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HILL UNIVERSITY
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Term work

on

OOPs with C++

(PCS 307)

2021-22

Submitted to:

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

GRAPHIC ERA HILL UNIVERSITY, DEHRADUN

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I would like to particularly thank my Data Science using OOPs with C++ Lab Faculty **Mr Aakash 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.

Vaibhav Kumar Kapriyal

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University. Roll No.- 2018837

B. Tech CSE-A-III Sem

Session: 2021-22

GEHU, Dehradun



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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 [int i, 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 fashion 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:

	<pre> * * * * * * * * * * </pre>	
8	<p>Write C++ code for below mentioned tasks?</p> <p>Pointer, Function, Inline Function, Recursion in C++:</p> <p>Task1: Will the program through an error and if yes then why?</p> <pre> int *p = {10,20,20}; cout << *p; p++; cout << *p; </pre> <p>Task2: Output of this program?</p> <p>V1. Issue?</p> <pre> int arr[] = {10,20,30}; cout << *arr; cout << arr; arr++; cout << *arr; </pre> <p>V2.How to resolve above issue?</p> <pre> int arr[] = {10,20,30}; cout << *arr; cout << arr; cout << *(?); </pre> <p>Task3: Output of this program?</p> <p>V1. Output?</p> <pre> int a = 10; int *p; int **q; p = &a; q = &p; cou << *p; cou << **q; </pre>	67

	<p>V2. Change the value of a using q pointer to pointer.</p> <p>Task4: Find factorial of a number using function but not recursion</p> <p>Task5: Find factorial of a number using recursion</p> <p>Task6: Series Problem using recursion for n series $2, (2^2 + 2), (3^3 + 3), (4^4 + 4), (5^5 + 5), \dots$</p> <p>Hint: $n * ((n-1)^{(n-1)} + (n-1))$</p> <p>Task7: Perform Call by value, call by Address for swapping value of a and b: <pre>int a = 10; int b = 20;</pre> <p>V1. Swap(a,b); //call by Value [void swap(int a, int b){}]</p> <p>V2. Swap(a,b); //call by Value [void swap(int &a, int &b){}]</p> <p>V3. Swap(&a,&b); //call by Address</p></p>	
9	<p>Write C++ code for below mentioned tasks?</p> <p>Class, Object, Constructor, Static Data Members, friend function in C++:</p> <p>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].</p> <p>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.</p>	84

	<p>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]</p> <p>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.</p> <p>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.]</p> <p>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++]</p>	
10	<p>Write C++ code for below mentioned tasks?</p> <p>Array of Objects, Pointer to Object, This pointer, Operator Overloading in C++</p> <p>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</p> <p>Task2: Pointer to Object in C++ WAP to create print or display Student information containing in Student class by using pointers to object.</p> <p>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.</p> <p>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.</p>	97



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DEPARTMENT OF CSE
B.Tech. CSE
STUDENT LAB REPORT SHEET

Name of StudentMob.No.....

Address Permanent

Father's NameOccupationMoNo.....

Mother's NameOccupation.....MoNo.....

SectionBranch.....Semester.....Class Roll No..... Grade A B C

Local Address.....Email..... Marks 5 3 1

Photograph
Passport Size

S.N o.	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								

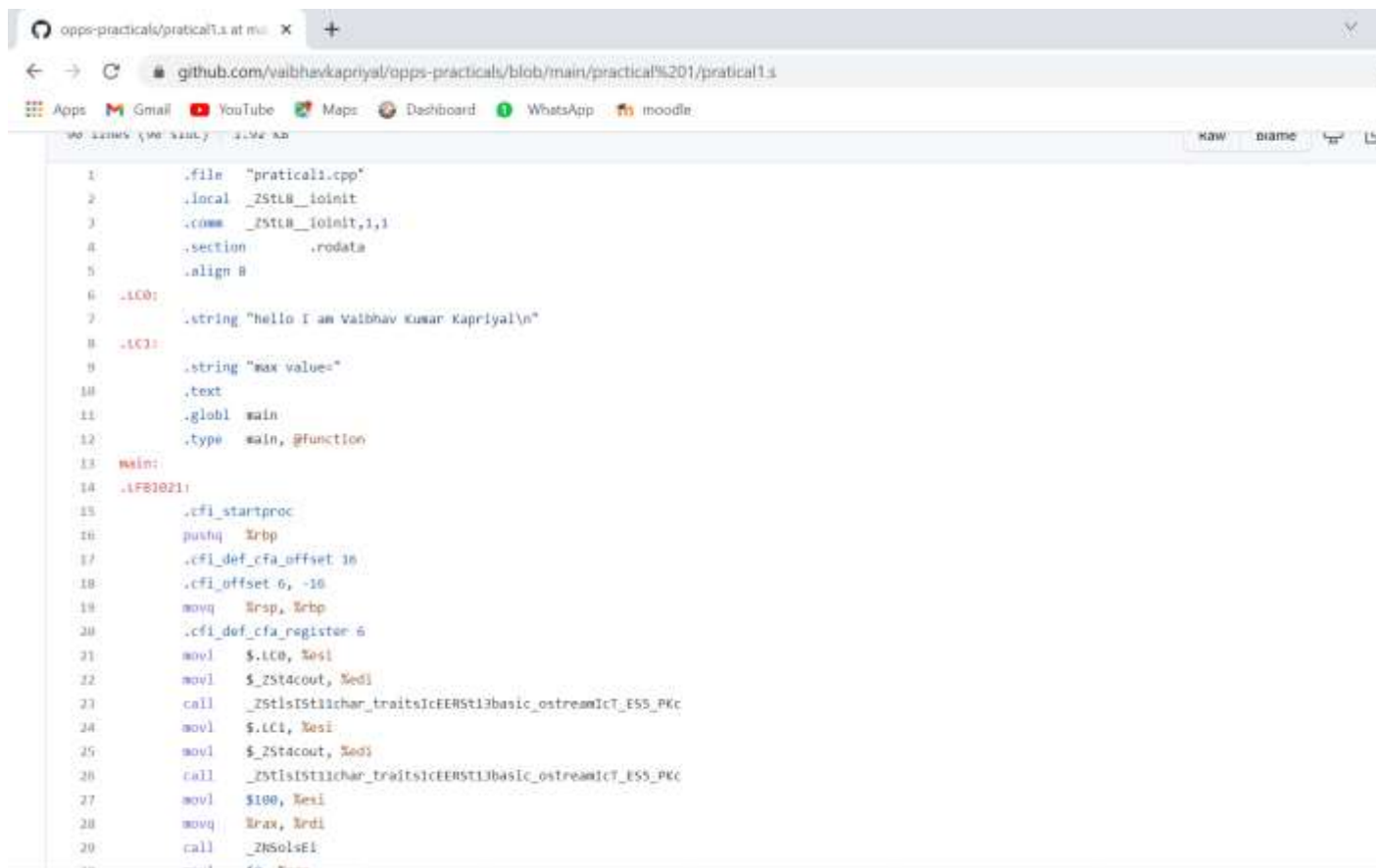
Practical 1

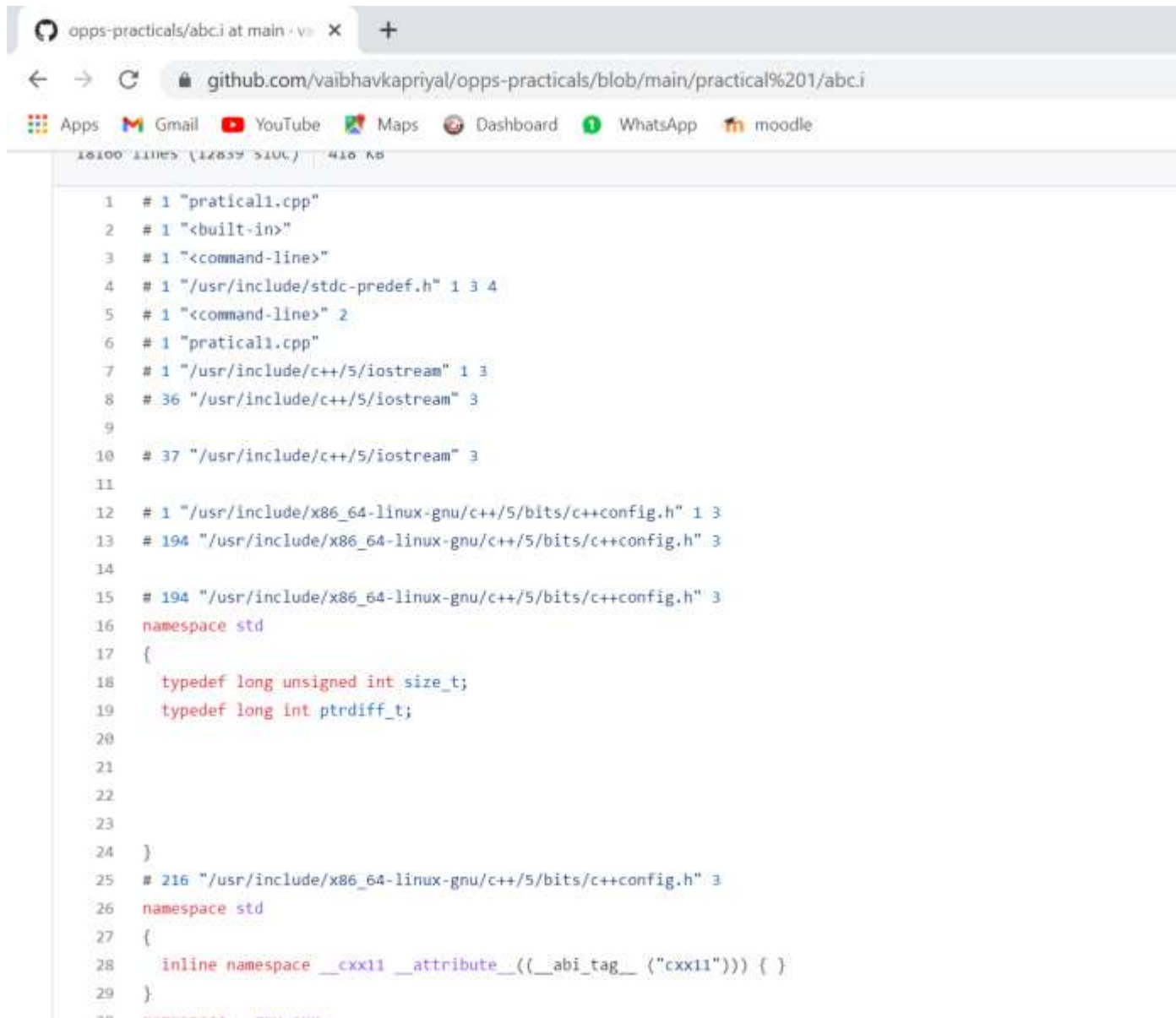
Source Code:

```
#include
<iostream>

using namespace std;
#define MAX 100;
int main()
{
    cout<<"hello I am Vaibhav Kumar Kapriyal\n";
    cout<<"max value="<<MAX;
    return 0;
}
```

