term work.

At last but not the least I greatly indebted to all other persons who directly or indirectly helped me during this course.

Photo [optional] **Anshika Maheshwari**

**<Paste your signature here>**

**University. Roll No.- 2018187**

**B.Tech CSE-A-III Sem**

**Session: 2021-22**

**GEHU, Dehradun**



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| 1 | Run all four compilation units individually for any sample program using C++. |  |
| 2 | Write an Efficient code to check if a number is prime or not. |  |
| 3 | Write C++ code for below mentioned tasks?  **Task1:** How the preprocessor will react when you try to use, #include<iostream.h> instead of #include<iostream>?  **Task2:** How the preprocessor will react when you use cout but don't include #include<iostream> in your code?  **Task3:** Take a char variable and use cin to take its value from the user, cout it and it will only return one character and loss rest of the data you have entered!  **Task4:** How to resolve above issue? [Hint: by using, getline(cin, line);] |  |
| 4 | Write C++ code for below mentioned tasks?  **add(int,int), add(float, float), both of these methods are in two different namespaces First and Second respectively.**  **Task1:** Access these methods using scope resolution operator [::](SRO) from main method?  **Task2:** Access these methods using "using" keyword for main method?  **Task3:**  Try to access these methods without using, (SRO) and "using" keyword and check how the compiler will react to it?  **Task4:** Try to access these methods for Mixed Values [Int, Float] and see how the compiler will react to it? |  |
| 5 | Write C++ code for below mentioned tasks?  **Primary Data Types related questions in C++:**  **Task1:**Initialise all primary data types, assign their values and print them all? [char, bool, short, int, long, float, double, long double, wide char]  **Task2:** Apply sizeof operator on all above operators and their variables?        Example        Int a = 10;       Cout<<Sizeof(int);       Cout<<Sizeof(a); |  |
| 6 | Write C++ code for below mentioned tasks?  **String related Questions in C++:**  **Task1:**What happens if we add integer with a string, how the compiler would react to it?  String str = "ABC"; Int a = 1; String str2 = str + a;  **Task2:** Check the entered string is Palindrome or not?  String str = "75457" Output: Yes it is a palindrome or No it is not a Palindrome.  (Use, getline(sin, str1) and reverse\_iterator of string to check this)  **Task3:** Make a reverse of a string using reverse method and reverse\_iterator of string class?  **Task4:** String Compare: Check if the strings are equal or not? (do not use str1.compare(str2), do it manually)  **Task5:** String Compare: Check the possible values string.compare() function will return?              (Create cases in which compare function would return below values)  X>0 X<0 X==0 X = -4 X = 5 X = -2104040...  Also check the ASCII difference between two characters?(use int type cast)  **Task6:** Check if string is mutable in C++ or not? String a = "Hello"; Cout<<&a; a[0] = 'J'; Cout<<&a; Cout<< a;  What is the output? |  |
| 7 | Write C++ code for below mentioned tasks?  **Array and 2D Array related Questions in C++:**  **Task1:** Create a switch statement [Manual], In Which:    a. When you pass 1 your program would print current year   b. When you pass 2 your program would print current month   c. When you pass 3 your program would print current day   d. When you pass 4 your program would print Not applicable  **Task2:** Create a switch statement [Using ctime], In Which:    a. When you pass 1 your program would print current year   b. When you pass 2 your program would print current month   c. When you pass 3 your program would print current day   d. When you pass 4 your program would print Not applicable    **Task3:**    v1. Print using reverse method:    1 2 3  9 8 7    4 5 6  ==>    6 5 4    7 8 9             3 2 1      v2. Print using (10- arr[i][j])  method:    1 2 3  9 8 7    4 5 6  ==>    6 5 4    7 8 9             3 2 1      v3. Restore using reverse method [without creating new array]:    1 2 3  9 8 7    4 5 6  ==>    6 5 4    7 8 9             3 2 1      v4. Restore using (10- arr[i][j]) method [without creating new array]:    1 2 3  9 8 7    4 5 6  ==>    6 5 4    7 8 9              3 2 1  **Task4:** Restore the same values in the same array, arr[3][3]:    1 2 3 1 1 1            4 5 6     ==> 2 2 2    7 8 9 3 3 3    v1. Use row loop [inti, for all j]    v2. Use arr[i][N-1]/3, at each place    v3. Use, arr[i][j]-(2\*i+j)  **Task5:** Store these in an array[4][4] in given fassion and then print:  \*  \* \*  \* \* \*  \* \* \* \*  **Task6:** Store these in an array[4][4] in given fashion and then print:  \* \* \* \*  \* \* \*  \* \*  \*  **Task7:** Store these in an array[4][4] in given fashion and then print:  \*          \* \*        \* \* \*      \* \* \* \*    **Task8:** Store these in an array[4][4] in given fashion and then print:  \* \* \* \*  \* \* \*  \* \*  \* |  |
| 8 | Write C++ code for below mentioned tasks?  **Pointer, Function, Inline Function, Recursion in C++:**  **Task1:**Will the program through an error and if yes then why?  int \*p = {10,20,20};  cout<< \*p;  p++;  cout<< \*p;  **Task2:**Output of this program?  **V1.** Issue?  intarr[] = {10,20,30};  cout<< \*arr;  cout<<arr;  arr++;  cout<< \*arr;  **V2.**How to resolve above issue?  intarr[] = {10,20,30};  cout<< \*arr;  cout<<arr;  cout<< \*(?);  **Task3:**Output of this program?  **V1.**Output?  int a = 10;  int \*p;  int \*\*q;  p = &a;  q = &p;  cou<< \*p;  cou<< \*\*q;  **V2.** Change the value of a using q pointer to pointer.  **Task4:** Find factorial of a number using function but not recurssion  **Task5:** Find factorial of a number using recurssion  **Task6:** Series Problem using recurssion for n series  2, (2^2 + 2), (3^3 + 3), (4^4 + 4), (5^5 + 5), .......  Hint:  n \* ((n-1)^(n-1) + (n-1))  **Task7:** Perform Call by value, call by Address for swapping value of a and b:  int a = 10;  int b = 20;  **V1.**Swap(a,b); //call by Value [void swap(int a, int b){}]  **V2.**Swap(a,b); //call by Value [void swap(int&a, int&b){}]  **V3.**Swap(&a,&b); //call by Address |  |
| 9 | Write C++ code for below mentioned tasks?  **Class, Object, Constructor, Static Data Members, friend function in C++:**  **Task1: Class and Object in C++** a. WAP to assign and print the roll number, phone number and address of two students having names "Sam" and "John" respectively by creating two objects of the class 'Student'. b. WAP which would contain array of objects [many objects], of a class Student. Student [Name, Age, Year, section, marks], the section would be A,B,C and D. Your program would be able to return the total marks of students in the college. Hint [Make a Matrix or Tabular diagram to understand the problem], all the rows will differ each other by different objects of Student class [Student s1,s2,s3,s4].  **Task2: Constructor in C++** WAP to create a class to print the area of a square and a rectangle. The class has two functions with the same name but different number of parameters. The function for printing the area of rectangle has two parameters which are its length and breadth respectively while the other function for printing the area of square has one parameter which is the side of the square. Use multiple constructors to for the initialization.  **Task3: Static Data Members in C++** WAP to count the total number of calls for a member function from more than one objects. [Lets say, from 3 such Objects]  **Task4: Friend Function in C++** WAP in which you create a Student class having basic information for each student, like name, age and marks. By using friend function add marks of all the students [lets say 3 objects] and print it.  **Task5: Structure in C++** WAP to create a College class and Student Structure in C++ in one program. By providing such suitable examples write at least 5 differences between class and struct code your have written above.  Hint [Access Specifiers, Heap and Stack, large and small memory, etc.]  **Task6: Extra Questions:** WAP which would perform these tasks of your data: a. Come to next line b. set minimum field width c. fill string with (\*) after setw(15) function     \*\*\*\*\*\*\*\*\*\*1234 by using endl, setw, and setfill [Manipulators in C++] |  |
| 10 | Write C++ code for below mentioned tasks?  **Array of Objects, Pointer to Object, This pointer, Operator Overloading in C++**  **Task1: Array of Objects in C++** WAP to create a directory that contains the following information. (a) Name of a person (b) Address (c) Telephone Number (if available with STD code) (d) Mobile Number (if available) (e) Head of the family  **Task2: Pointer to Object in C++** WAP to create print or display Student information containing in Student class by using pointers to object.  **Task3: This pointer in C++** WAP to pass two variables in a parameterized constructor during object creation and have same names variables as class member data and constructor parameters. Your job is to calculate the remainder of those two numbers.  **Task4: Operator Overloading in C++** a). WAP, in which you write a friend function to overload a less than '<' operator in C++. b). WAP in which you can add two objects [every object would have 1 integer value] by overloading + operator, which eventually would add the data values of those two object by adding the objects. |  |



**DEPARTMENT OF CSE**

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| --- |
| Photograph  Passport Size |

**B.Tech. CSE**

**STUDENT LAB REPORT SHEET**

**Name of Student ……………………………………….…….Mob.No……………………………….…………..**

**Address Permanent ………………………………………………………………………………………….………..**

**Father’s Name …………………………Occupation ……………………………MoNo……..…….….………**

**Mother’s Name ………………… …..Occupation……………………………MoNo…………….…………..**

**Section …………….Branch……………………Semester……………..Class Roll No………………. Grade A B C**

**Local Address…………………………………………………Email……………….……………………. Marks 5 31**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.No.** | **Practical** | **D.O.P.** | **Date of Submission** | **Grade (Viva)** | **Grade (Report File)** | **Total Marks (out of 10)** | **Student’s Signature** | **Teacher’s Signature** |
| **1** | **Practical-01** |  |  |  |  |  |  |  |
| **2** | **Practical-02** |  |  |  |  |  |  |  |
| **3** | **Practical-03** |  |  |  |  |  |  |  |
| **4** | **Practical-04** |  |  |  |  |  |  |  |
| **5** | **Practical-05** |  |  |  |  |  |  |  |
| **6** | **Practical-06** |  |  |  |  |  |  |  |
| **7** | **Practical-07** |  |  |  |  |  |  |  |
| **8** | **Practical-08** |  |  |  |  |  |  |  |
| **9** | **Practical-09** |  |  |  |  |  |  |  |
| **10** | **Practical-10** |  |  |  |  |  |  |  |
| **11** |  |  |  |  |  |  |  |  |
| **12** |  |  |  |  |  |  |  |  |

**Program 1**

**Q. Write a C++ Program to print any sample message over console: Example: “Hello World!”**

**Then Start writing Source Code of the Program**

**Then in New Page, Paste the screenshot of the Output.**

**See the next page for demonstration**

**Program 1**

**Source Code:**

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| #define MAX 5 |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

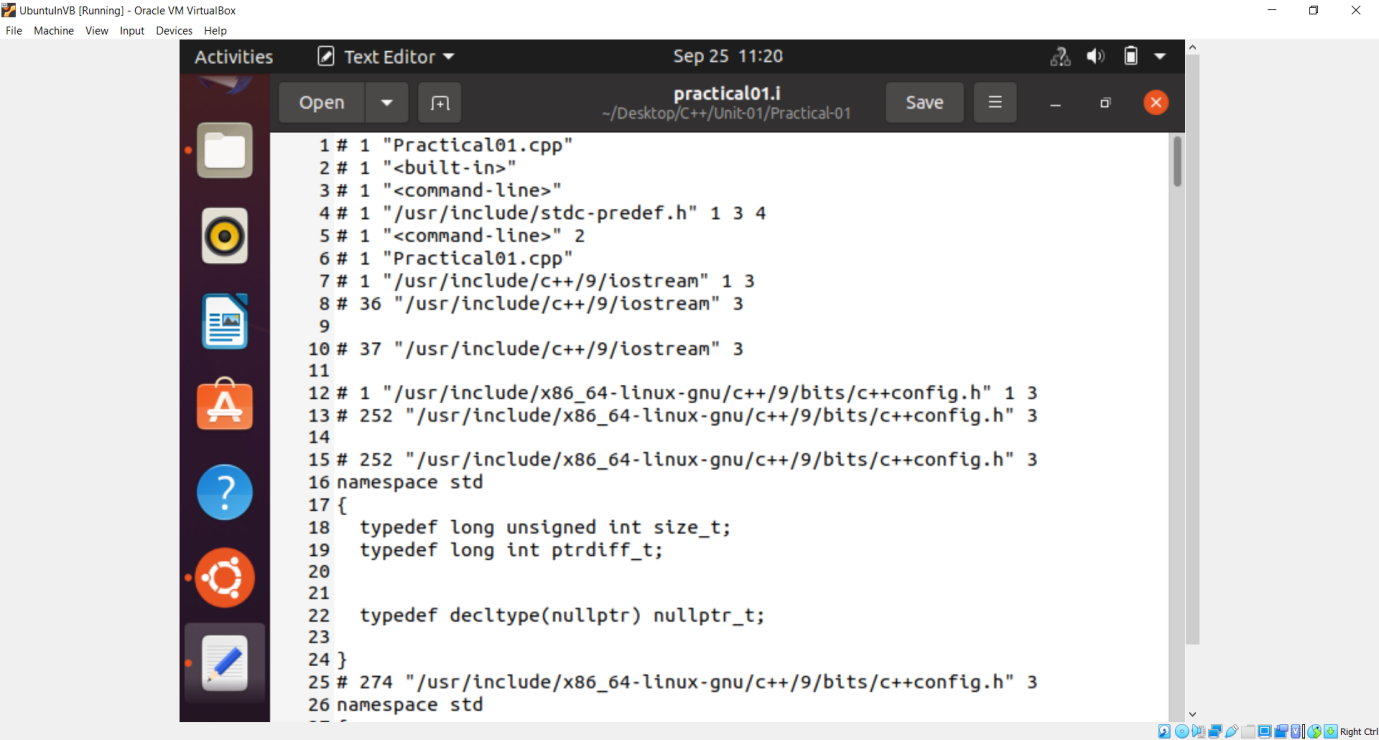
|  |
| --- |
| cout<<"Hello, World!"; |
|  |