Output



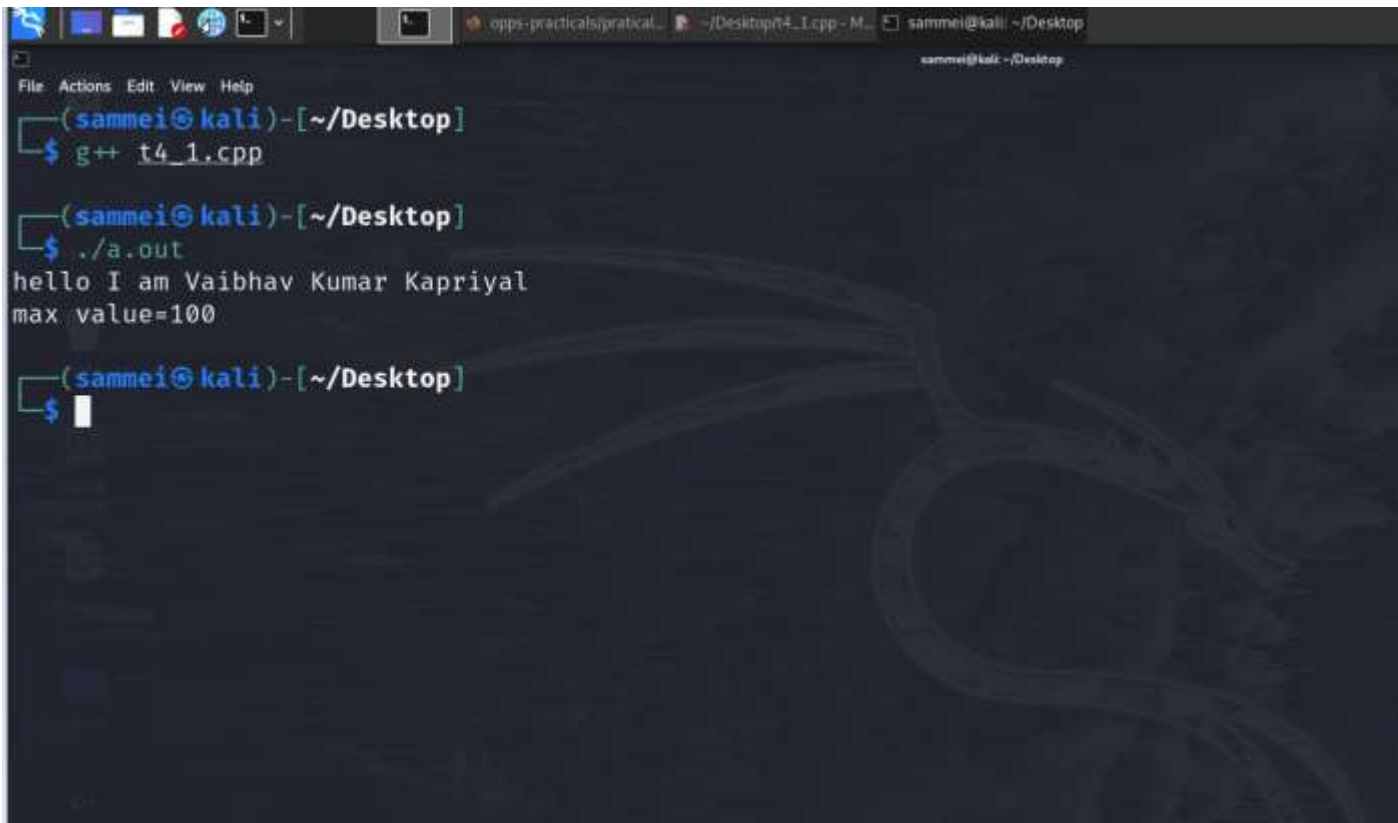


The screenshot shows a web browser window with the address bar displaying 'github.com/vaibhavkapriyal/opps-practicals/blob/main/practical%201/abc.i'. The browser's top bar includes navigation icons and a search bar. Below the address bar, there are links to 'Apps', 'Gmail', 'YouTube', 'Maps', 'Dashboard', 'WhatsApp', and 'moodle'. The main content area displays a code editor for a file named 'practical1.cpp'. The code is a C++ header file with preprocessor directives for standard library headers and namespace declarations. The code is as follows:

```

1  # 1 "practical1.cpp"
2  # 1 "<built-in>"
3  # 1 "<command-line>"
4  # 1 "/usr/include/stdc-predef.h" 1 3 4
5  # 1 "<command-line>" 2
6  # 1 "practical1.cpp"
7  # 1 "/usr/include/c++/5/iostream" 1 3
8  # 36 "/usr/include/c++/5/iostream" 3
9
10 # 37 "/usr/include/c++/5/iostream" 3
11
12 # 1 "/usr/include/x86_64-linux-gnu/c++/5/bits/c++config.h" 1 3
13 # 194 "/usr/include/x86_64-linux-gnu/c++/5/bits/c++config.h" 3
14
15 # 194 "/usr/include/x86_64-linux-gnu/c++/5/bits/c++config.h" 3
16 namespace std
17 {
18     typedef long unsigned int size_t;
19     typedef long int ptrdiff_t;
20
21
22
23
24 }
25 # 216 "/usr/include/x86_64-linux-gnu/c++/5/bits/c++config.h" 3
26 namespace std
27 {
28     inline namespace __cxx11 __attribute__((__abi_tag__ ("cxx11"))) { }
29 }
30 namespace std __attribute__((__abi_tag__ ("cxx11"))) { }

```



```
(sammei@kali)-[~/Desktop]
$ g++ t4_1.cpp

(sammei@kali)-[~/Desktop]
$ ./a.out
hello I am Vaibhav Kumar Kapriyal
max value=100

(sammei@kali)-[~/Desktop]
$
```

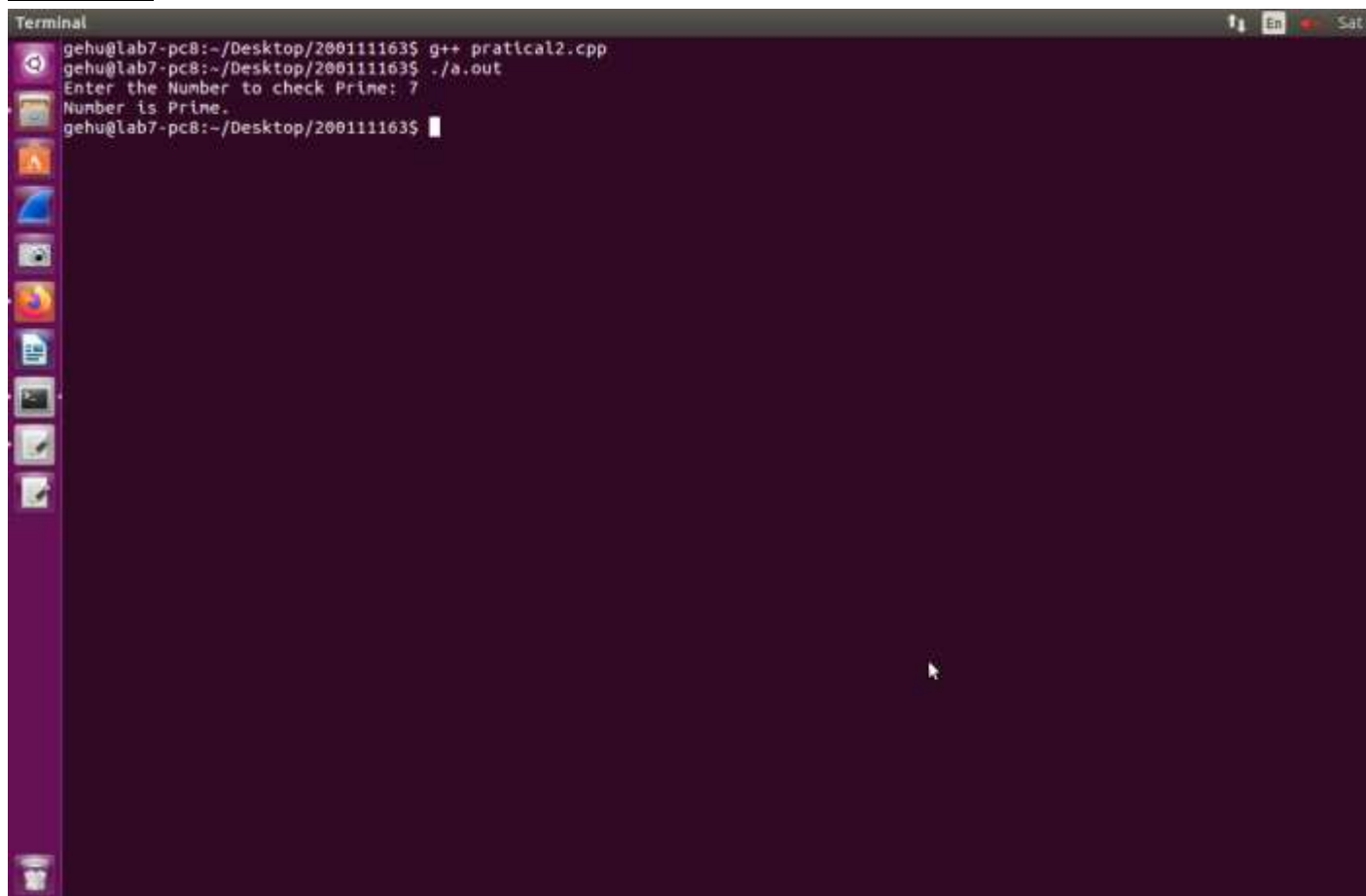
Practical 2

Source Code:

```
#include
<iostream>

using namespace std;
int main()
{
    int n, i, m=0, flag=0;
    cout << "Enter the Number to check Prime: ";
    cin >> n;
    m=n/2;
    for(i = 2; i <= m; i++)
    {
        if(n % i == 0)
        {
            cout<<"Number is not Prime."<<endl;
            flag=1;
            break;
        }
    }
    if (flag==0)
        cout << "Number is Prime."<<endl;
    return 0;
}
```

Output

A terminal window titled "Terminal" with a dark purple background. The window shows the execution of a C++ program. The user is at the prompt "gehu@lab7-pc8:~/Desktop/200111163\$". They enter "g++ practical2.cpp" and then "./a.out". The program prompts "Enter the Number to check Prine: 7". The user enters "7". The program outputs "Number is Prine." and returns to the prompt. The left sidebar of the terminal shows various application icons.

```
Terminal
gehu@lab7-pc8:~/Desktop/200111163$ g++ practical2.cpp
gehu@lab7-pc8:~/Desktop/200111163$ ./a.out
Enter the Number to check Prine: 7
Number is Prine.
gehu@lab7-pc8:~/Desktop/200111163$
```

Practical 3

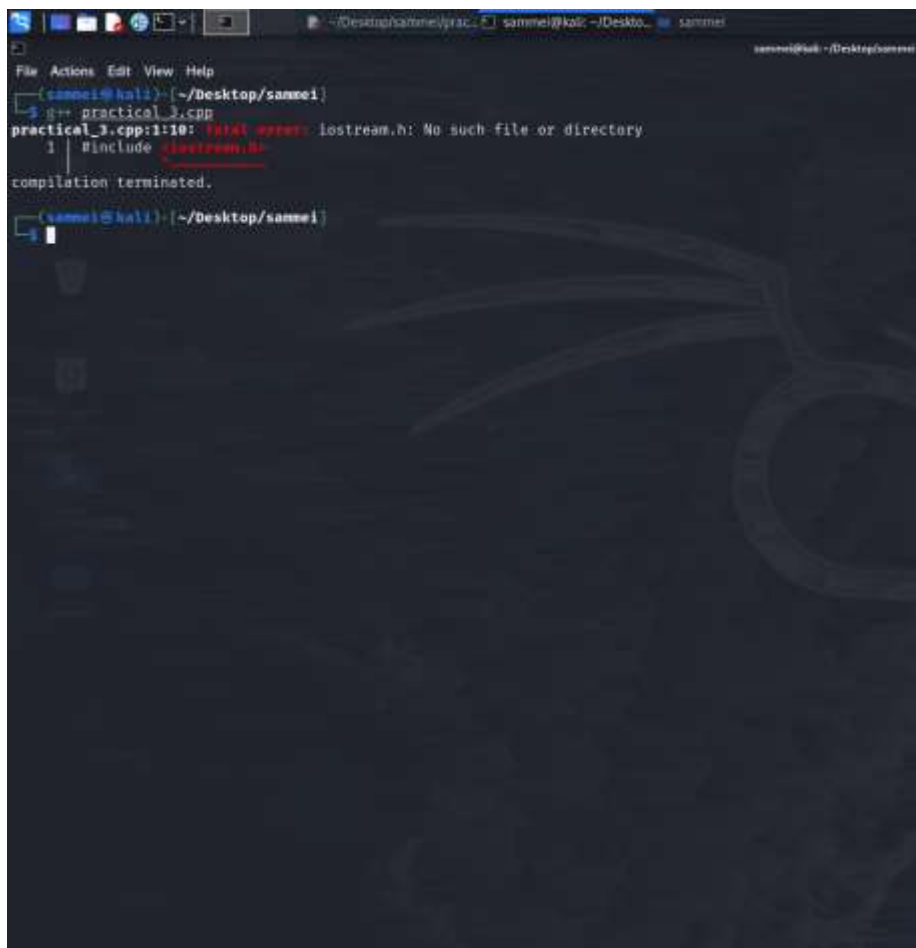
Task 1

Source Code:

```
#include
<iostream.h>

using namespace std;
int main
{
    int a=60;
    cout<<"Vaibhav Kumar Kapriyal Roll no.-"<<a<<"\n";
    return 0;
}
```

Output



Practical 3

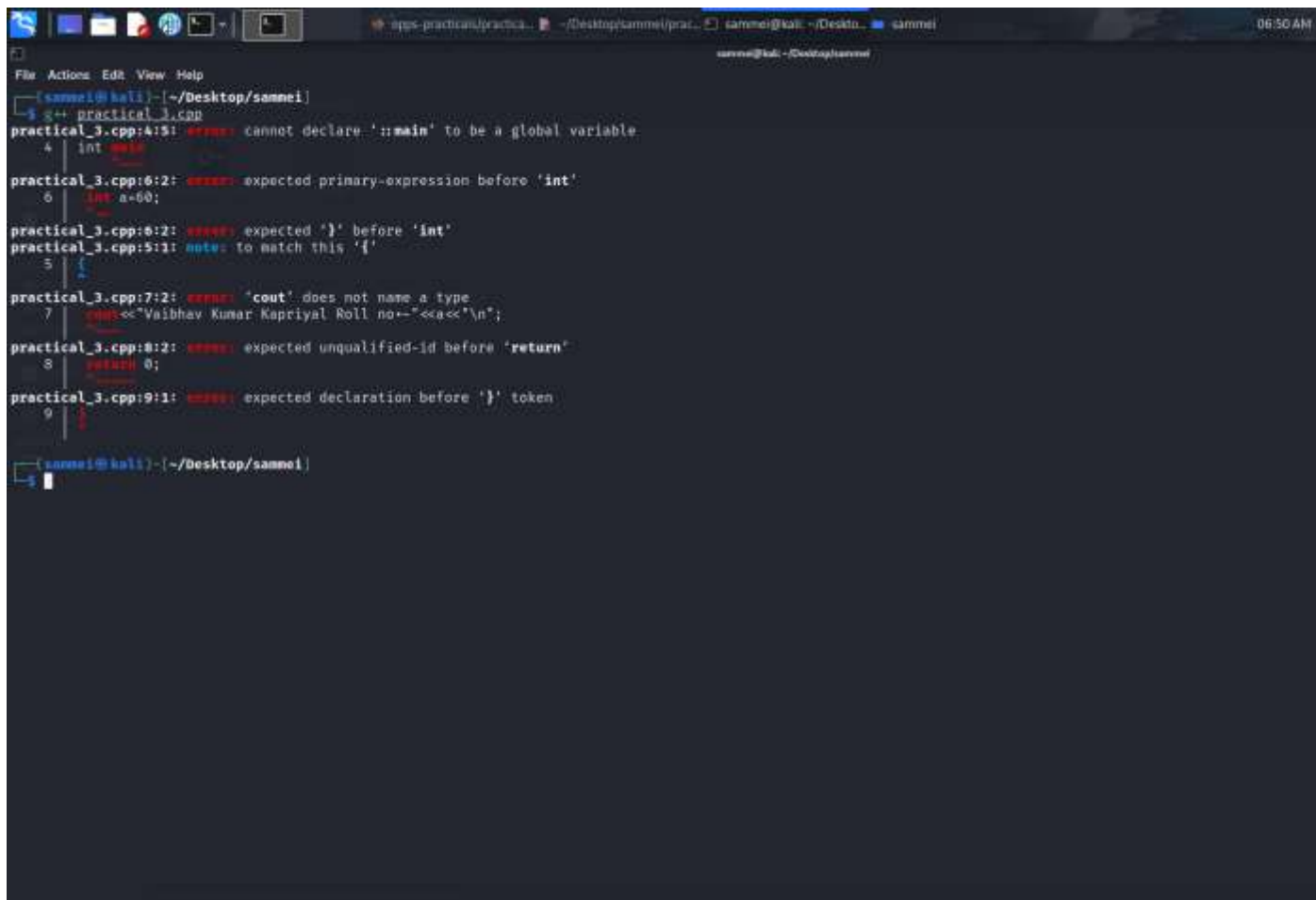
Task 2

Source Code:

```
//#include
<iostream.h>

using namespace std;
int main
{
    int a=60;
    cout<<"Vaibhav Kumar Kapriyal Roll no.-"<<a<<"\n";
    return 0;
}
```