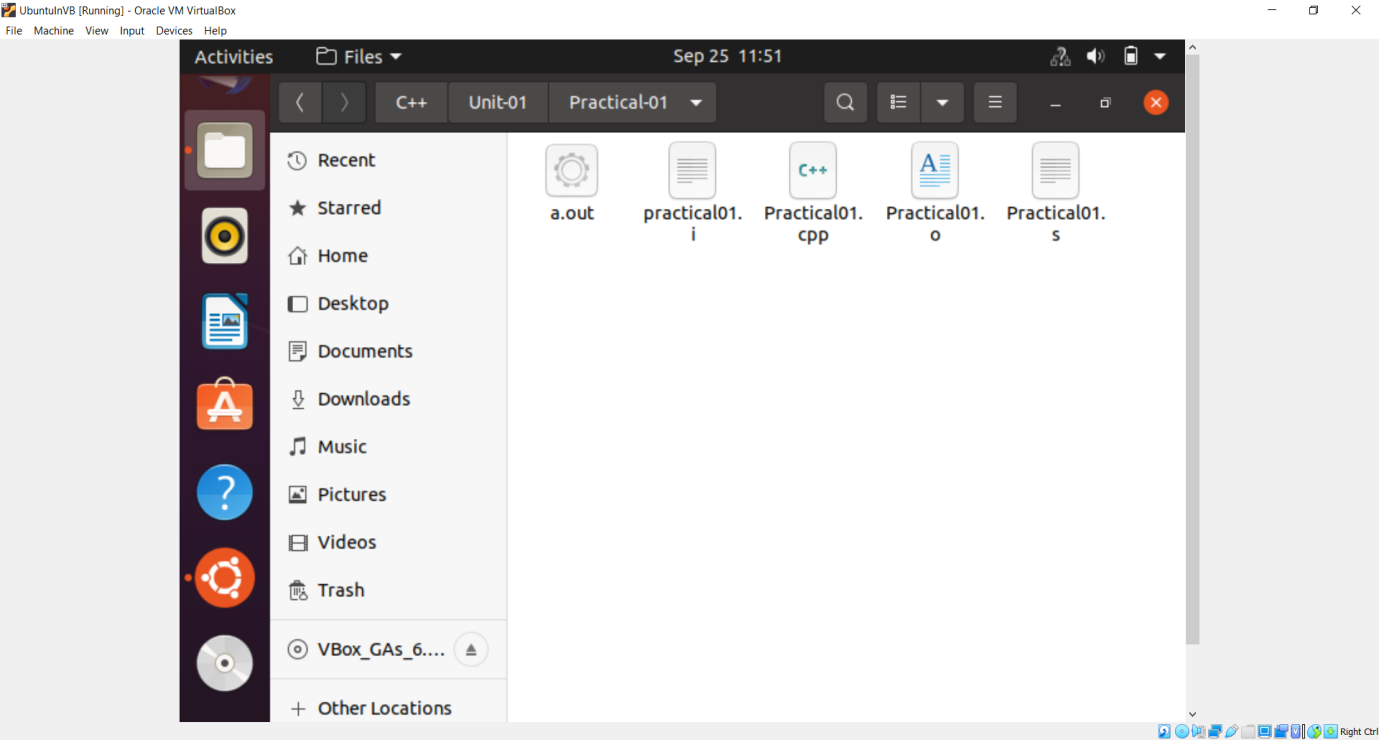
|  |
| --- |
|  |

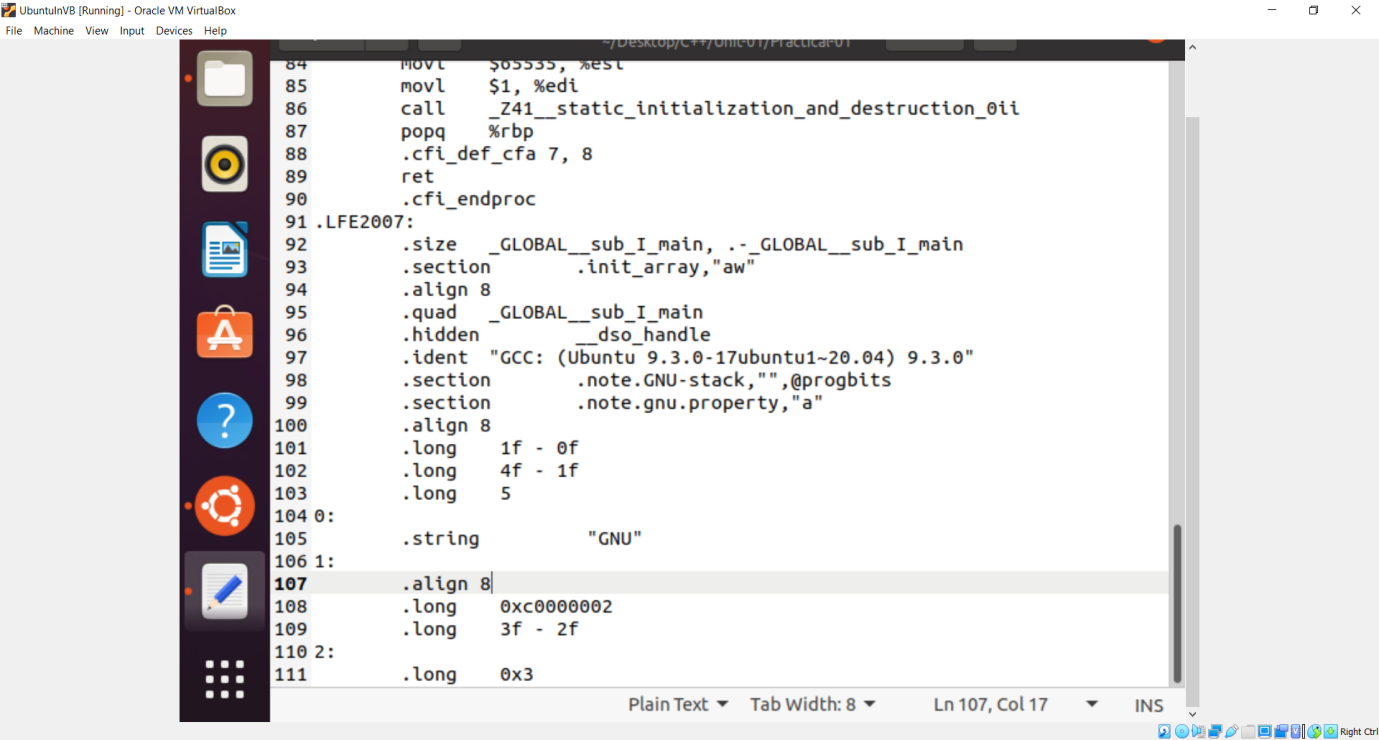
|  |
| --- |
| return 0; |
|  |

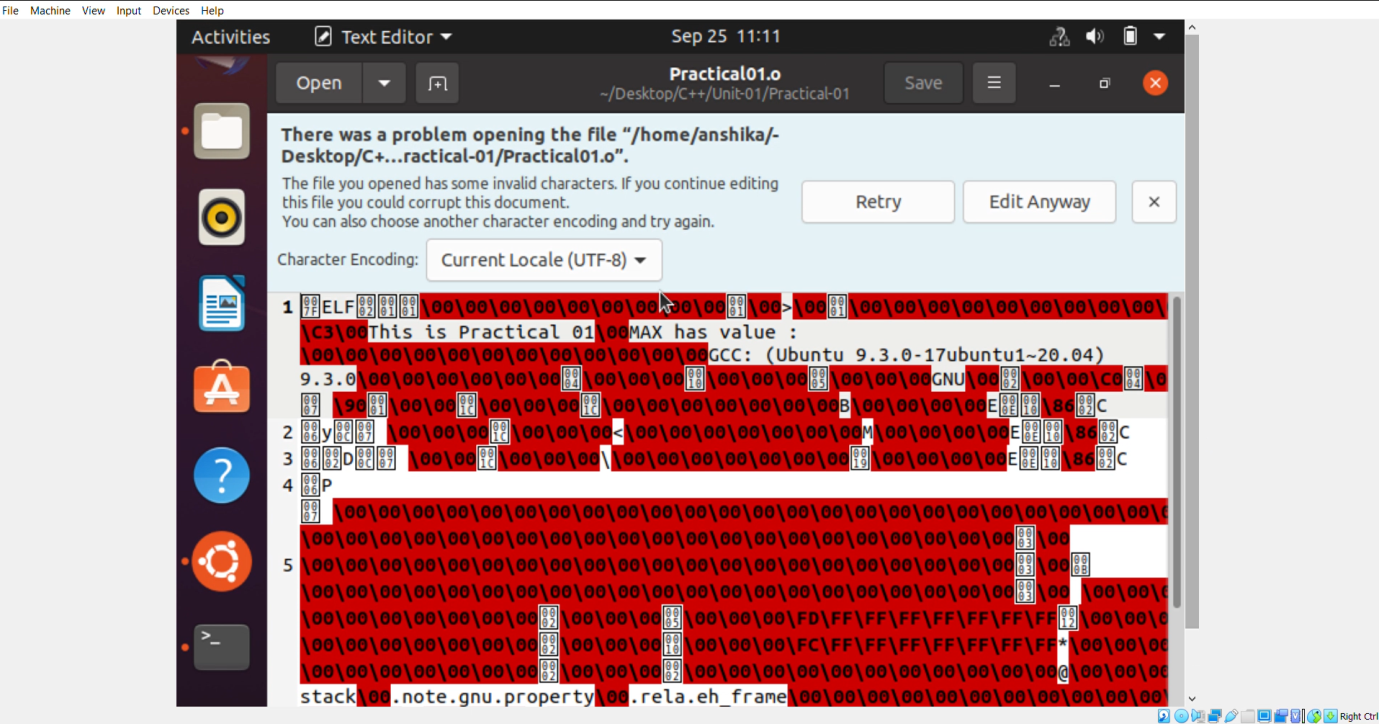
}

**Output**

****

****

****

****

**Program 2**

**Source Code:**

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int n; |
|  |

|  |
| --- |
| cout<<"Enter a number : "; |
|  |

|  |
| --- |
| cin>>n; |
|  |

|  |
| --- |
| int i=2; //Every number is divisible by 1! |
|  |

|  |
| --- |
| while(i<=n-1) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| if(n%i==0){ |
|  |

|  |
| --- |
| cout<<"\nThe number "<<n<<" is not prime"; |
|  |

|  |
| --- |
| break; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| i=i+1; |
|  |

|  |
| --- |
| } |
|  |

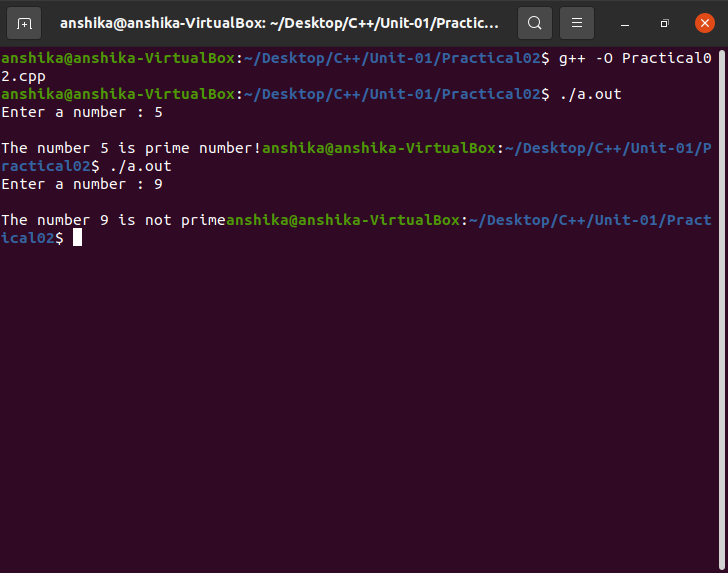
|  |
| --- |
| if(i==n) |
|  |

|  |
| --- |
| cout<<"\nThe number "<<n<<" is prime number!"; |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**

****

**Program 3**

**Task 1 :**

**Source Code:**

|  |
| --- |
| #include<iostream.h> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| cout<<"This is Practical-03 : Task 1!"; |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**

****

**Program 3**

**Task 2 :**

**Source Code:**

|  |
| --- |
| //#include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

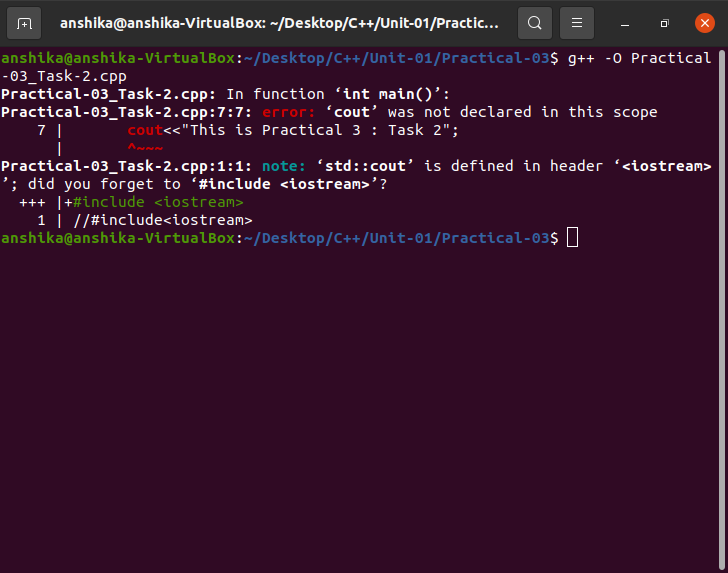
|  |
| --- |
|  |
|  |

|  |
| --- |
| cout<<"This is Practical 3 : Task 2"; |
|  |

|  |
| --- |
| return 0; |
|  |

|  |
| --- |
| } |
|  |

**Output**

****

**Program 3**

**Task 3 :**

**Source Code:**

|  |
| --- |
| //#include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

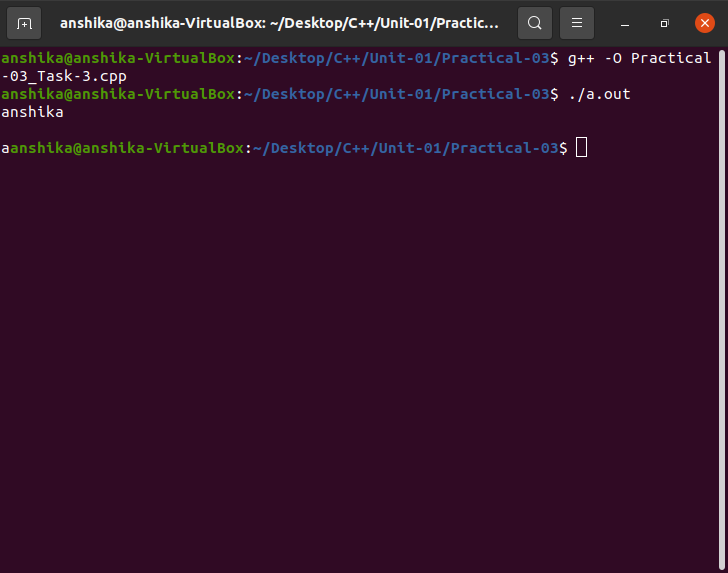
|  |
| --- |
|  |
|  |

|  |
| --- |
| cout<<"This is Practical 3 : Task 2"; |
|  |

|  |
| --- |
| return 0; |
|  |

|  |
| --- |
| } |
|  |

**Output**

****

**Program 3**

**Task 4 :**

**Source Code:**

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| string ch; |
|  |

|  |
| --- |
| cout<<"Enter : "; |
|  |

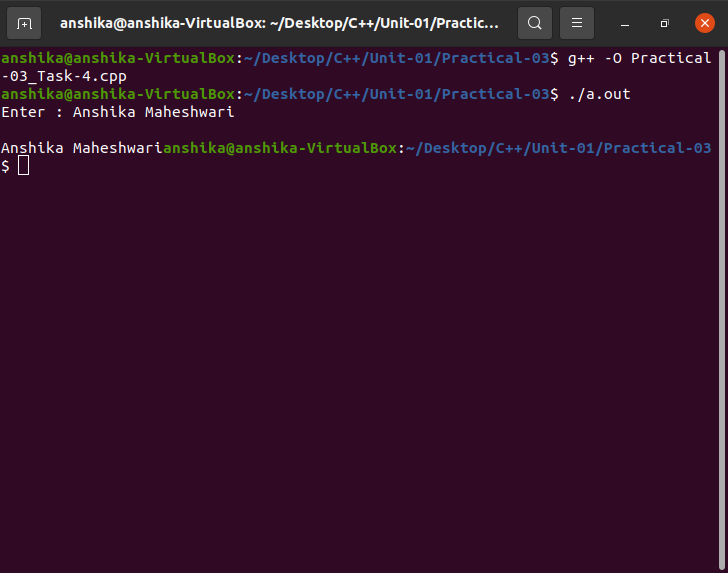
|  |
| --- |
| getline(cin,ch); |
|  |

|  |
| --- |
| cout<<endl<<ch; |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**