Output

A screenshot of a C++ compiler window (likely g++ or a similar IDE) showing the compilation of a file named 'practical_3.cpp'. The window has a dark background with light-colored text. The top bar shows the file path and the user's name 'sammei'. The main area displays the source code with several error messages highlighted in red. The errors are: 1. 'cannot declare 'main' to be a global variable' at line 4, column 15. 2. 'expected primary-expression before 'int'' at line 6, column 2. 3. 'expected '}' before 'int'' at line 6, column 2. 4. 'note: to match this '{' at line 5, column 1. 5. ''cout' does not have a type' at line 7, column 2. 6. 'expected unqualified-id before 'return'' at line 8, column 2. 7. 'expected declaration before '}' token' at line 9, column 1. The code is as follows: #include <iostream.h> using namespace std; int main { int a=60; cout<<"Vaibhav Kumar Kapriyal Roll no.-"<<a<<"\n"; return 0; } The window also shows a terminal window at the bottom with the command 'g++ practical_3.cpp' and the output 'practical_3.cpp:4:15: error: cannot declare 'main' to be a global variable'.

Practical 3

Task 3

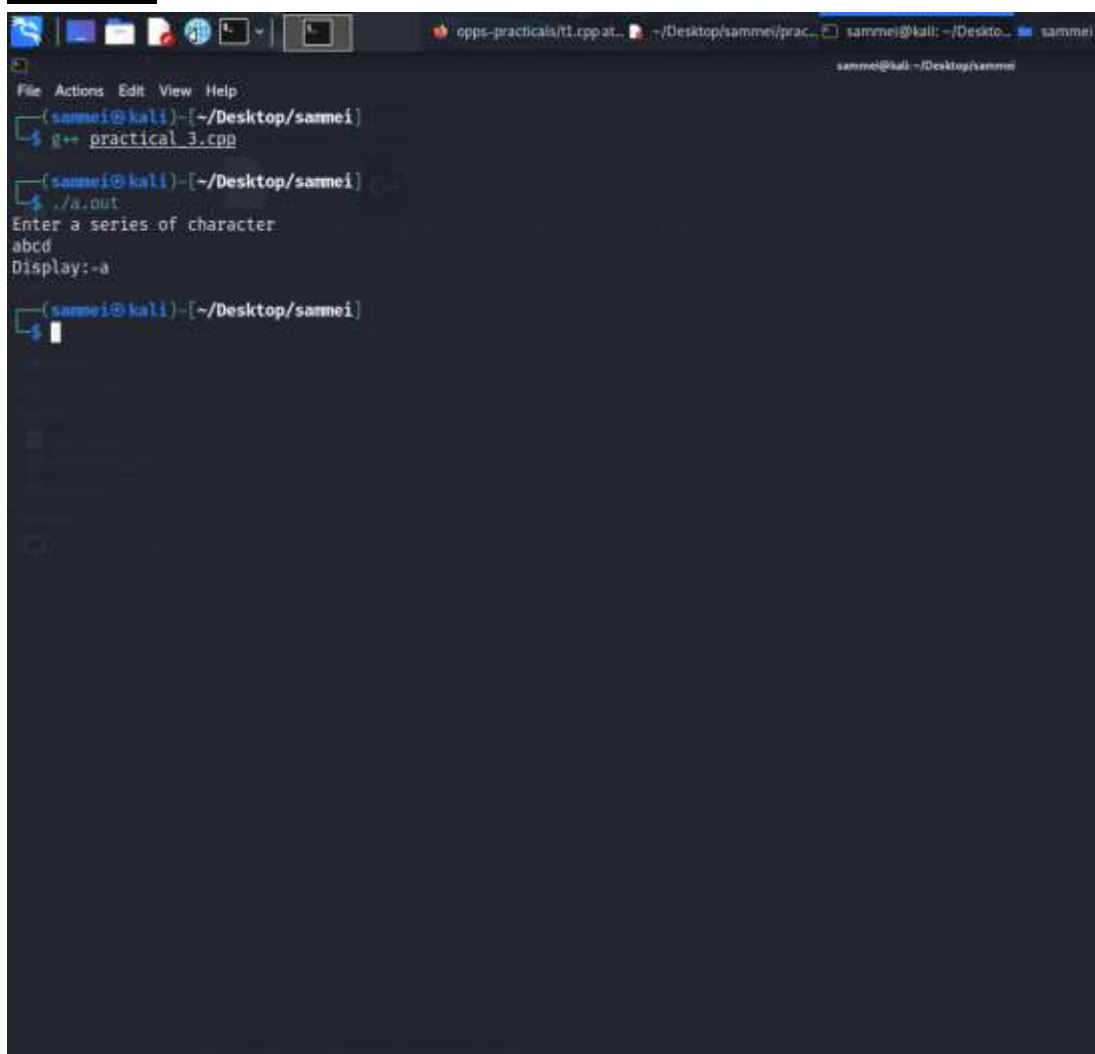
Source Code:

```
#include
<iostream>

using namespace std;

int main()
{
    char c;
    cout<<"Enter a series of character\n";
    cin>>c;
    cout<<"Display:-"<<c<<"\n";
    return 0;
}
```

Output



```
File Actions Edit View Help
(sammei@kali)~[~/Desktop/sammei]
$ g++ practical_3.cpp
(sammei@kali)~[~/Desktop/sammei]
$ ./a.out
Enter a series of character
abcd
Display:-a
(sammei@kali)~[~/Desktop/sammei]
$
```

Practical 3

Task 4

Source Code:

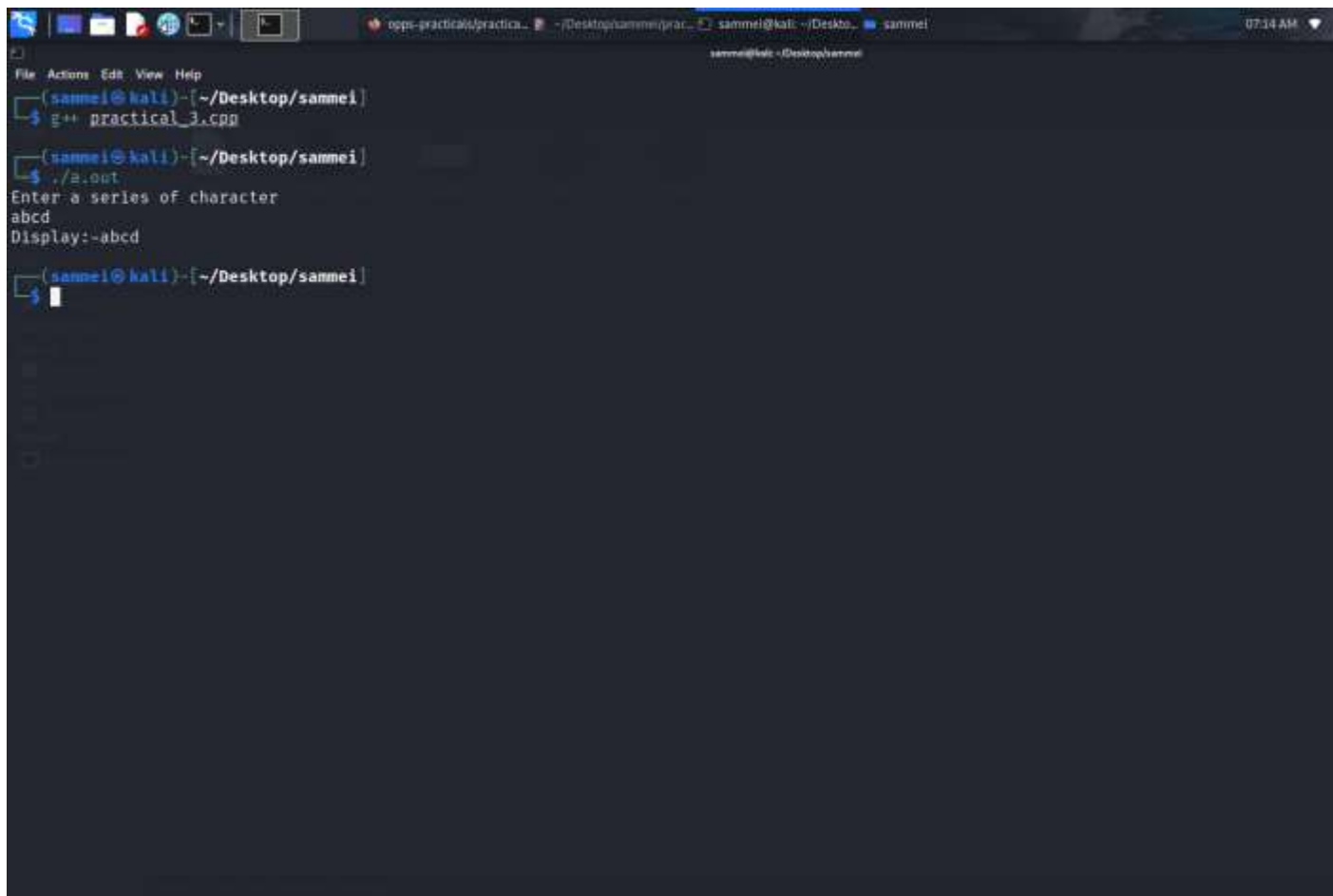
```
#include
<iostream>

#include <string>

using namespace std;

int main()
{
    string str;
    cout<<"Enter a series of character\n";
    getline(cin,str);
    cout<<"Display:-"<<str<<"\n";
    return 0;
}
```

Output



```
File Actions Edit View Help
(sannei@kali)~[/Desktop/sannei]
$ g++ practical_3.cpp
(sannei@kali)~[/Desktop/sannei]
$ ./a.out
Enter a series of character
abcd
Display:-abcd
(sannei@kali)~[/Desktop/sannei]
$
```

Practical 4

Task 1

Source Code:

```
#include
<iostream>

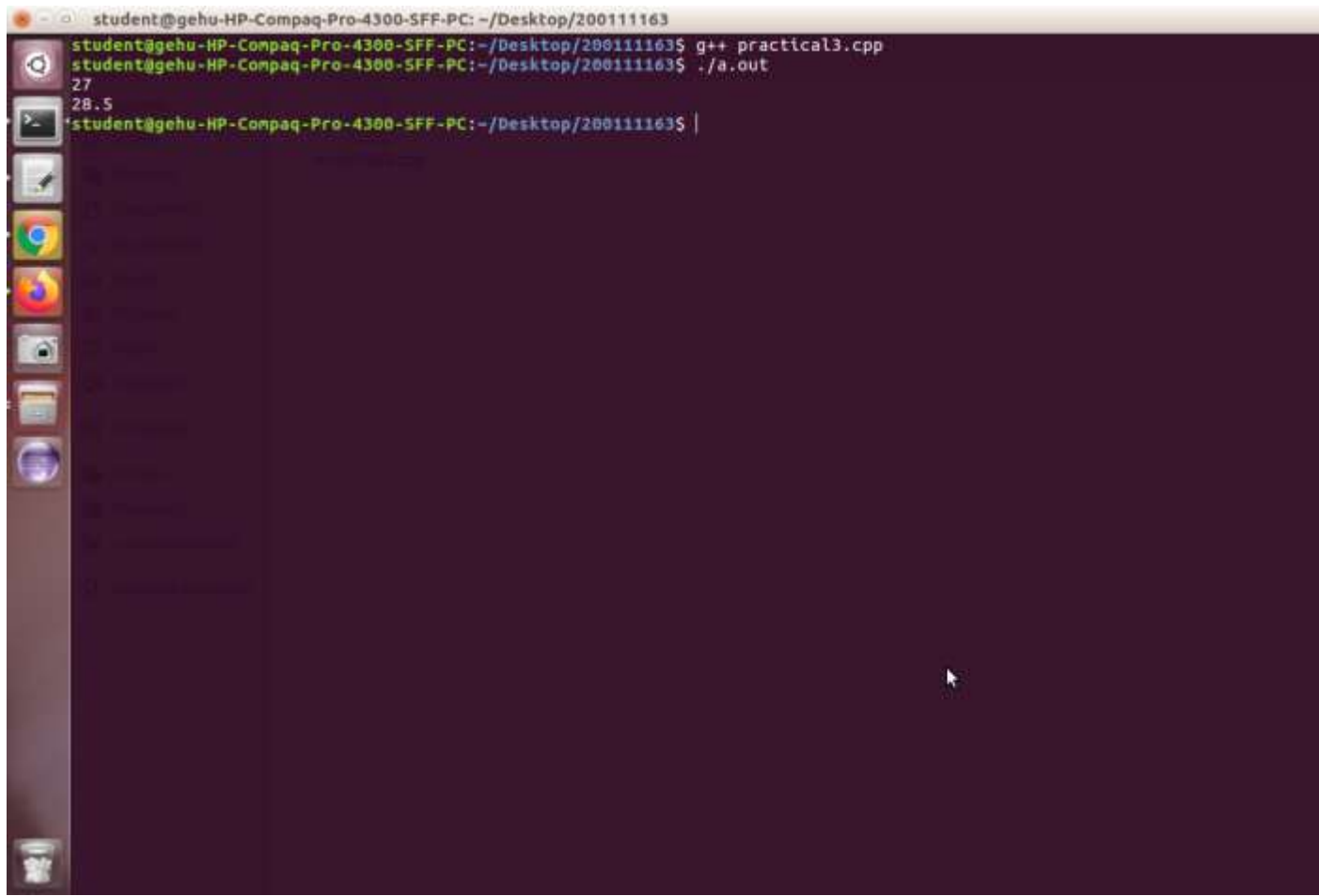
using namespace std;

namespace first
{
    int add(int a,int b)
    {
        return a+b;
    }
}

namespace second
{
    float add(float a,float b)
    {
        return a+b;
    }
}

int main()
{
    cout<<first::add(12,15)<<"\n";
    cout<<second::add(12.6,15.9)<<"\n";
    return 0;
}
```

Output



The screenshot shows a terminal window on a Linux desktop. The window title is "student@gehu-HP-Compaq-Pro-4300-SFF-PC: ~/Desktop/200111163". The terminal content shows the following commands and output:

```
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ g++ practical3.cpp
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ ./a.out
27
28.5
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ |
```

The desktop environment includes a sidebar with icons for various applications and a trash bin at the bottom left.

Practical 4

Task 2

Source Code:

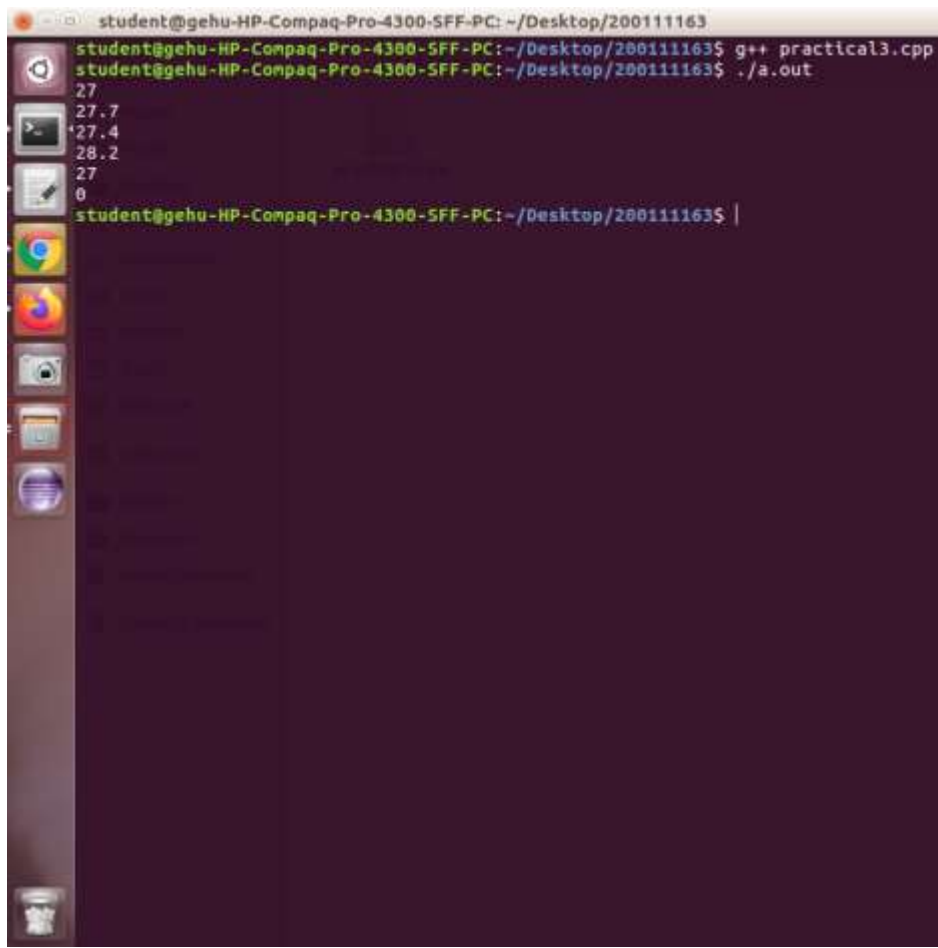
```
#include
<iostream>

using namespace std;

namespace first
{
    int add(int a,int b)
    {
        return a+b;
    }
}
namespace second
{
    float add(float a,float b)
    {
        return a+b;
    }
}
using namespace second;

int main()
{
    cout<<add(12,15)<<"\n";
    cout<<add(12.5,15)<<"\n";
    cout<<add(12,15.7)<<"\n";
    cout<<add(12.9,15.3)<<"\n";
    cout<<add(12.0,15.0)<<"\n";
    return 0;
}
```

Output



A terminal window on a Linux desktop environment. The window title is 'student@gehu-HP-Compaq-Pro-4300-SFF-PC: ~/Desktop/200111163'. The terminal shows the following commands and output:

```
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ g++ practical3.cpp
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ ./a.out
27
27.7
27.4
28.2
27
0
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ |
```

The desktop background is dark purple. On the left side, there is a vertical dock with several application icons: a terminal, a file manager, a web browser, a music player, a calendar, and a system monitor.