****

**Program 4**

**Task 1 :**

**Source Code:**

|  |
| --- |
| . |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| namespace First{ |
|  |

|  |
| --- |
| int add(int a,int b) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| return a+b; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| namespace Second{ |
|  |

|  |
| --- |
| float add(float a,float b) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| return a+b; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| std::cout<<First::add(1,3)<<" "; //1+3=4 |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| std::cout<<Second::add(1.2F,3.5F); //4.7 |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**

**A screenshot of a computer

Description automatically generated**

**Program 4**

**Task 2 :**

**Source Code:**

#include <iostream>

namespace first

{

int add(int a, int b)

{

return a + b;

}

}

namespace second

{

float add(float a, float b)

{

return a + b;

}

}

using namespace first;

using namespace second;

int main()

{

std::cout<< add(1, 5) << "\n";

std::cout<< add(1, 5.9) << "\n";

std::cout<< add(1.6, 5) << "\n";

std::cout<< add(0, 0) << "\n";

return 0;

}

**Output**

**A screenshot of a computer

Description automatically generated**

**Program 4**

**Task 3 :**

**Source Code:**

#include <iostream>

namespace second

{

float add(float a, float b)

{

return a + b;

}

}

namespace first

{

int add(int a, int b)

{

return a + b;

}

}

int main()

{

std::cout<< add(1, 5) << "\n";

std::cout<< add(1, 5.9f) << "\n";

std::cout<< add(1.6f, 5) << "\n";

//std::cout<<second::add( 1.1f , 6.5f )<<"\n";

std::cout<< add(0, 0) << "\n";

return 0;

}

**Output**

**A screenshot of a computer

Description automatically generated**

**Program 5**

**Task 1 :**

**Source Code:**

|  |
| --- |
| #include <iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| void func1(){ |
|  |

|  |
| --- |
| char a = 'a'; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func2(){ |
|  |

|  |
| --- |
| int a = 10, b = 9; |
|  |

|  |
| --- |
| bool c; |
|  |

|  |
| --- |
| c = a > b; |
|  |

|  |
| --- |
| cout << c << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func3(){ |
|  |

|  |
| --- |
| short a; |
|  |

|  |
| --- |
| a = 12; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func4(){ |
|  |

|  |
| --- |
| int a = 1234; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func5(){ |
|  |

|  |
| --- |
| float a = 12.5; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func6(){ |
|  |

|  |
| --- |
| long a = 123456; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func7(){ |
|  |

|  |
| --- |
| double a = 123.6748; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func8(){ |
|  |

|  |
| --- |
| long double a = 1234.7890; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func9(){ |
|  |

|  |
| --- |
| wchar\_t a = L'\0'; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| int main(){ |
|  |

|  |
| --- |
| func1(); |
|  |

|  |
| --- |
| func2(); |
|  |

|  |
| --- |
| func3(); |
|  |

|  |
| --- |
| func4(); |
|  |

|  |
| --- |
| func5(); |
|  |

|  |
| --- |
| func6(); |
|  |

|  |
| --- |
| func7(); |
|  |

|  |
| --- |
| func8(); |
|  |

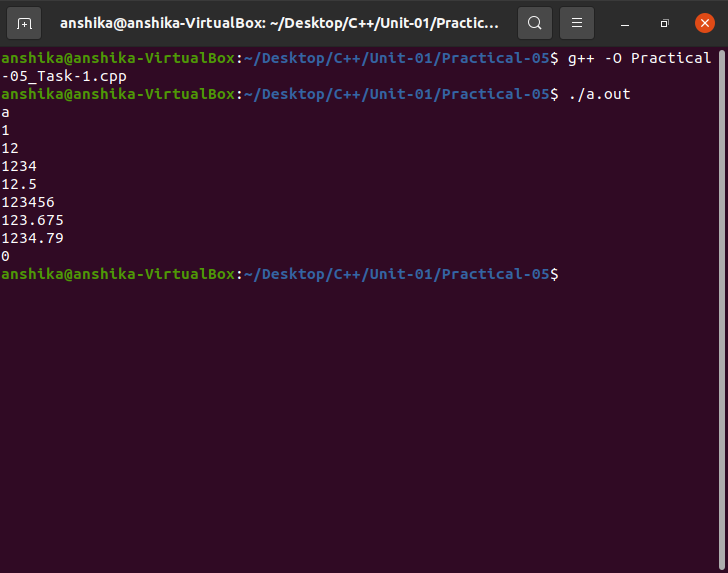
|  |
| --- |
| func9(); |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**

**Program 5**

**Task 2 :**

**Source Code:**

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| void func1() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| char a = 'a'; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| cout << sizeof(a) << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func2() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int a=10,b=9; |
|  |

|  |
| --- |
| bool c; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| cout << sizeof(a) << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func3() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| short a; |
|  |

|  |
| --- |
| a = 12; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| cout << sizeof(a) << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func4() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int a = 1234; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| cout << sizeof(a) << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func5() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| float a = 12.5; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| cout << sizeof(a) << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func6() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| long a = 123456; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| cout << sizeof(a) << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func7() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| double a=123.6748; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| cout << sizeof(a) << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func8() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| long double a = 1234.7890; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| cout << sizeof(a) << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| void func9() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| wchar\_t a = L'\0'; |
|  |

|  |
| --- |
| cout << a << endl; |
|  |

|  |
| --- |
| cout << sizeof(a) << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| func1(); |
|  |

|  |
| --- |
| func2(); |
|  |

|  |
| --- |
| func3(); |
|  |

|  |
| --- |
| func4(); |
|  |

|  |
| --- |
| func5(); |
|  |

|  |
| --- |
| func6(); |
|  |

|  |
| --- |
| func7(); |
|  |

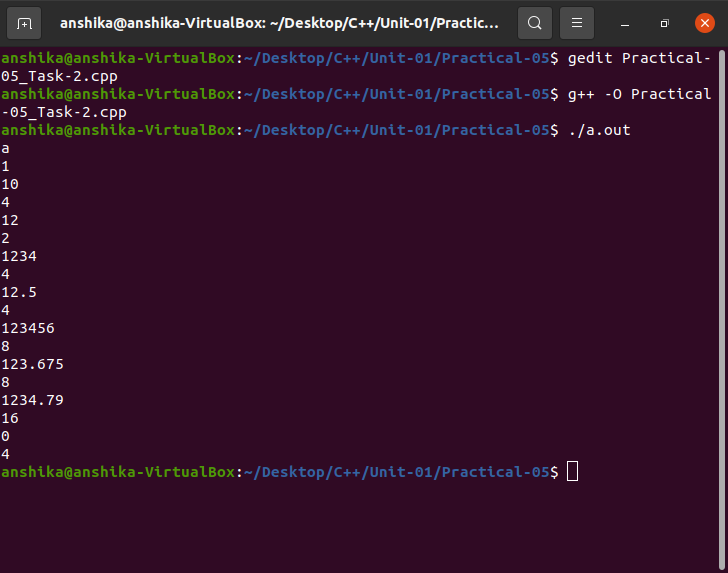
|  |
| --- |
| func8(); |
|  |

|  |
| --- |
| func9(); |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 6**

**Task 1 :**

**Source Code:**

#include <iostream>

using namespace std;

int main()

{

  int i1 = 5, i2 = 10;

  float f1 = 4.7, f2 = 8.56;

  string s1 = "Anshika ", s2 = "Maheshwari";

  cout<< "int + int " << i1 + i2 <<endl;

  cout<< "float + float " << f1 + f2 <<endl;

  cout<< "string + string " << s1 + s2 <<endl;

  cout<< "int + float " << i1 + f1 <<endl;

  cout<< "string + int" << s1 + i1 <<endl;

  return 0;

}

**Output**

Text

Description automatically generated

|  |
| --- |
|  |
|  |

**Program 6**

**Task 2 :**

**Source Code:**

|  |
| --- |
| #include<bits/stdc++.h> |
|  |

|  |
| --- |
| #include<string> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| string a; |
|  |

|  |
| --- |
| int n=5; |
|  |

|  |
| --- |
| cout<<"Enter a string : "; |
|  |

|  |
| --- |
| getline(cin,a); |
|  |

|  |
| --- |
| cout<<"\n"; |
|  |

|  |
| --- |
| int i,j,flag=0; |
|  |

|  |
| --- |
| for(i=0;i<n/2;i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| if(a[i]!=a[n-1-i]) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cout<<"The entered string is not a Palindrome!"; |
|  |

|  |
| --- |
| exit(0); |
|  |

|  |
| --- |
| } |
|  |

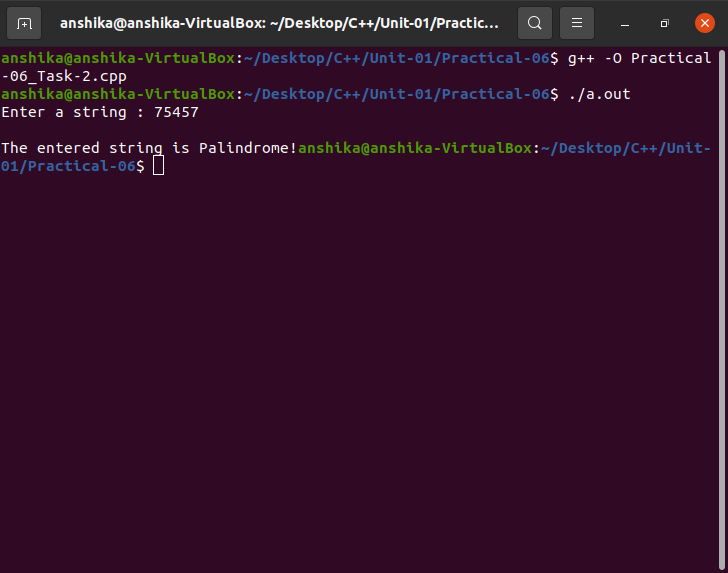
|  |
| --- |
| } |
|  |

|  |
| --- |
| cout<<"The entered string is Palindrome!"; |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 6**

**Task 3 :**

**Source Code:**

|  |
| --- |
| #include<bits/stdc++.h> |
|  |

|  |
| --- |
| #include<string> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| string str1; |
|  |

|  |
| --- |
| int j,i,n; |
|  |

|  |
| --- |
| cout<<"Enter your string : "; |
|  |

|  |
| --- |
| getline(cin,str1); |
|  |

|  |
| --- |
| cout<<"\n"; |
|  |

|  |
| --- |
| n=str1.length(); |
|  |

|  |
| --- |
| cout<<"The reverse of string entered is : \t"; |
|  |

|  |
| --- |
| for(i=n-1;i>=0;i--) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cout<<str1[i]; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
|  |
|  |

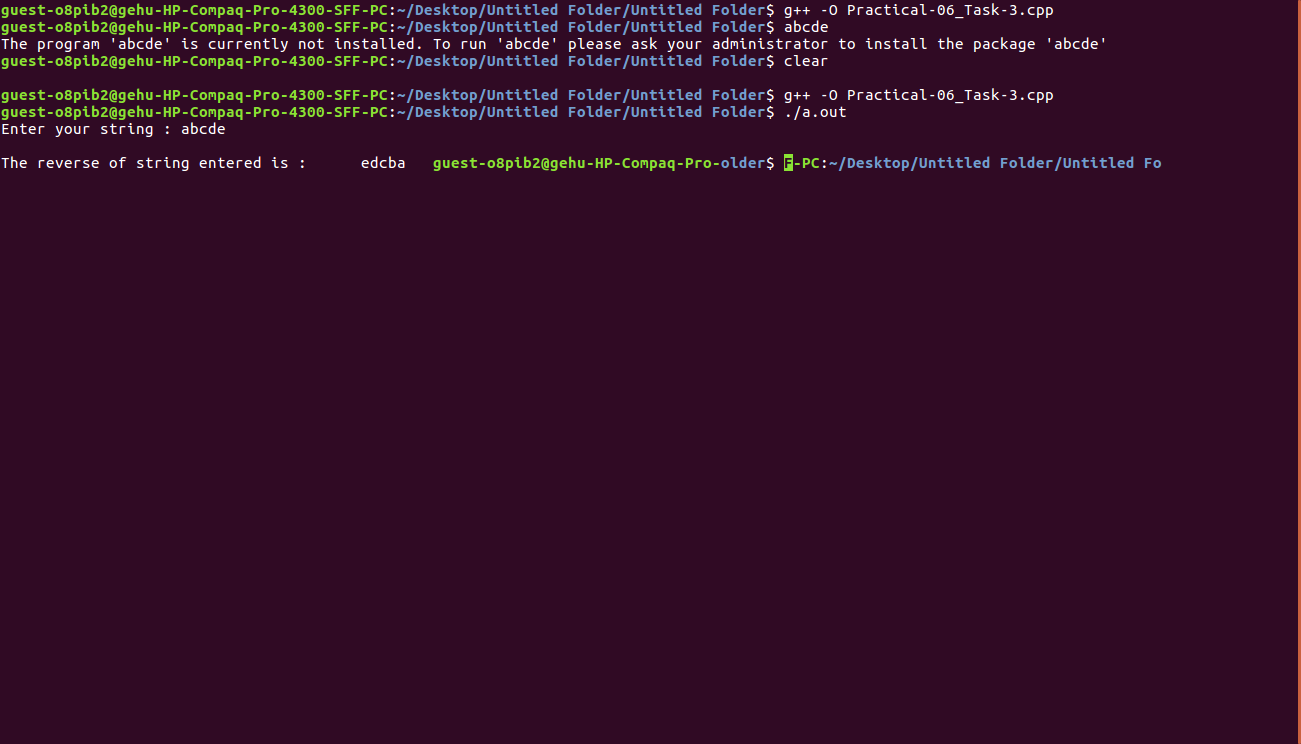
|  |
| --- |
| cout<<"\t"; |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 6**

**Task 4 :**

**Source Code:**

|  |
| --- |
| #include<bits/stdc++.h> |
|  |

|  |
| --- |
| #include<string> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { string str1; |
|  |

|  |
| --- |
| string str2; |
|  |

|  |
| --- |
| int i; |
|  |

|  |
| --- |
| cout<<"Enter string 1 : "; |
|  |

|  |
| --- |
| getline(cin,str1); |
|  |

|  |
| --- |
| cout<<"Enter string 2 : "; |
|  |

|  |
| --- |
| getline(cin,str2); |
|  |

|  |
| --- |
| cout<<"\n\n"; |
|  |

|  |
| --- |
| int n1=str1.length(); |
|  |

|  |
| --- |
| int n2=str2.length(); |
|  |

|  |
| --- |
| if(n1!=n2){ |
|  |

|  |
| --- |
| cout<<"Strings are not equal !\n"; |
|  |

|  |
| --- |
| exit(0); |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| for(i=0;i<n1;i++){ |
|  |

|  |
| --- |
| if(str1[i]!=str2[i]){ |
|  |

|  |
| --- |
| cout<<"Strings are not equal !\n"; |
|  |

|  |
| --- |
| exit(0); |
|  |

|  |
| --- |
| } |
|  |

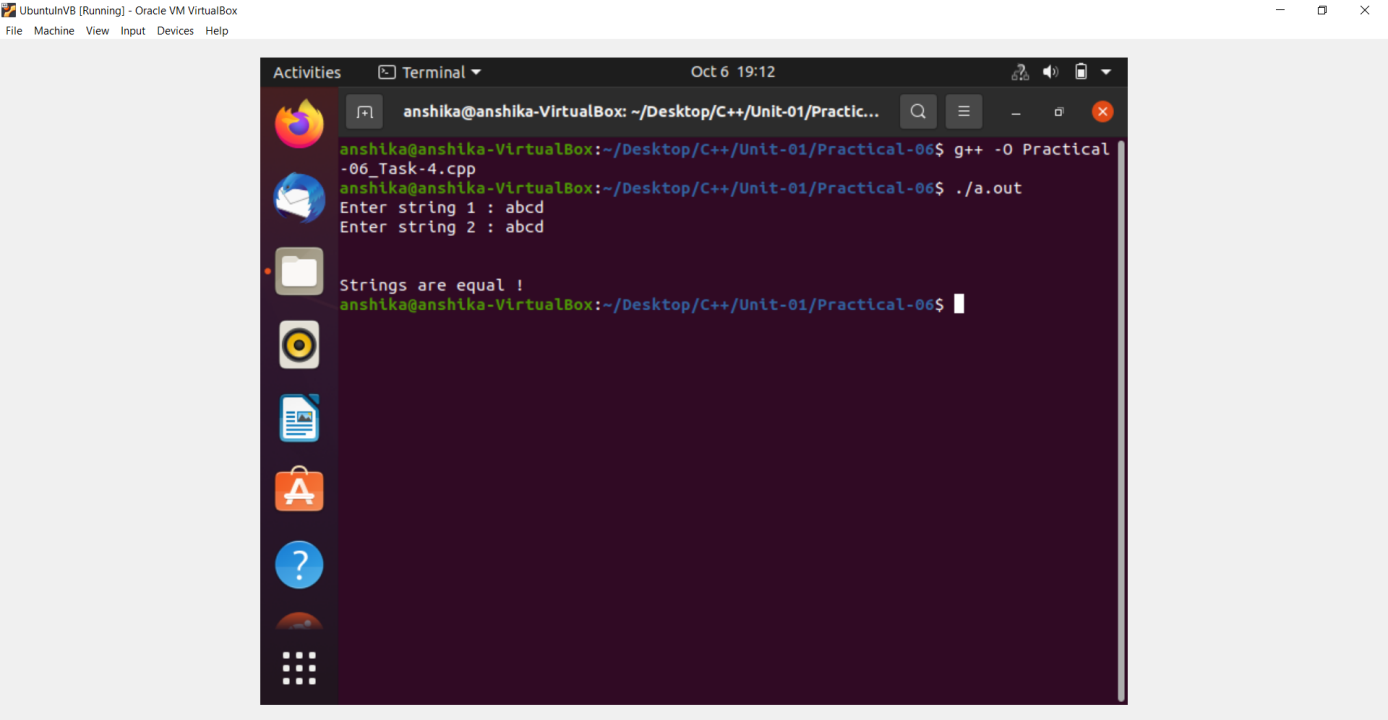
|  |
| --- |
| } |
|  |

|  |
| --- |
| cout<<"Strings are equal !\n"; |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 6**

**Task 5 :**

**Source Code:**

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| #include<string.h> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| int main(){ |
|  |

|  |
| --- |
| string s1 = "abc"; |
|  |

|  |
| --- |
| string s2 = "ABC"; |
|  |

|  |
| --- |
| int x = s1.compare(s2); |
|  |

|  |
| --- |
| if(x == 0) |
|  |

|  |
| --- |
| cout << "The two strings are equal" << endl; |
|  |

|  |
| --- |
| else if(x < 0) |
|  |

|  |
| --- |
| cout << s1 << " is less than " << s2 << endl; |
|  |

|  |
| --- |
| else |
|  |

|  |
| --- |
| cout << s1 << " is greater than " << s2 << endl; |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**

**Graphical user interface, text, application

Description automatically generated**

**Program 6**

**Task 6 :**

**Source Code:**

|  |
| --- |
| #include<bits/stdc++.h> |
|  |

|  |
| --- |
| #include<string> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| string str1; |
|  |

|  |
| --- |
| cout<<"Enter a string : "; |
|  |

|  |
| --- |
| getline(cin,str1); |
|  |

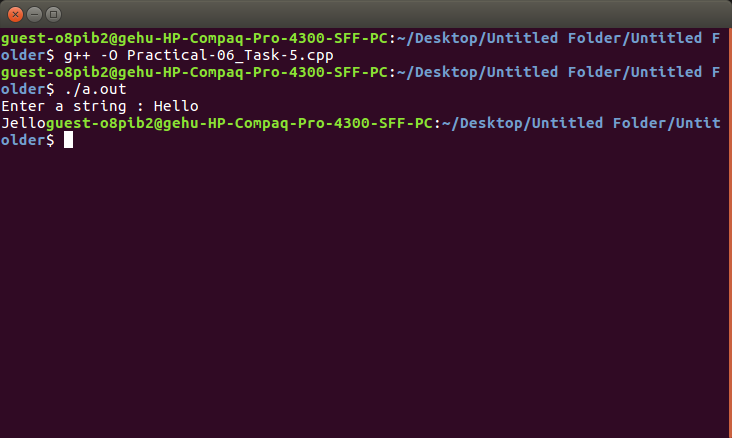
|  |
| --- |
| str1[0]='J'; |
|  |

|  |
| --- |
| cout<<str1; |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 7**

**Task 1 :**

**Source Code:**

|  |
| --- |
|  |
|  |

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| #include<stdlib.h> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int choice; |
|  |

|  |
| --- |
| cout<<"1. Current Year \t\t2.Current Month \t\t3. Current Date \t\t4.Exit\n"; |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| while(1) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cout<<"Enter your choice : "; |
|  |

|  |
| --- |
| cin>>choice; |
|  |

|  |
| --- |
| switch(choice) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| case 1: cout<<"\n"<<"Current Year : 2021\n"; |
|  |

|  |
| --- |
| break; |
|  |

|  |
| --- |
| case 2: cout<<"\n"<<"Current Month : October\n"; |
|  |

|  |
| --- |
| break; |
|  |

|  |
| --- |
| case 3: cout<<"\n"<<"Current Date : 13-10-2021\n"; |
|  |

|  |
| --- |
| break; |
|  |

|  |
| --- |
| case 4: exit(0); |
|  |

|  |
| --- |
| break; |
|  |

|  |
| --- |
| default:cout<<"Choice Invalid !\n"; |
|  |

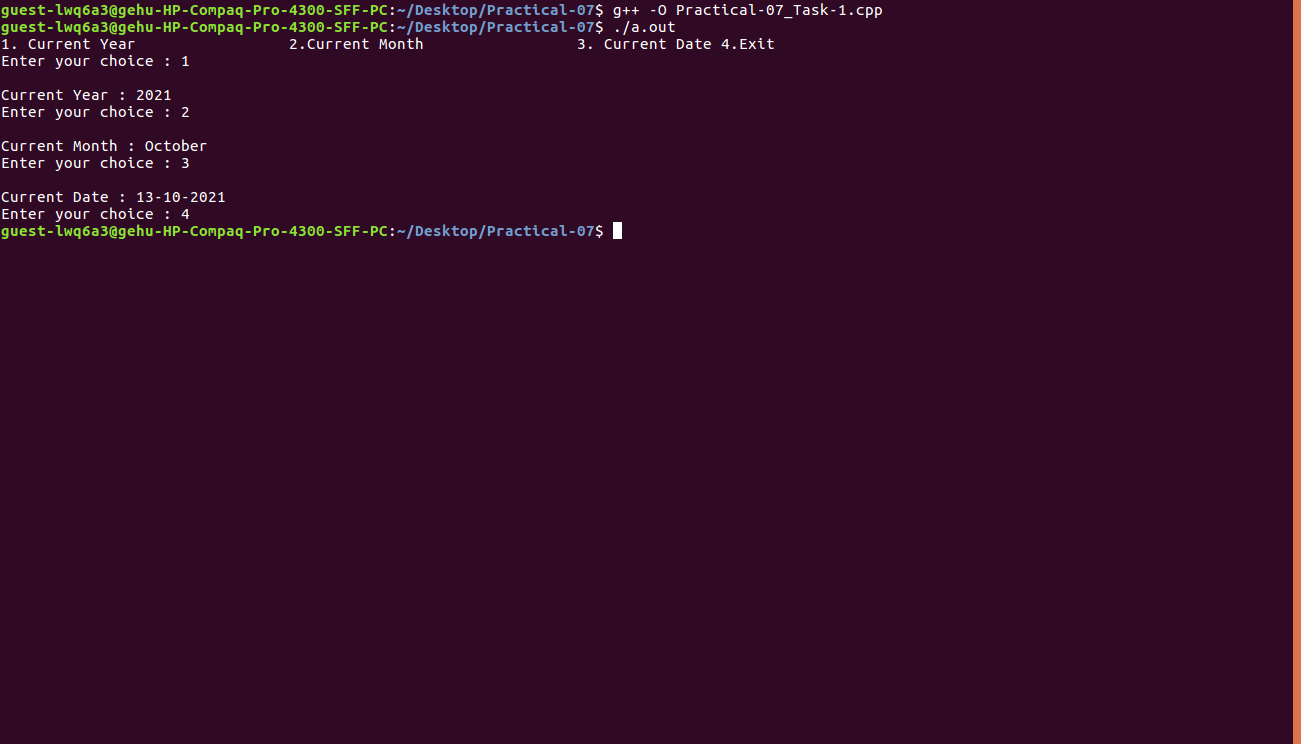
|  |
| --- |
| } |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 7**

**Task 2 :**

**Source Code:**

|  |
| --- |
|  |
|  |

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| #include<stdlib.h> |
|  |

|  |
| --- |
| #include<ctime> |
|  |

|  |
| --- |
| #include<string> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| int main(){ |
|  |

|  |
| --- |
| int choice; |
|  |

|  |
| --- |
| time\_t curtime=time(0); |
|  |

|  |
| --- |
| string dt =ctime(&curtime); |
|  |

|  |
| --- |
| cout << "Current time =" << dt; |
|  |

|  |
| --- |
| while(1){ |
|  |

|  |
| --- |
| cout<< "1. Current Year\n" << "2.Current Month\n" << "3. Day\n"<<"4. Exit\n"<<"\nEnter Your Choice \n"; |
|  |

|  |
| --- |
| cin>>choice; |
|  |

|  |
| --- |
| switch(choice){ |
|  |

|  |
| --- |
| case 1: cout<<dt.substr(20,4)<<endl; |
|  |

|  |
| --- |
| break; |
|  |

|  |
| --- |
| case 2: cout<<dt.substr(4,3)<<endl; |
|  |

|  |
| --- |
| break; |
|  |

|  |
| --- |
| case 3: cout<<dt.substr(0,3)<<endl; |
|  |

|  |
| --- |
| break; |
|  |

|  |
| --- |
| case 4: cout<<"Exiting"<<endl; |
|  |

|  |
| --- |
| exit(0); |
|  |

|  |
| --- |
| default:cout<<"try again with correct choice\n"; |
|  |

|  |
| --- |
| break; |
|  |

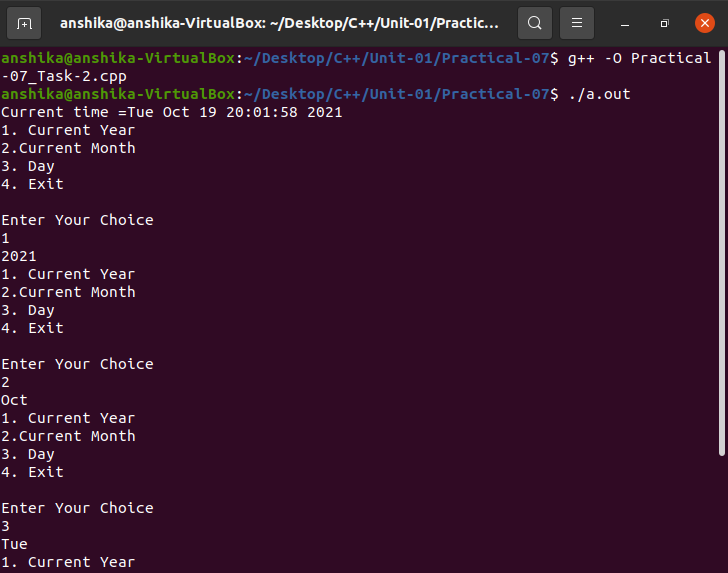
|  |
| --- |
| } |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 7**

**Task 3 v1 :**

**Source Code:**

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int arr[3][3],j,n,i; |
|  |

|  |
| --- |
| cout<<"Enter the value of n : "; |
|  |

|  |
| --- |
| cin>>n; |
|  |

|  |
| --- |
| cout<<"Enter 2D Matrix"<<"\n"; |
|  |

|  |
| --- |
| for(i=0;i<n;i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(j=0;j<n;j++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cin>>arr[i][j]; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| cout<<"\nResultant matrix : \n"; |
|  |

|  |
| --- |
| for(i=n-1;i>=0;i--) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(j=n-1;j>=0;j--) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cout<<arr[i][j]<<" "; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| cout<<"\n"; |
|  |