Practical 4

Task 3

Source Code:

```
#include
<iostream>

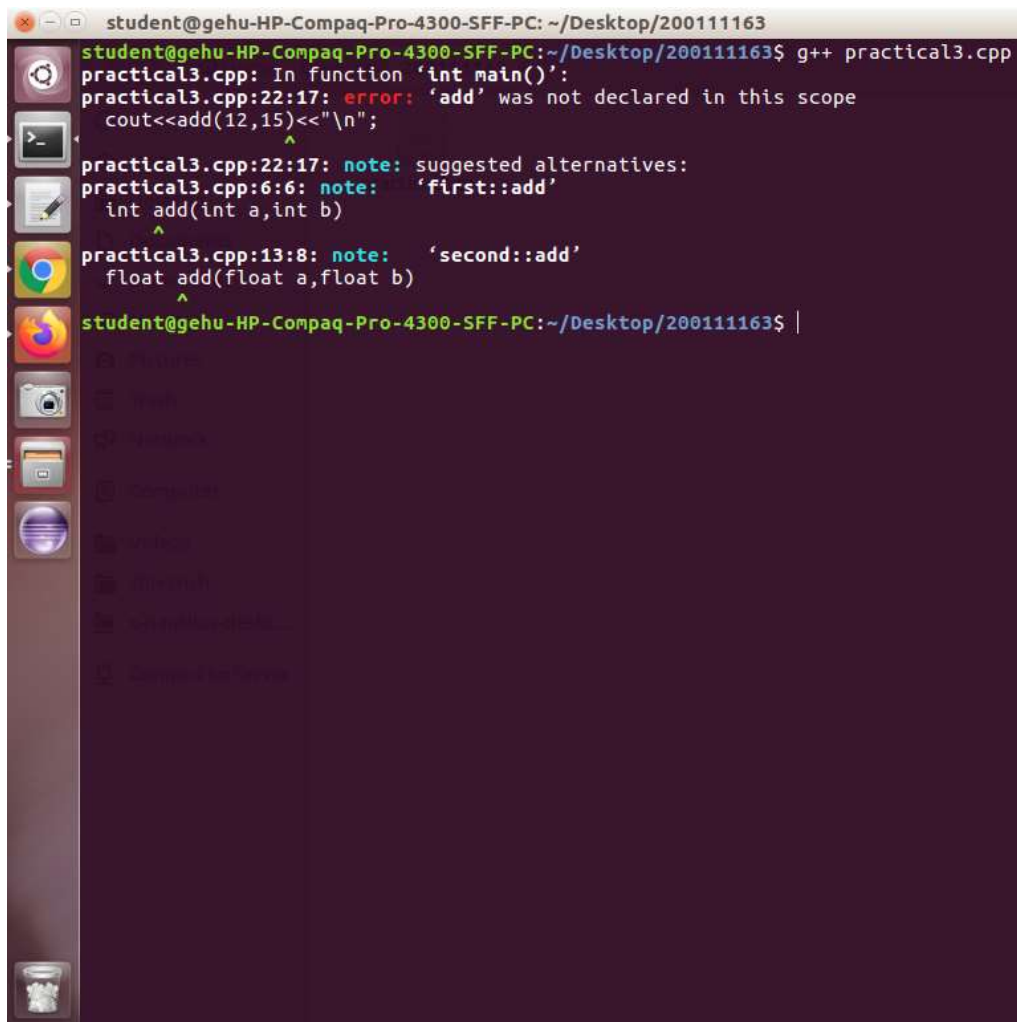
using namespace std;

namespace first
{
    int add(int a,int b)
    {
        return a+b;
    }
}

namespace second
{
    float add(float a,float b)
    {
        return a+b;
    }
}

int main()
{
    cout<<add(12,15)<<"\n";
    cout<<add(12.5,15)<<"\n";
    cout<<add(12,15.7)<<"\n";
    cout<<add(12.9,15.3)<<"\n";
    cout<<add(12.0,15.0)<<"\n";
    return 0;
}
```


Output



```
student@gehu-HP-Compaq-Pro-4300-SFF-PC: ~/Desktop/200111163
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ g++ practical3.cpp
practical3.cpp: In function 'int main()':
practical3.cpp:22:17: error: 'add' was not declared in this scope
    cout<<add(12,15)<<"\n";
                  ^
practical3.cpp:22:17: note: suggested alternatives:
practical3.cpp:6:6: note:   'first::add'
    int add(int a,int b)
    ^
practical3.cpp:13:8: note:   'second::add'
    float add(float a,float b)
    ^
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ |
```

Practical 5

Task 1

Source Code:

```
#include
<iostream>

using namespace std;
void intfun()
{
    int a=5657865;
    cout<<a<<'\n';
}
void charfun ()
{
    char i='b';
    cout<<i<<'\n';
}
void boolfun ()
{
    bool b=1;
    cout<<b<<'\n';
}
void shortfun()
{
    short s=100;
    cout<<s<<'\n';
}
void floatfun()
{
    float f=12.6474f;
    cout<<f<<'\n';
}
void longfun()
{
    long l=64579745756;
    cout<<l<<'\n';
}
void doublefun()
{
    double d=3255.65658;
    cout<<d<<'\n';
}
void longdoublefun()
{
    long double lb=43254.8788;
```

```

        cout<<lb<<'n';
    }
    void widecharfun()
    {
        wchar_t ch=L'\0';
        cout<<ch<<'n';
    }

    int main()
    {
        intfun();
        charfun ();
        boolfun ();
        shortfun();
        floatfun();
        longfun();
        doublefun();
        longdoublefun();
        widecharfun();
        return 0;
    }

```

Output

```

[samnei@kali] ~/Desktop/samnei/practical 5 c++
$ g++ t1.cpp
[samnei@kali] ~/Desktop/samnei/practical 5 c++
$ ./a.out
5657855
b
1
100
12.6474
64579745756
3255.66
43254.9
65
[samnei@kali] ~/Desktop/samnei/practical 5 c++
$

```

Practical 5

Task 2

Source Code:

```
#include
<iostream>

using namespace std;
void intfun()
{
    int a=5657865;
    cout<<a<<" size= ";
    cout<<sizeof(a)<<'\n';
    cout<<"size of int = "<<sizeof(int)<<'\n';
}
void charfun ()
{
    char i='b';
    cout<<i<<" size= ";
    cout<<sizeof(i)<<'\n';
    cout<<"size of charater = "<<sizeof(char)<<'\n';
}
void boolfun ()
{
    bool b=1;
    cout<<b<<" size= ";
    cout<<sizeof(b)<<'\n';
    cout<<"size of boolean = "<<sizeof(bool)<<'\n';
}
void shortfun()
{
    short s=100;
    cout<<s<<" size= ";
    cout<<sizeof(s)<<'\n';
    cout<<"size of short int = "<<sizeof(short)<<'\n';
}
void floatfun()
{
    float f=12.6474f;
    cout<<f<<" size= ";
    cout<<sizeof(f)<<'\n';
    cout<<"size of float = "<<sizeof(float)<<'\n';
}
void longfun()
{
    long l=64579745756;
```

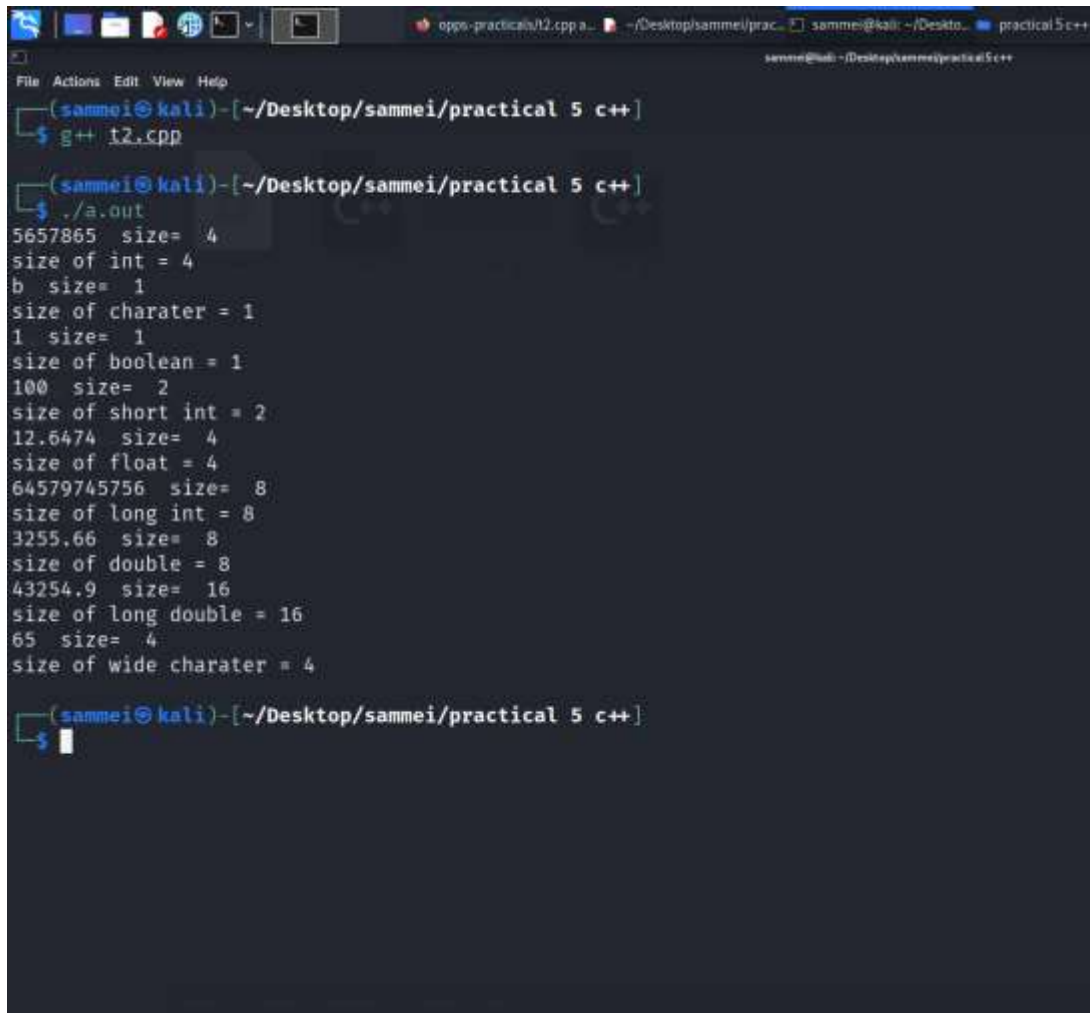
```

        cout<<l<<"  size=  ";
        cout<<sizeof(l)<<'\\n';
        cout<<"size of long int = "<<sizeof(long)<<'\\n';
    }
    void doublefun()
    {
        double d=3255.65658;
        cout<<d<<"  size=  ";
        cout<<sizeof(d)<<'\\n';
        cout<<"size of double = "<<sizeof(double)<<'\\n';
    }
    void longdoublefun()
    {
        long double lb=43254.8788;
        cout<<lb<<"  size=  ";
        cout<<sizeof(lb)<<'\\n';
        cout<<"size of long double = "<<sizeof(long double)<<'\\n';
    }
    void widecharfun()
    {
        wchar_t ch=L'\\0';
        cout<<ch<<"  size=  ";
        cout<<sizeof(ch)<<'\\n';
        cout<<"size of wide charater = "<<sizeof(wchar_t)<<'\\n';
    }

    int main()
    {
        intfun();
        charfun ();
        boolfun ();
        shortfun();
        floatfun();
        longfun();
        doublefun();
        longdoublefun();
        widecharfun();
        return 0;
    }