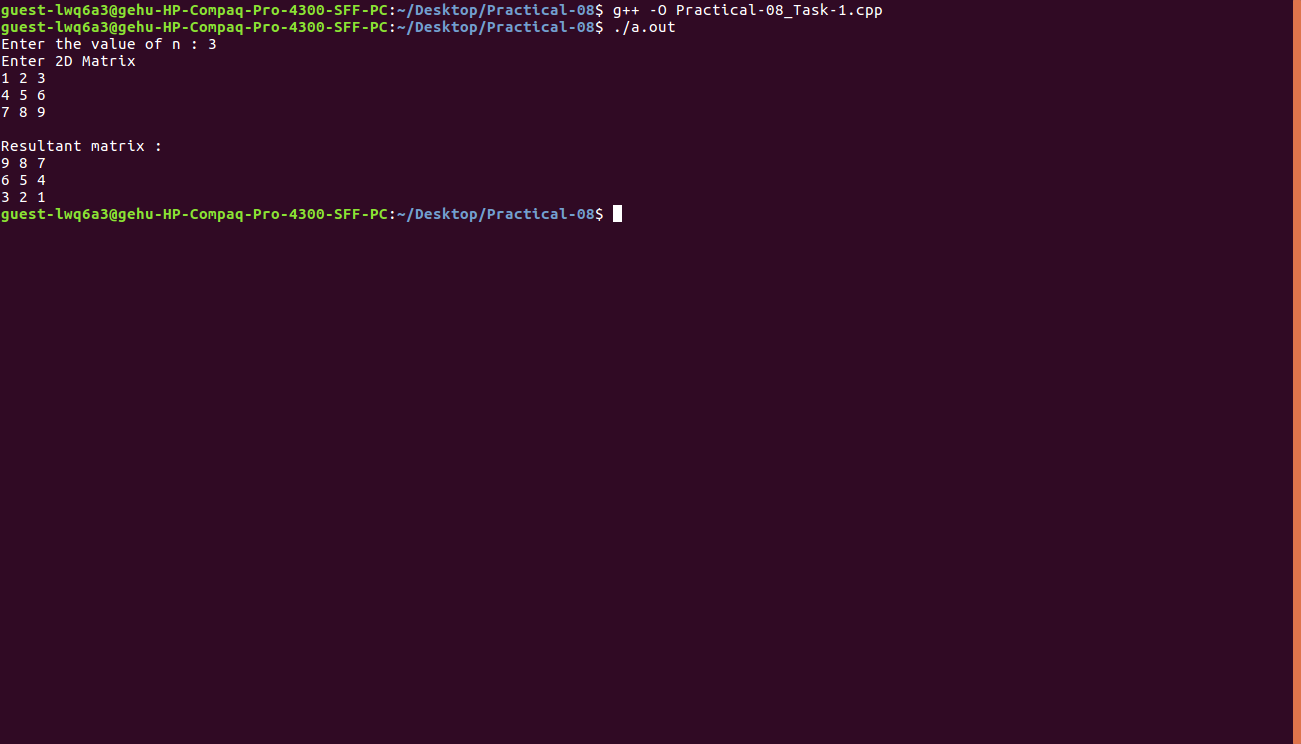
|  |
| --- |
| } |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 7**

**Task 3 v2 :**

**Source Code:**

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int arr[3][3],j,n,i; |
|  |

|  |
| --- |
| cout<<"Enter the value of n : "; |
|  |

|  |
| --- |
| cin>>n; |
|  |

|  |
| --- |
| cout<<"Enter 2D Matrix"<<"\n"; |
|  |

|  |
| --- |
| for(i=0;i<n;i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(j=0;j<n;j++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cin>>arr[i][j]; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| cout<<"\nResultant matrix : \n"; |
|  |

|  |
| --- |
| for(i=0;i<n;i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(j=0;j<n;j++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cout<<10-arr[i][j]<<" "; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| cout<<"\n"; |
|  |

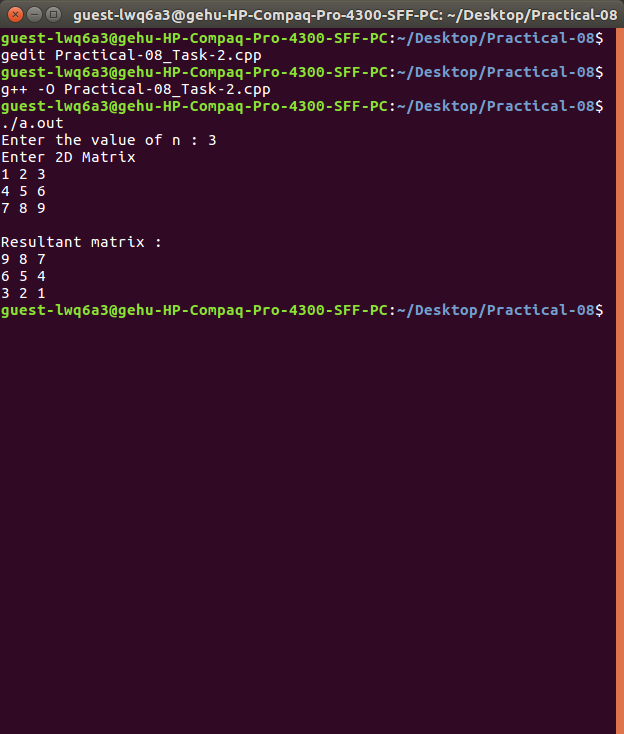
|  |
| --- |
| } |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 7**

**Task 3 v3 :**

**Source Code:**

#include <iostream>

using namespace std;

int main()

{

int N = 3;

int arr[N][N];

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

for(int j = 0 ; j < N ; j++)

cin>>arr[i][j];

}

int i = 0, k = N-1;

while(i<= k){

for(int j = 0 ; j < N ; j++){

swap(arr[i][j],arr[k][j]);

}i++;

k--;

}

int y = 0, z = N-1;

while(y <= z){

for(int x = 0 ; x < N ; x++){

swap(arr[x][y],arr[x][z]);

}y++;

z--;

} cout<< "\nFinal array : " <<endl;

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

for(int j = 0 ; j < N ; j++)

cout<<arr[i][j] << " ";

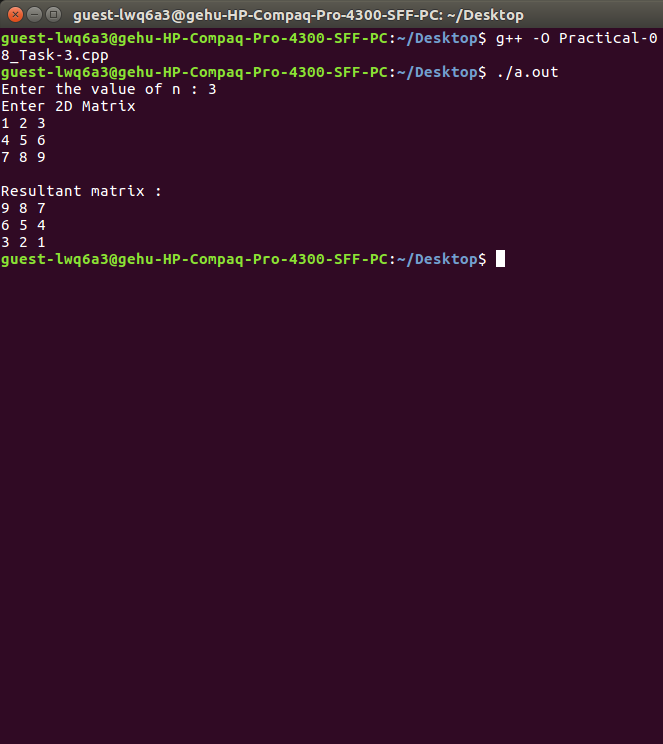
cout<< "\n";

}

return 0;

}

**Output**



**Program 7**

**Task 3 v4 :**

**Source Code:**

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int arr[3][3],j,n,i; |
|  |

|  |
| --- |
| cout<<"Enter the value of n : "; |
|  |

|  |
| --- |
| cin>>n; |
|  |

|  |
| --- |
| cout<<"Enter 2D Matrix"<<"\n"; |
|  |

|  |
| --- |
| for(i=0;i<n;i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(j=0;j<n;j++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cin>>arr[i][j]; |
|  |

|  |
| --- |
| arr[i][j]=10-arr[i][j]; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| cout<<"\nResultant matrix : \n"; |
|  |

|  |
| --- |
| for(i=0;i<n;i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(j=0;j<n;j++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cout<<arr[i][j]<<" "; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| cout<<"\n"; |
|  |

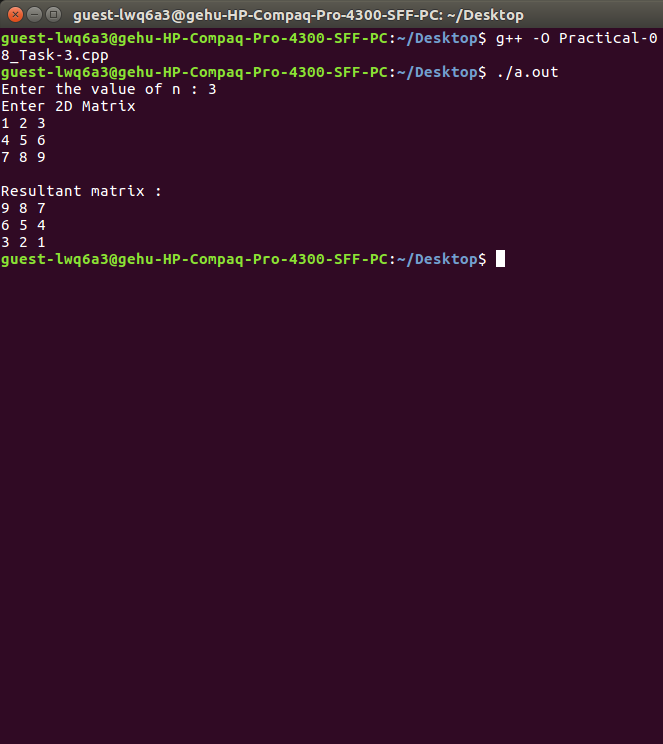
|  |
| --- |
| } |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**

****

**Program 7**

**Task 4 v1 :**

**Source Code:**

|  |
| --- |
|  |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int i,j,n,arr[3][3]; |
|  |

|  |
| --- |
| cout<<"Enter the value of n : "; |
|  |

|  |
| --- |
| cin>>n; |
|  |

|  |
| --- |
| for(i=0;i<n;i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(j=0;j<n;j++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cin>>arr[i][j]; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| for(i=0;i<n;i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(j=0;j<n;j++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cout<<i+1; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| cout<<"\n"; |
|  |

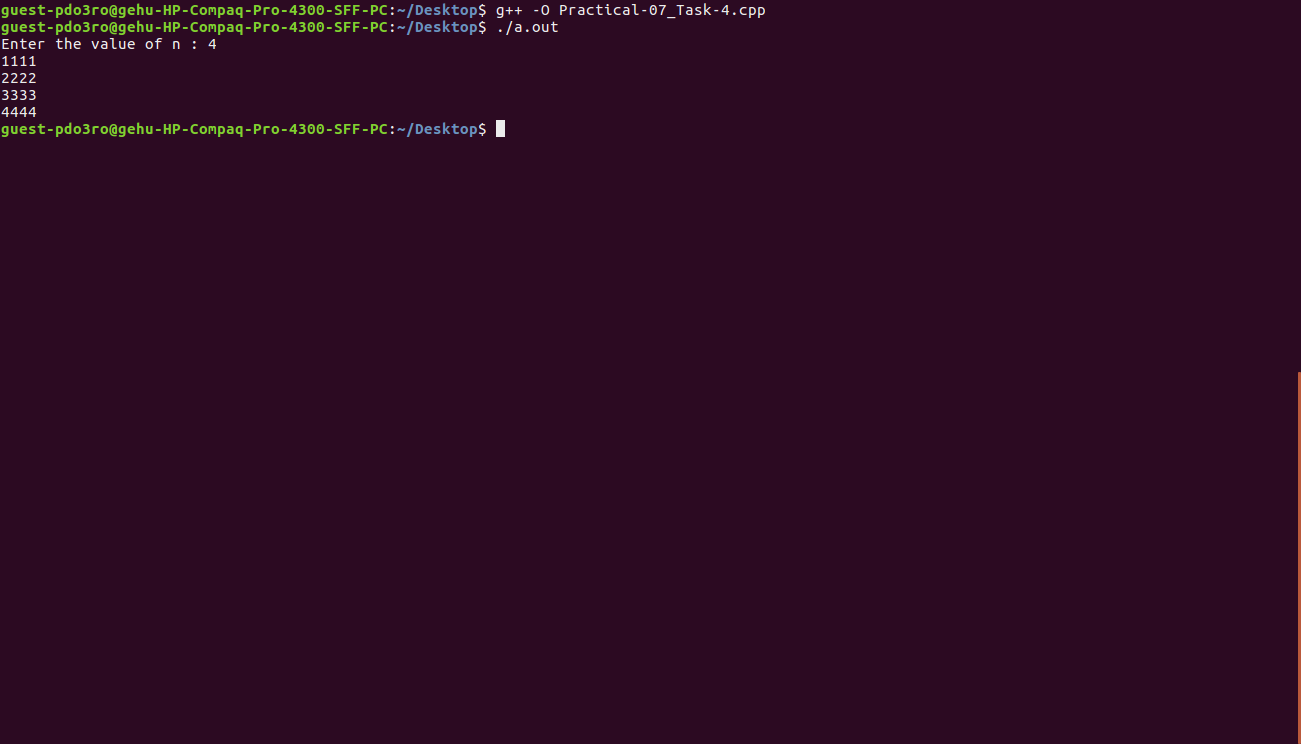
|  |
| --- |
| } |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 7**

**Task 4 v2 :**

**Source Code:**

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int arr[3][3]; |
|  |

|  |
| --- |
| int i,j,n; |
|  |

|  |
| --- |
| cout<<"Enter the value of n : "; |
|  |

|  |
| --- |
| cin>>n; |
|  |

|  |
| --- |
| for(i=0;i<n;i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(j=0;j<n;j++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cin>>arr[i][j]; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| cout<<"\nOutput : \n"; |
|  |

|  |
| --- |
| for(i=0;i<n;i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(j=0;j<n;j++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cout<<arr[i][n-1]/3<<" "; |
|  |

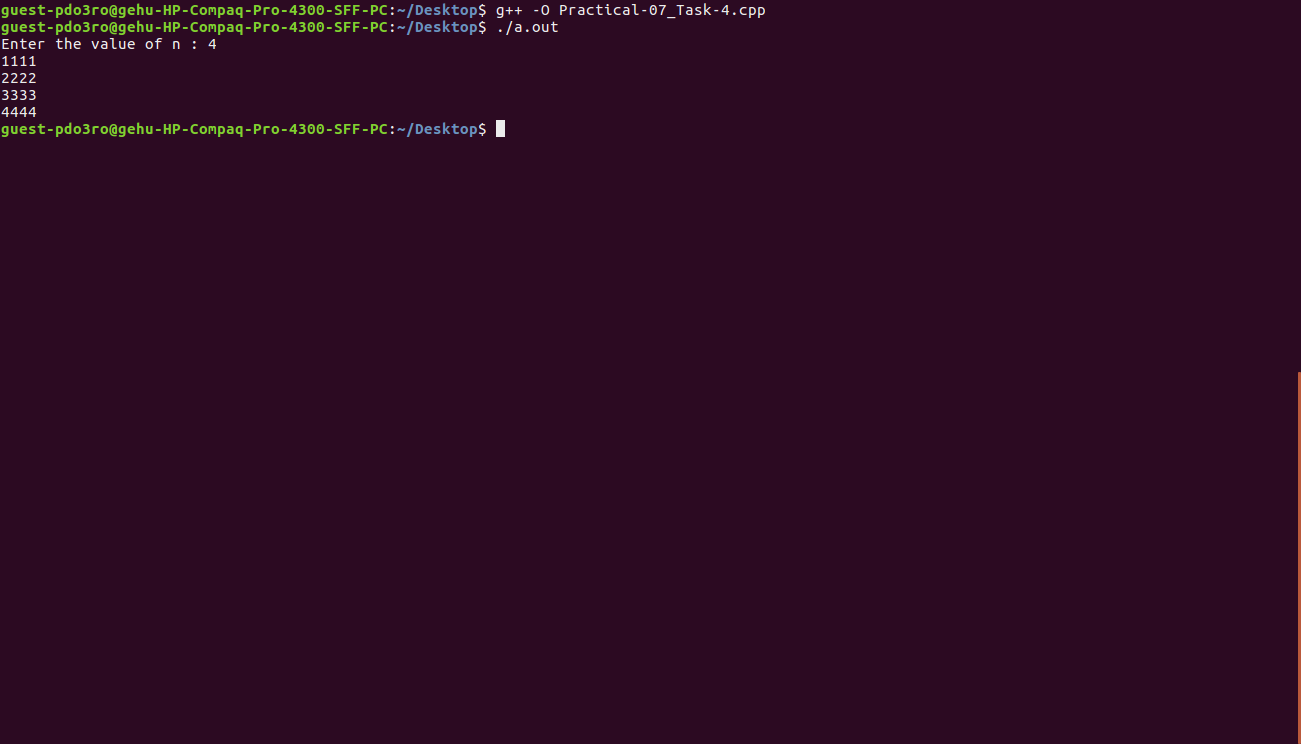
|  |
| --- |
| } |
|  |

|  |
| --- |
| cout<<"\n"; |
|  |

|  |
| --- |
| } |
|  |

}

**Output**

****

**Program 7**

**Task 4 v3 :**

**Source Code:**

|  |
| --- |
|  |
|  |

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int N; |
|  |

|  |
| --- |
| cout<<"Enter the value of N : "; |
|  |

|  |
| --- |
| cin>>N; |
|  |

|  |
| --- |
| int arr[N][N]; |
|  |

|  |
| --- |
| for(int i = 0 ; i < N ; i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(int j = 0 ; j < N ; j++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cin >> arr[i][j]; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| for(int i = 0 ; i <= N ; i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(int j = 0 ; j <= N ; j++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| arr[i][j] = ((j\*10+i)%10)+1; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| cout << "\nResultant array : " << endl; |
|  |

|  |
| --- |
| for(int i = 0 ; i < N ; i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(int j = 0 ; j < N ; j++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cout << arr[i][j] << " "; |
|  |

|  |
| --- |
| } |
|  |

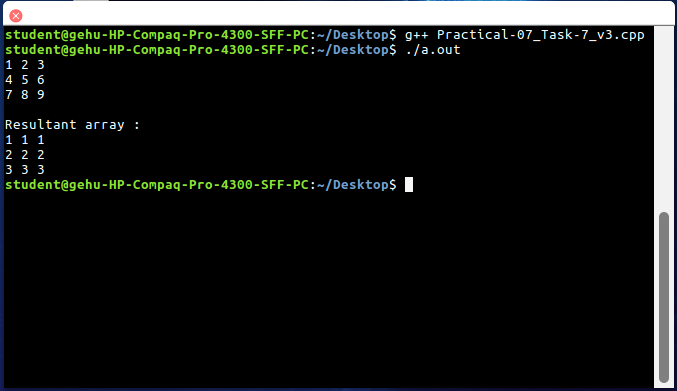
|  |
| --- |
| cout << "\n"; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 7**

**Task 5 :**

**Source Code:**

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int i,j,n; |
|  |

|  |
| --- |
| cout<<"Enter the value of n : "; |
|  |

|  |
| --- |
| cin>>n; |
|  |

|  |
| --- |
| for(i=0;i<n;i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(j=0;j<=i;j++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cout<<"\*"<<" "; |
|  |

|  |
| --- |
| } |
|  |

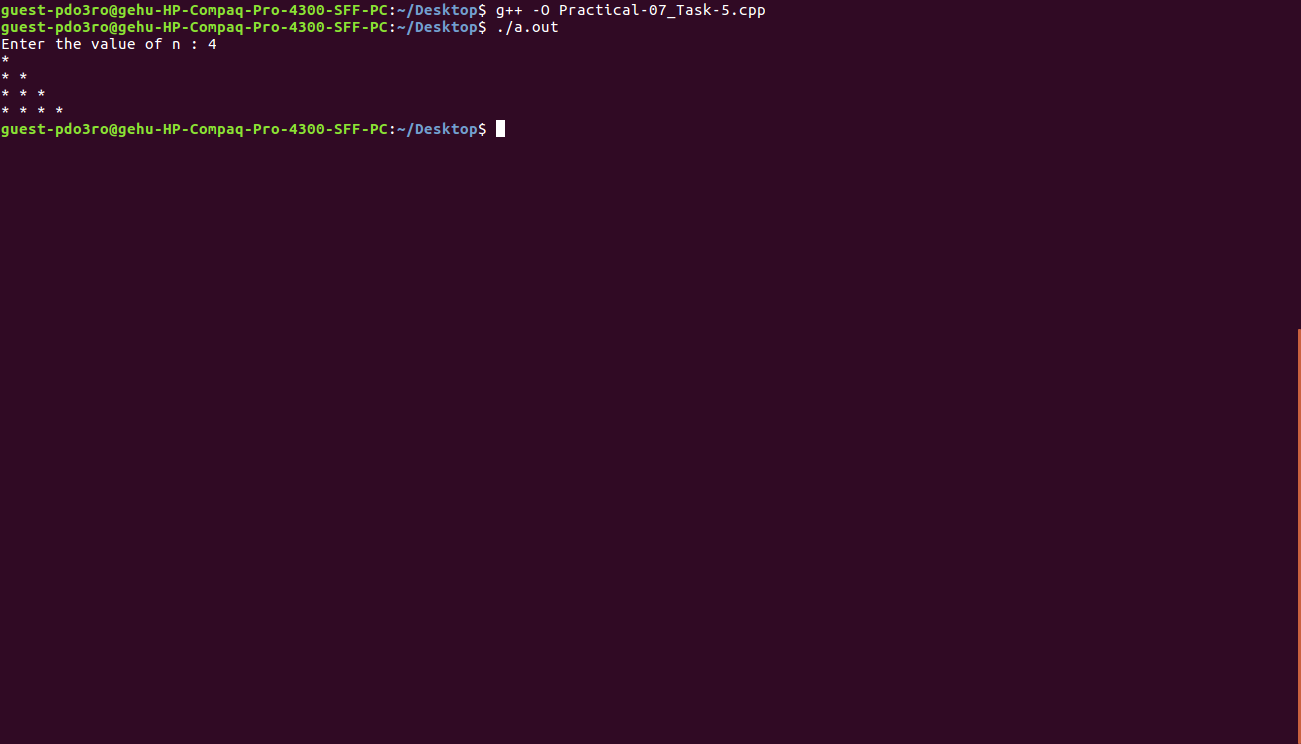
|  |
| --- |
| cout<<"\n"; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 7**

**Task 6 :**

**Source Code:**

|  |
| --- |
|  |
|  |

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int i,j,n; |
|  |

|  |
| --- |
| char arr[n][n]; |
|  |

|  |
| --- |
| cout<<"Enter the value of n : "; |
|  |

|  |
| --- |
| cin>>n; |
|  |

|  |
| --- |
| for(j=n-1;j>=0;j--) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(i=0;i<=j;i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| cout<<"\* "; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| cout<<"\n"; |
|  |

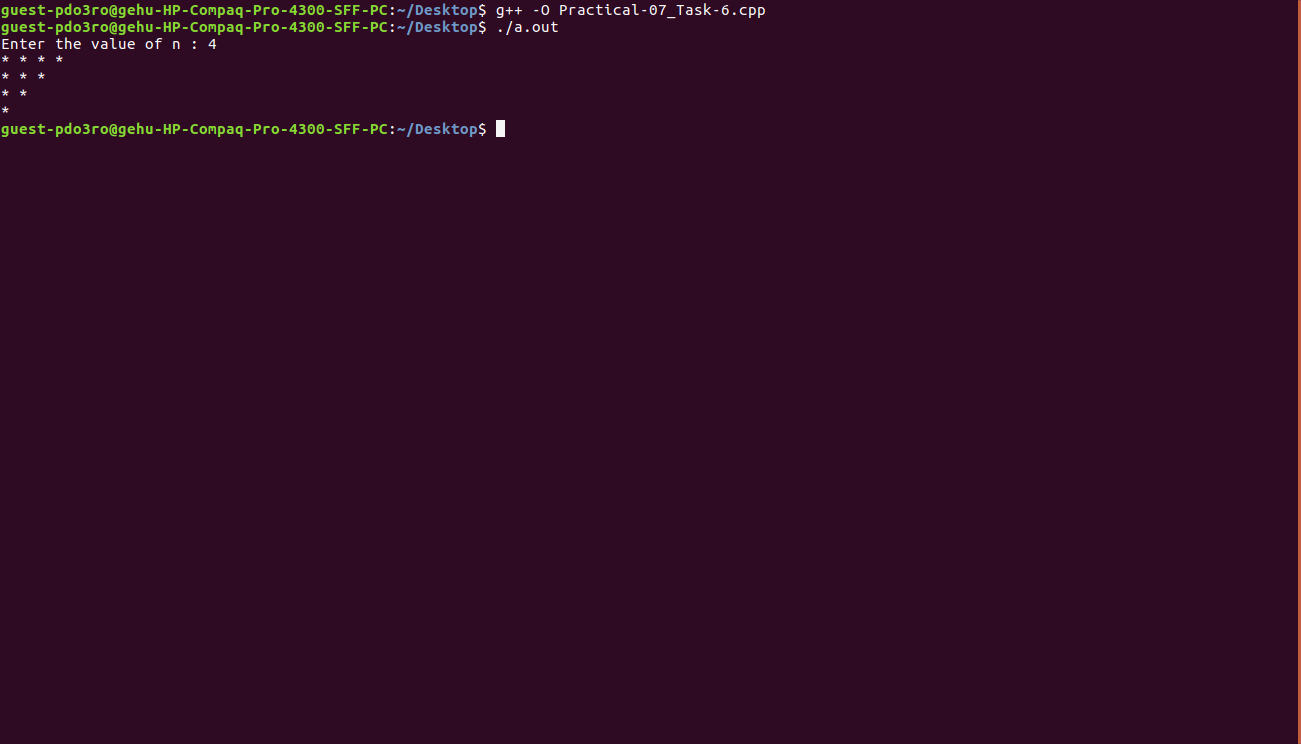
|  |
| --- |
| } |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 7**

**Task 7 :**

**Source Code:**

|  |
| --- |
|  |
|  |

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int i,j,n; |
|  |

|  |
| --- |
| cout<<"Enter the value of n :"; |
|  |

|  |
| --- |
| cin >> n; |
|  |

|  |
| --- |
| for(i=0;i<n;i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(j=0;j<n;j++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int sum = i + j; |
|  |

|  |
| --- |
| if(sum>=n-1) |
|  |

|  |
| --- |
| cout<<"\*"; |
|  |

|  |
| --- |
| else |
|  |

|  |
| --- |
| cout<<" "; |
|  |

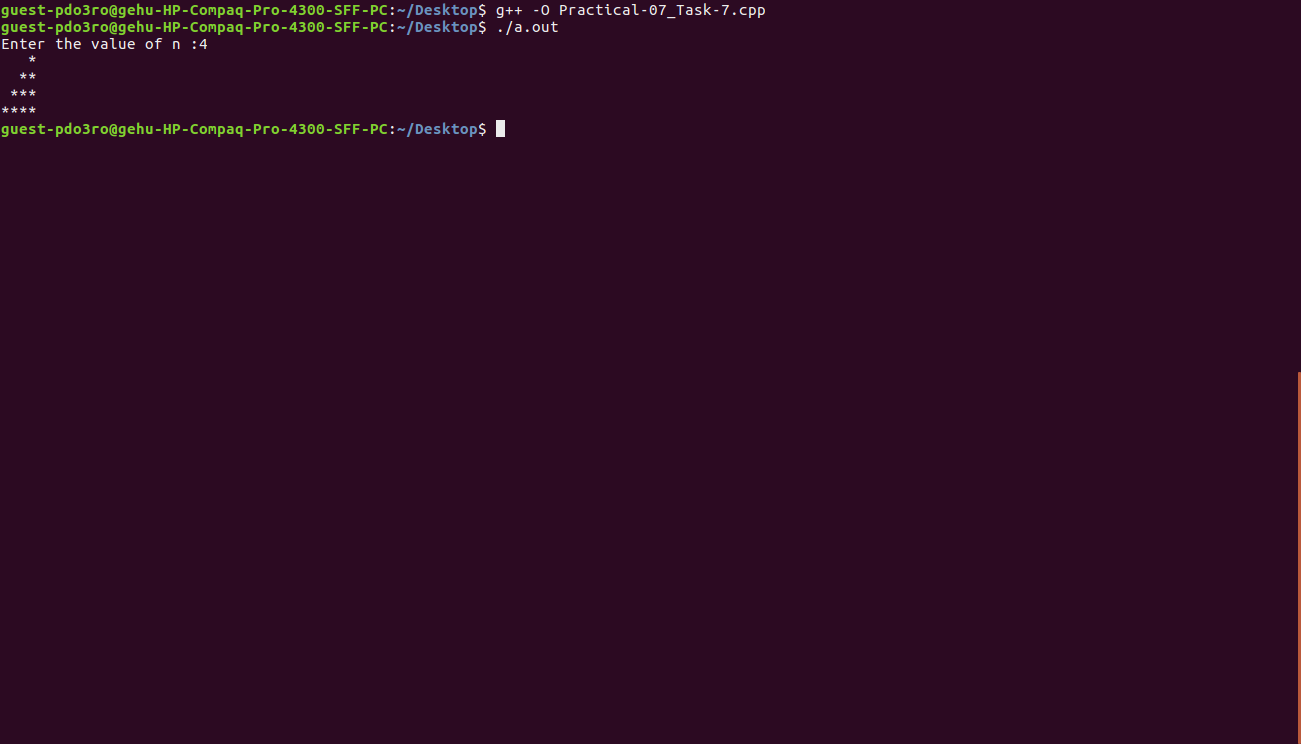
|  |
| --- |
| }cout<<"\n"; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



|  |
| --- |
|  |
|  |

|  |
| --- |
| **Program 7**  **Task 8 :**  **Source Code:**  #include<iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int i,j,n; |
|  |

|  |
| --- |
| cout<<"Enter the value of n :"; |
|  |

|  |
| --- |
| cin >> n; |
|  |

|  |
| --- |
| for(i=0;i<n;i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| for(j=0;j<n;j++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int sum = i + j; |
|  |

|  |
| --- |
| if(sum<=n-1) |
|  |

|  |
| --- |
| cout<<"\*"; |
|  |

|  |
| --- |
| else |
|  |

|  |
| --- |
| cout<<" "; |
|  |

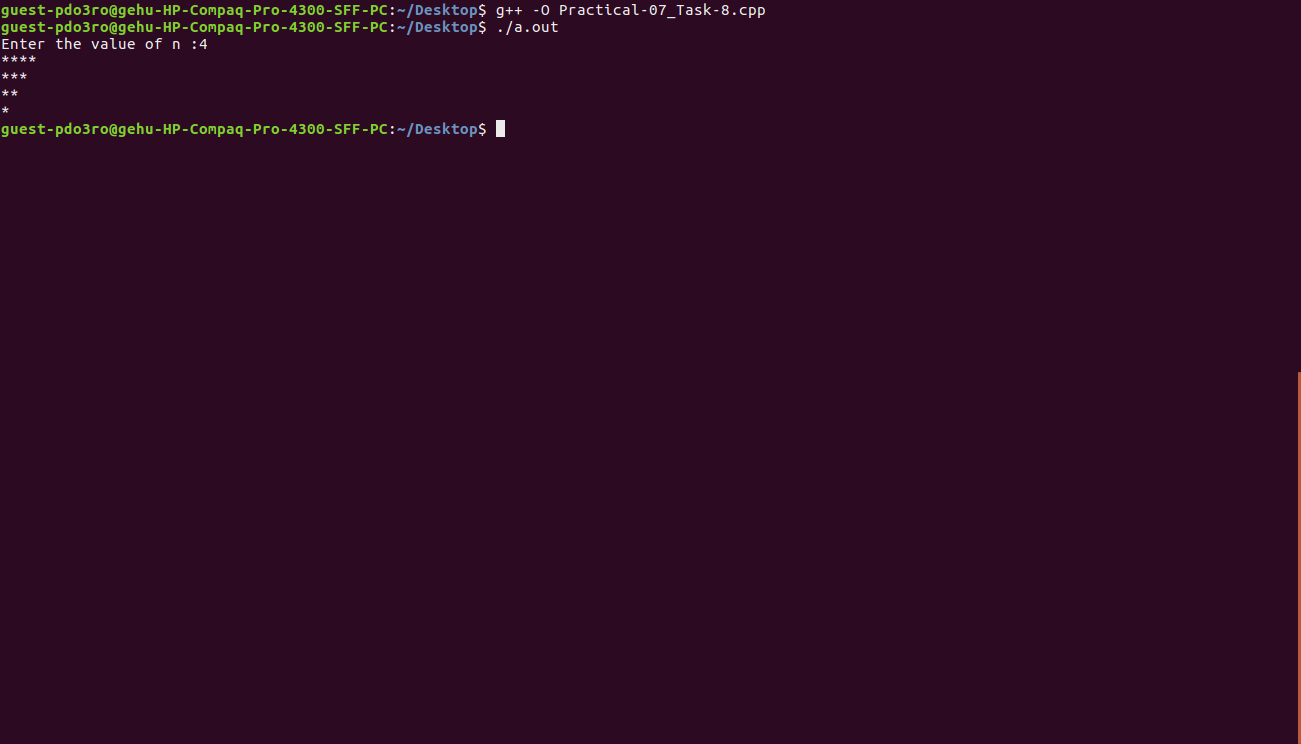
|  |
| --- |
| }cout<<"\n"; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 8**

**Task 1 :**

**Source Code:**

**Task 1:**

**Source Code:**

#include<iostream>

using namespace std;

int main(){

int \*p={10,20,30};

cout<<\*p<<" " ;

p++;

cout<<\*p;

return 0;

}

**Output**

**A screenshot of a computer

Description automatically generated**

**Program 8**

**Task 2:**

**Source Code:**

**Program 8**

**Task 3:**

**Source Code:**

#include <iostream>

using namespace std;

int main()

{

int a = 10;

int \*p = &a;

int \*\*q = &p;

cout<< a << " ";

\*p = 20;

cout<< \*p << " ";

\*\*q = 30;

cout<< \*\*q <<endl;

return 0;

}

**Output**

**A screenshot of a computer

Description automatically generated**

|  |
| --- |
| **Program 8**  **Task 4 :**  **Source Code:**  #include<iostream> |
|  |

|  |
| --- |
| #include<bits/stdc++.h> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| long int fact(int n) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| long ans = 1; |
|  |

|  |
| --- |
| for(int i = 1 ; i <= n ; i++) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| ans\*=i; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| return ans; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int num; |
|  |

|  |
| --- |
| cout << "Enter the number : "<<endl; |
|  |

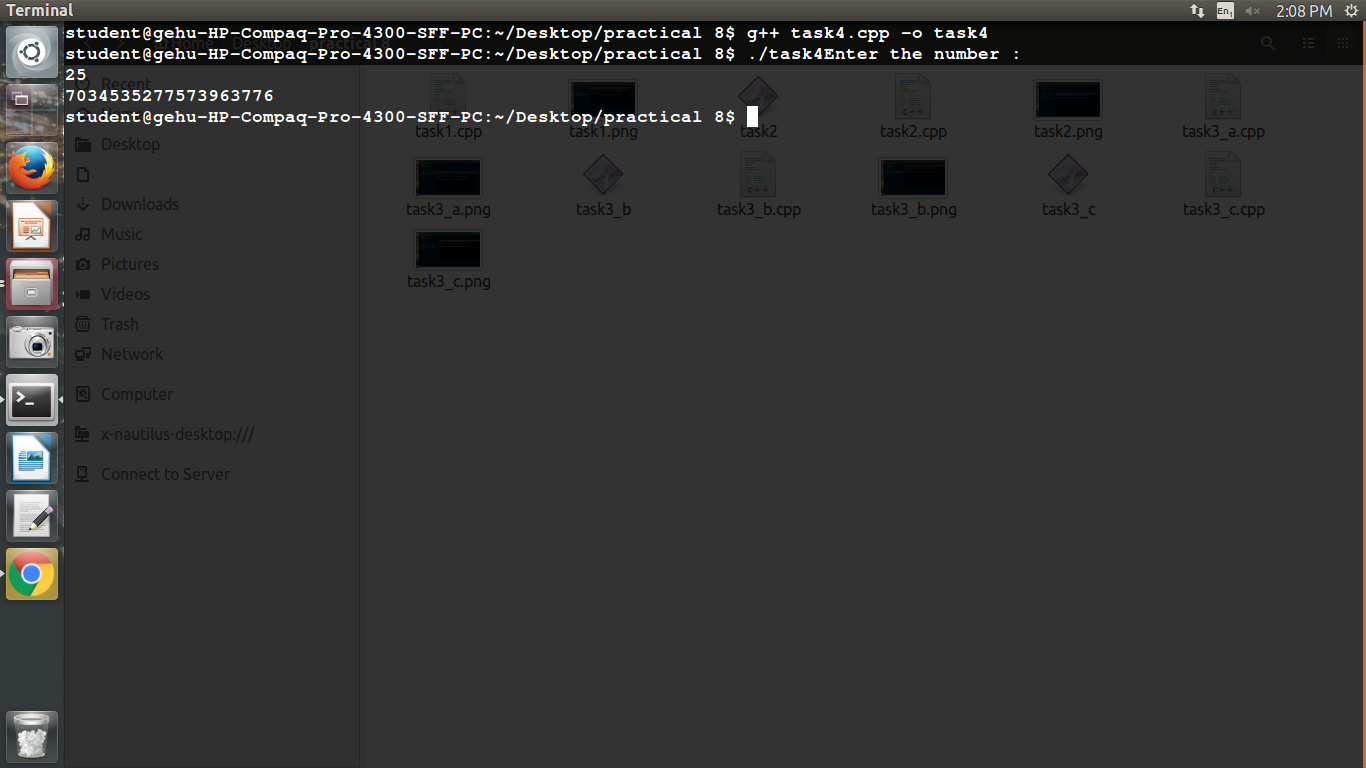
|  |
| --- |
| cin >> num; |
|  |

|  |
| --- |
| cout << fact(num) << endl; |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 8**

**Task 5 :**

**Source Code**

|  |
| --- |
| #include<iostream> |
|  |

|  |
| --- |
| #include<bits/stdc++.h> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| long int fact(int n) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| if(n==1)return n; |
|  |

|  |
| --- |
| return n\*fact(n-1); |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int num; |
|  |

|  |
| --- |
| cout << "Enter the number : "<<endl; |
|  |

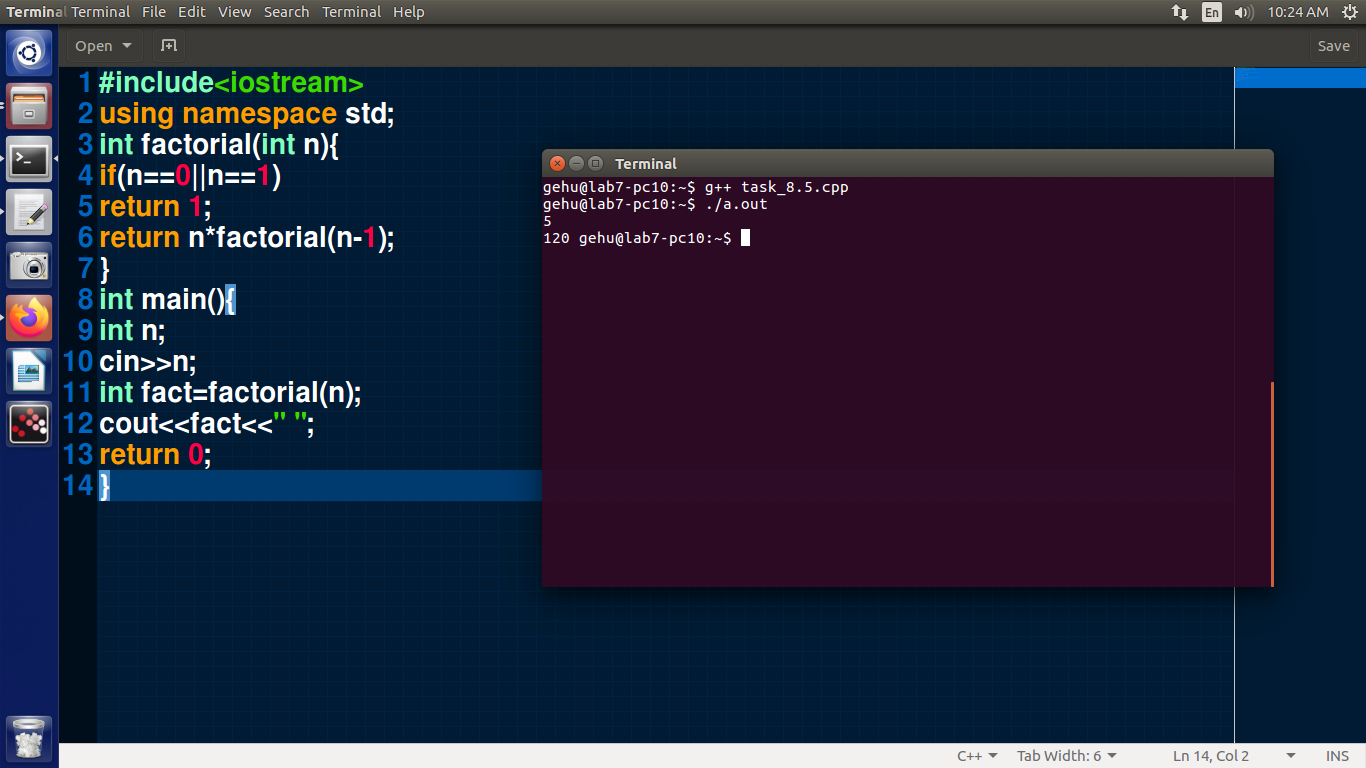
|  |
| --- |
| cin >> num; |
|  |

|  |
| --- |
| cout << fact(num) << endl; |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**

****

**Program 8**

**Task 6 :**

**Source Code**

|  |
| --- |
| #include <bits/stdc++.h> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| void seq(int n) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| if (n == 1) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| return; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| seq(n - 1); |
|  |

|  |
| --- |
| cout << n \* (pow(n - 1, n - 1) + n - 1) << " "; |
|  |

|  |
| --- |
| return; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int n; |
|  |

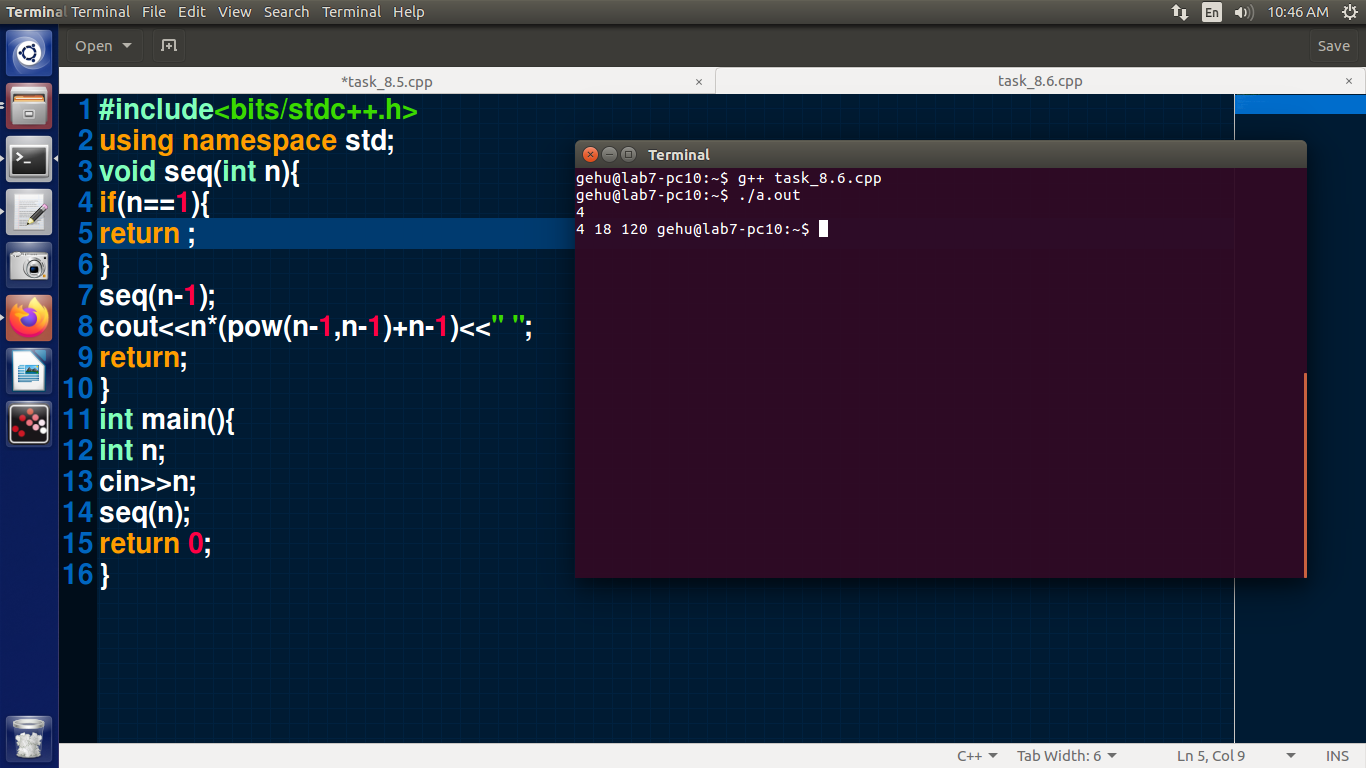
|  |
| --- |
| cin >> n; |
|  |

|  |
| --- |
| seq(n); |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 8**

**Task 7 v1 :**

**Source Code**

|  |
| --- |
| #include <iostream> |
|  |

|  |
| --- |
| using namespace std; |
|  |

|  |
| --- |
| void swap(int a, int b) |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int temp = a; |
|  |

|  |
| --- |
| a = b; |
|  |

|  |
| --- |
| b = temp; |
|  |

|  |
| --- |
| cout << "swap value in swap function " << a << " " << b << endl; |
|  |

|  |
| --- |
| } |
|  |

|  |
| --- |
| int main() |
|  |

|  |
| --- |
| { |
|  |

|  |
| --- |
| int a = 10; |
|  |

|  |
| --- |
| int b = 20; |
|  |

|  |
| --- |
| cout << "value before swap " << a << " " << b << endl; |
|  |

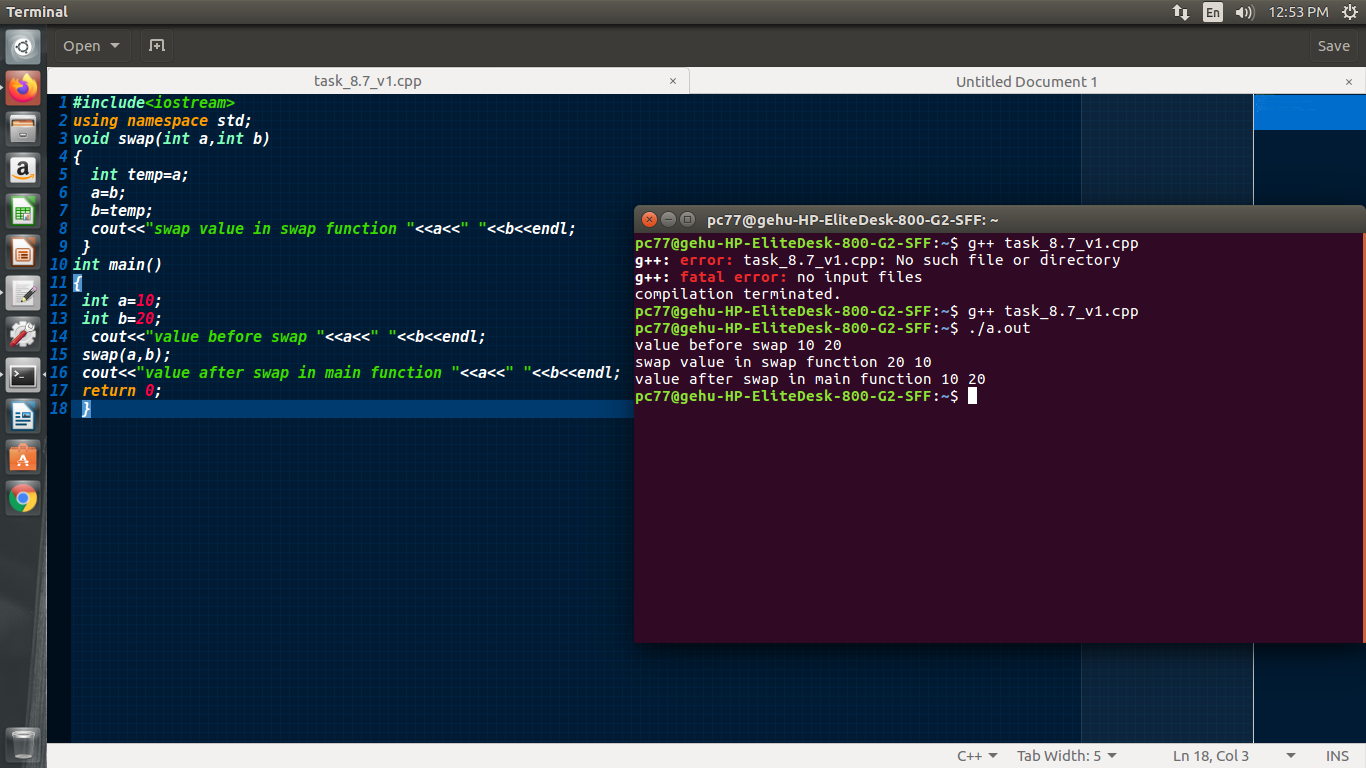
|  |
| --- |
| swap(a, b); |
|  |

|  |
| --- |
| cout << "value after swap in main function " << a << " " << b << endl; |
|  |

|  |
| --- |
| return 0; |
|  |

}

**Output**



**Program 8**

**Task 7 v2:**

**Source Code:**

#include <iostream>

using namespace std;

void swap(int &a, int &b)

{

int temp = a;

a = b;

b = temp;

cout<< "swap value in swap function " << a << " " << b <<endl;

}

int main()

{

int a = 10;

int b = 20;

cout<< "value before swap " << a << " " << b <<endl;

swap(a, b);

cout<< "value after swap in main function " << a << " " << b <<endl;

return 0;

}

**Output**

**A screenshot of a computer

Description automatically generated**

**Program 8**

**Task 7 v3:**

**Source Code:**

#include <iostream>

using namespace std;

void swap(int \*x, int \*y)

{

int temp = \*x;

\*x = \*y;

\*y = temp;

cout<< "swap value in swap function " << \*x << " " << \*y <<endl;

}

int main()

{

int a = 10;

int b = 20;

cout<< "value before swap " << a << " " << b <<endl;

swap(&a, &b);

cout<< "value after swap in main function " << a << " " << b <<endl;

return 0;

}

**Output**

**A screenshot of a computer

Description automatically generated**

**Program 9**

**Task 1 a:**

**Source Code:**

#include<iostream>

using namespace std;

class student{

public:

int roll\_no;

long int phone\_no;

string address;

};

int main(){

student Sam,John;

Sam.roll\_no=56;

Sam.phone\_no=847398573;

Sam.address="kedarpur lane no.4";

John.roll\_no=45;

John.phone\_no=9862396429;

John.address="mothrowala road dehradun";

cout<<"The details of Sam are :"<<" Roll no: "<<Sam.roll\_no<<" Phone no. : "<<Sam.phone\_no<<" Address : "<<Sam.address;

cout<<endl;

cout<<"The details of John are :"<<" Roll no: "<<John.roll\_no<<" Phone no. : "<<John.phone\_no<<" Address : "<<John.address;

}

**Output**

**Graphical user interface, text, application

Description automatically generated**

**Program 9**

**Task 1 b:**

**Source Code:**

#include <iostream>

#include <string>

using namespace std;

class student

{ //friend function array

string name;

int marks;

char sec;

public:

void set\_values(string name, int m, char sec)

{

this->name = name;

this->marks = m;

this->sec = sec;

}

friend int get\_marks(student obj);

};

int get\_marks(student obj)

{

return obj.marks;

}

int main()

{

int n;

cout<< "enter no. of students" <<endl;

cin>>n;

student arr[n];

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

{

cout<< "enter name,marks and section of student " <<i + 1 <<endl;

int temp;

string name;

char sec;

cin>>name;

cin>>temp;

cin>>sec;

arr[i].set\_values(name, temp, sec);

}

int sum = 0;

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

{

sum += get\_marks(arr[i]);

}

cout<<sum;

}

**Output**

**A screenshot of a computer

Description automatically generated with medium confidence**

**Program 9**

**Task 2:**

**Source Code:**

#include <iostream>

#include <string>

using namespace std;

class cal\_area

{

public:

cal\_area(int a)

{

int area = 4 \* (a) \* (a);

cout<< "area of square"

<< " " << area <<endl;

}

cal\_area(int l, int b)

{

int area = l \* b;

cout<< "area of rectangle"

<< " " << area <<endl;

}

};

int main()

{

cal\_area A1(4), A2(3, 4);

}

**Output**

**A screenshot of a computer

Description automatically generated with medium confidence**

**Program 9**

**Task 3:**

**Source Code:**

#include <iostream>

using namespace std;

class Student

{

string NAME;

int Roll\_no;

public:

static int count;

void setValue(string name, int rollno)

{

NAME = name;

Roll\_no = rollno;

count++;

}

static int display()

{

return count;

}

};

int Student::count = 0;

int main()

{

Student obj1, obj2, obj3, obj4, obj5;

obj1.setValue("PraKHAR", 50);

obj2.setValue("SHUBHANG", 57);

obj3.setValue("ShiKHAR", 40);

obj4.setValue("ABHISHEk", 3);

cout<< "NO< OF TIMES MEMBER FUNCTION CALLED : " << Student::count;

}

**Output**

**A screenshot of a computer

Description automatically generated with medium confidence**

**Program 9**

**Task 4:**

**Source Code:**

#include <iostream>

#include <string.h>

using namespace std;

class student

{

string name;

int marks;

char sec;

public:

student(string name, int m, char sec)

{

this->name = name;

this->marks = m;

this->sec = sec;

}

friend int get\_marks(student);

};

int get\_marks(student obj)

{

return obj.marks;

}

int main()

{

student obj1("Shikhar", 99, 'A');

student obj2("shivi", 84, 'B');

student obj3("prakhar", 78, 'B');

int sum = 0;

sum += get\_marks(obj1);

sum += get\_marks(obj2);

sum += get\_marks(obj3);

cout<< "total sum of all students marks : " << sum;

}

**Output**

**A screenshot of a computer

Description automatically generated with medium confidence**

**Program 9**

**Task 5:**

**Source Code:**

#include <iostream>

using namespace std;

class college

{

string name;

int roll\_no;

};

struct student

{

string name;

int roll\_no.

} int main()

{

college t;

student s1;

t.name = "Prakhar"; // compiler error because x is private

t.x = 20; //error concept of data hiding

s1.name = "aedi";

s1.roll\_no = 34;

getchar();

return 0;

}

/\* \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*difference between struct and class\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

1. access specifier :-a structure is a class defined with struct keyword and access specifier

is by default public where as when class is derived access specifier is by defalut private.

2. security :- data members in class are private the concept of data hiding because

we cannot acess data members directly ,on the other

hand data members of structure are public by default which shows a lack of security in using structure.

3.structure is a value type data type ansd class is a refrence type data type instances of stack are stored

in stack where in class instances are stored in heap as the refrences of object are stored in heap.

4.inheritance :- structure cannot inherit other structures or classess w

here as class can inherit other classes ans struct.

\*/

**Output**

**A screenshot of a computer

Description automatically generated**

**Program 9**

**Task 6:**

**Source Code:**

#include <iostream>

#include <iomanip>

#include <ios>

using namespace std;

int main()

{

cout<< "enter our choice" <<endl;

cout<< "1.come to next line 2.setting field with 3.fill string with \* after setw(15) function" <<endl;

int n;

long str = 123456789;

cout<< "before before any operation " <<str;

while (1){

cout<<endl;

cin>>n;

switch (n)

{

case 1:cout<< "before going to next line " <<str;

cout<<endl;

cout<<str;

break;

case 2: cout<< "after setting field width" << str <<endl;

cout<<setw(15);

cout<<str;

break;

case 3:cout<< "before setfill " << str <<endl;

cout<<setfill('\*') <<setw(15);

cout<<str;

break;

default:

return 0;

}

}

}

**Output**

Text

Description automatically generated

**Program 10**

**Task 2:**

**Source Code:**

#include <iostream>

using namespace std;

class student

{

string name;

string add;

int roll\_no;

char sec;

public:

void set\_values()

{

getline(cin, name);

getline(cin, add);

cin>>roll\_no;

cin>>sec;

}

void show\_data()

{

cout<< name << " " << add << " " <<roll\_no<< " " <<sec;

}

};

int main()

{

student \*ptr;

student obj1;

ptr = &obj1;

ptr->set\_values();

ptr->show\_data();

}

**Output**

Text

Description automatically generated

**Program 10**

**Task 3:**

**Source Code:**

#include <iostream>

using namespace std;

class rem

{

int a, b;

public:

rem(int a, int b)

{

this->a = a;

this->b = b;

cout<< "remainder of two member variables is " << a % b <<endl;

}

};

int main()

{

rem obj(78, 23);

}

**Program 10**

**Task 4 a:**

**Source Code:**

#include <iostream>

using namespace std;

class abc

{

int a;

public:

abc(int a)

{

this->a = a;

}

friend void operator<(abc&obj, abc&obj1);

};

void operator<(abc&obj, abc&obj1)

{

if (obj.a< obj1.a)

cout<< "true";

else

cout<< "false";

}

int main()

{

abcobj(56);

abc obj1(5);

obj<obj1;

}

**Output**

A screenshot of a computer

Description automatically generated with medium confidence

**Program 10**

**Task 4 b:**

**Source Code:**

#include <iostream>

using namespace std;

class abc

{

int num;

public:

abc(int x)

{

this->num = x;

}

void operator+(abcobj)

{

cout<<num + obj.num;

}

};

int main()

{

abcobj(10);

abc obj1(20);

obj + obj1;

}

**Output**

A screenshot of a computer

Description automatically generated with medium confidence