```

Output



```
(sammei@kali) - [~/Desktop/sammei/practical 5 c++]
$ g++ t2.cpp

(sammei@kali) - [~/Desktop/sammei/practical 5 c++]
$ ./a.out
5657865 size= 4
size of int = 4
b size= 1
size of charater = 1
1 size= 1
size of boolean = 1
100 size= 2
size of short int = 2
12.6474 size= 4
size of float = 4
64579745756 size= 8
size of long int = 8
3255.66 size= 8
size of double = 8
43254.9 size= 16
size of long double = 16
65 size= 4
size of wide charater = 4

(sammei@kali) - [~/Desktop/sammei/practical 5 c++]
$
```

Practical 6

Task 1

Source Code:

```
#include
<iostream>

using namespace std;

int main()
{
    int a=10;
    string s="Vaibhav";
    float f=10.56;
    //cout<<"Integer+Integer:- "<<a+a<<"\n";
    //cout<<"Sting + String:- "<<s+s<<"\n";
    //cout<<"Float+Float:- "<<f+f<<"\n";
    //cout<<"Integer+Float:- "<<a+f<<"\n";
    cout<<"Integer+String:- "<<a+s<<"\n";
    return 0;
}
```

Output

```
student@lab8pc-28: ~/Desktop/200111163
student@lab8pc-28:~/Desktop/200111163$ g++ t1.cpp
student@lab8pc-28:~/Desktop/200111163$ ./a.out
Integer+Integer:- 20
student@lab8pc-28:~/Desktop/200111163$ g++ t1.cpp
student@lab8pc-28:~/Desktop/200111163$ ./a.out
Sting + String:- VaibhavVaibhav
student@lab8pc-28:~/Desktop/200111163$ g++ t1.cpp
student@lab8pc-28:~/Desktop/200111163$ ./a.out
Float+Float:- 21.12
student@lab8pc-28:~/Desktop/200111163$ g++ t1.cpp
student@lab8pc-28:~/Desktop/200111163$ ./a.out
Integer+Float:- 20.56
student@lab8pc-28:~/Desktop/200111163$ g++ t1.cpp
t1.cpp: In function 'int main()':
t1.cpp:14:30: error: no match for 'operator+' (operand types are 'int' and 'std::__cxx11::string {aka std::__cxx11::basic_string<char>}')
    cout<<"Integer+String:- "<<a+s<<"\n";
                           ^
In file included from /usr/include/c++/5/bits/stl_algobase.h:67:0,
                 from /usr/include/c++/5/bits/char_traits.h:39,
                 from /usr/include/c++/5/ios:40,
                 from /usr/include/c++/5/ostream:38,
                 from /usr/include/c++/5/iostream:39,
                 from t1.cpp:1:
/usr/include/c++/5/bits/stl_iterator.h:334:5: note: candidate: template<class _Iterator> std::reverse_iterator< _Iterator>::operator+(typename std::reverse_iterator< _Iterator>::difference_type, const std::reverse_iterator< _Iterator>&)
    operator+(typename reverse_iterator< _Iterator>::difference_type __n,
/usr/include/c++/5/bits/stl_iterator.h:334:5: note: template argument deduction/substitution failed:
t1.cpp:14:31: note: 'std::__cxx11::string {aka std::__cxx11::basic_string<char>}' is not derived from 'const std::reverse_iterator< _Iterator>'
    cout<<"Integer+String:- "<<a+s<<"\n";
```

Practical 6

Task 2

Source Code:

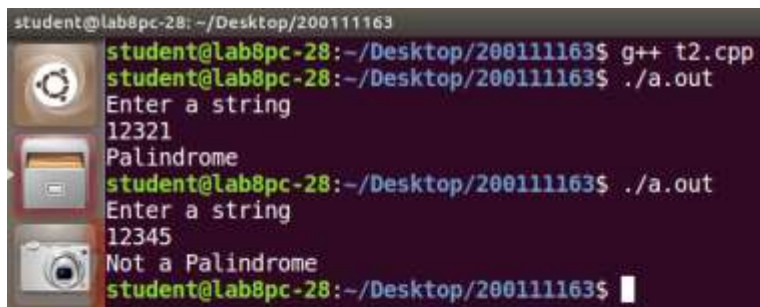
```
#include
<iostream>

#include <string>

using namespace std;

int main()
{
    string s,temp;
    cout<<"Enter a string\n";
    getline(cin,s);
    int l=0,i;
    l=s.length();
    for(i=l-1;i>=0;i--)
    {
        temp=temp+s[i];
    }
    if(temp==s)
        cout<<"Palindrome\n";
    else
        cout<<"Not a Palindrome\n";
    return 0;
}
```


Output



A terminal window with a dark purple background and a vertical sidebar of application icons on the left. The terminal shows the following sequence of commands and outputs:

```
student@lab8pc-28: ~/Desktop/200111163
student@lab8pc-28:~/Desktop/200111163$ g++ t2.cpp
student@lab8pc-28:~/Desktop/200111163$ ./a.out
Enter a string
12321
Palindrome
student@lab8pc-28:~/Desktop/200111163$ ./a.out
Enter a string
12345
Not a Palindrome
student@lab8pc-28:~/Desktop/200111163$
```

Practical 6

Task 3

Source Code:

```
#include
<iostream>

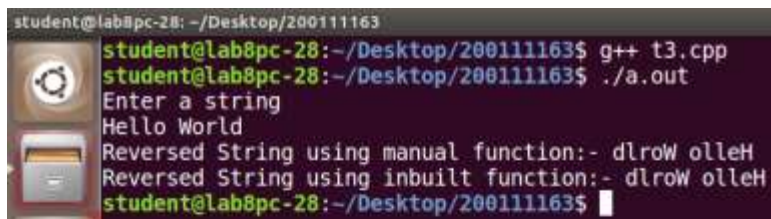
#include <string>
#include <bits/stdc++.h>

using namespace std;

void reverse(string s)
{
    string temp1;
    int l=0,i;
    l=s.length();
    for(i=l-1;i>=0;i--)
    {
        temp1=temp1+s[i];
    }
    cout<<"Reversed String using manual function:- "<<temp1<<"\n";
}

int main()
{
    string s;
    cout<<"Enter a string\n";
    getline(cin,s);
    reverse(s);
    reverse(s.begin(),s.end());
    cout<<"Reversed String using inbuilt function:- "<<s<<"\n";
    return 0;
}
```

Output



The screenshot shows a terminal window with a dark purple background. On the left side, there is a vertical dock containing several application icons: a gear (system settings), a folder (file manager), a camera, a Firefox browser, a LibreOffice Writer document, a LibreOffice Calc spreadsheet, a LibreOffice Impress presentation, a settings gear with a red pencil, a document with a pencil, and a terminal icon. The terminal window title bar reads "student@lab8pc-28: ~/Desktop/200111163". The terminal output is as follows:

```
student@lab8pc-28:~/Desktop/200111163$ g++ t3.cpp
student@lab8pc-28:~/Desktop/200111163$ ./a.out
Enter a string
Hello World
Reversed String using manual function:- dlrow olleH
Reversed String using inbuilt function:- dlrow olleH
student@lab8pc-28:~/Desktop/200111163$
```

Practical 6

Task 4

Source Code:

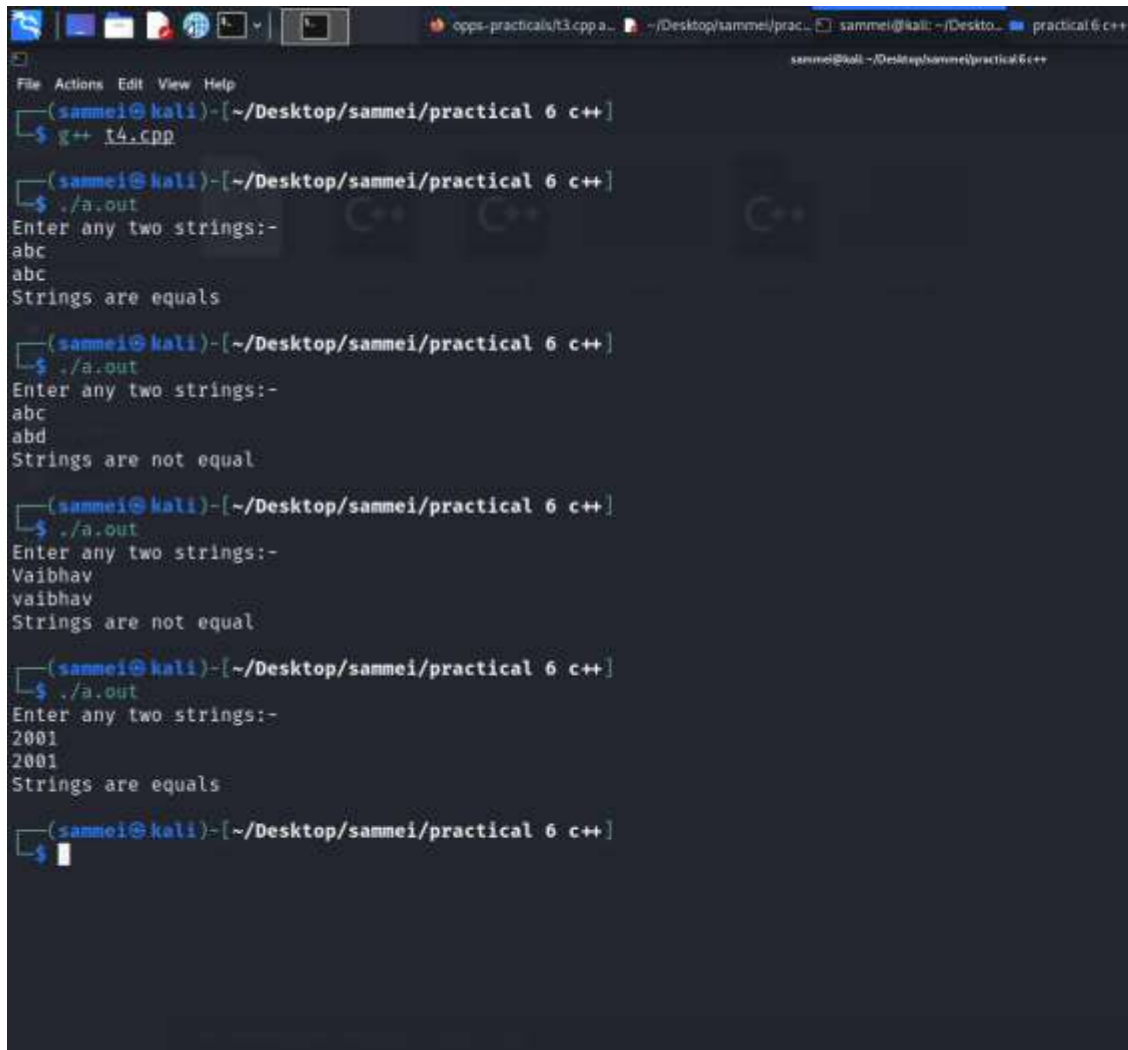
```
#include
<iostream>

#include <bits/stdc++.h>

using namespace std;
int compare(string s1, string s2)
{
    int l1=s1.length();
    int l2=s2.length();
    if(l1==l2)
    {
        for(int i=0;i<l1;i++)
        {
            if(s1[i]!=s2[i])
                return 0;
        }
        return 1;
    }
    else
        return 0;
}

int main()
{
    string s1,s2;
    cout<<"Enter any two strings:- \n";
    getline(cin,s1);
    getline(cin,s2);
    int c=compare(s1,s2);
    if(c==0)
        cout<<"Strings are not equal\n";
    else
        cout<<"Strings are equals\n";
    return 0;
}
```

Output



```
File Actions Edit View Help
[sammei@kali] ~/Desktop/sammei/practical 6 c++
$ g++ t4.cpp

[sammei@kali] ~/Desktop/sammei/practical 6 c++
$ ./a.out
Enter any two strings:-
abc
abc
Strings are equals

[sammei@kali] ~/Desktop/sammei/practical 6 c++
$ ./a.out
Enter any two strings:-
abc
abd
Strings are not equal

[sammei@kali] ~/Desktop/sammei/practical 6 c++
$ ./a.out
Enter any two strings:-
Vaibhav
vaibhav
Strings are not equal

[sammei@kali] ~/Desktop/sammei/practical 6 c++
$ ./a.out
Enter any two strings:-
2001
2001
Strings are equals

[sammei@kali] ~/Desktop/sammei/practical 6 c++
$
```

Practical 6

Task 5

Source Code:

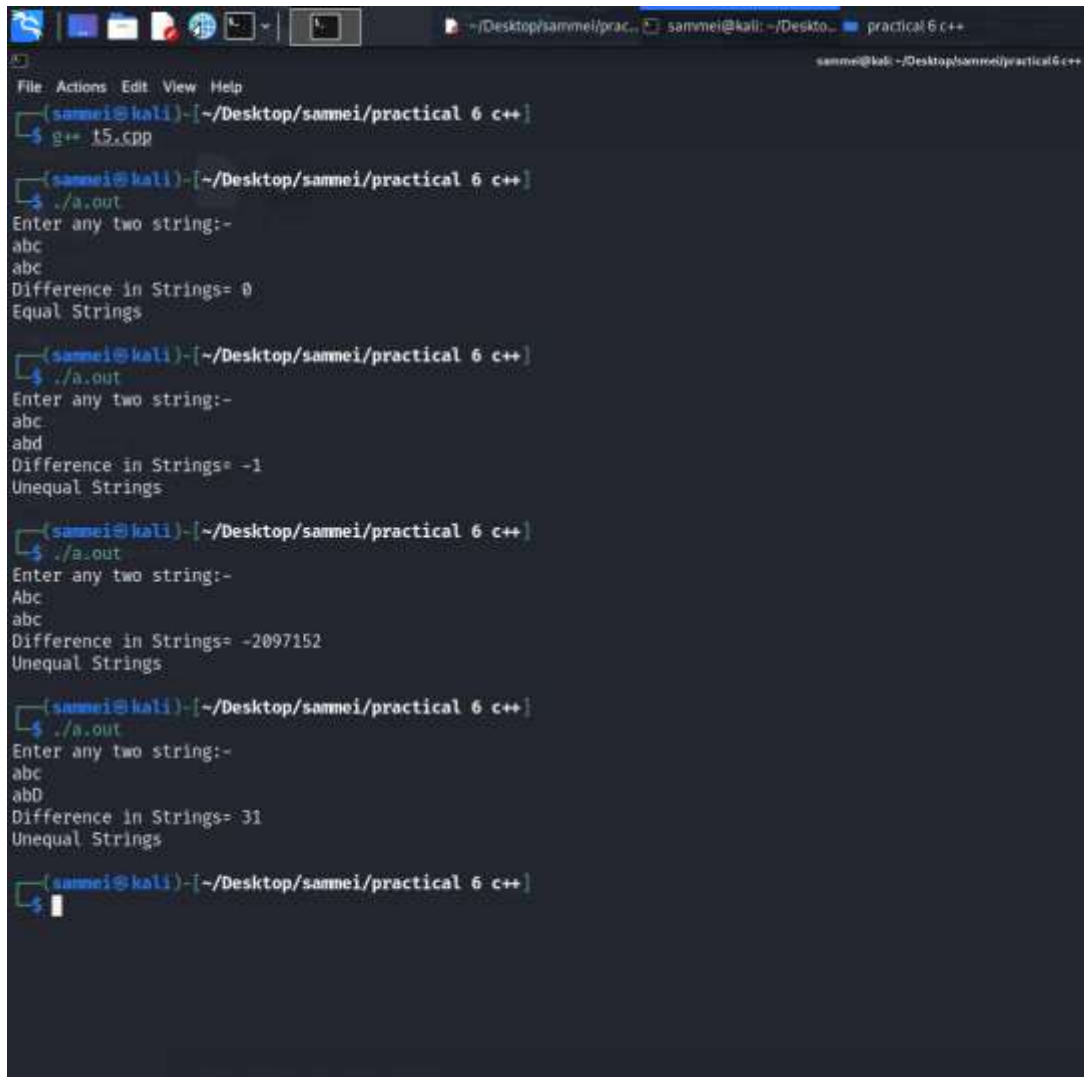
```
# include
<iostream>

    # include <string>

    using namespace std;

    int main()
    {
        string s1,s2;
        cout<<"Enter any two string:-\n";
        getline(cin,s1);
        getline(cin,s2);
        int x= s1.compare(s2);
        cout<<"Difference in Strings= "<<x<<"\n";
        if(x==0)
            cout<<"Equal Strings\n";
        else
            cout<<"Unequal Strings\n";
        return 0;
    }
```

Output



```
File Actions Edit View Help
[sammei@kali] ~/Desktop/sammei/practical 6 c++
$ g++ t5.cpp
[sammei@kali] ~/Desktop/sammei/practical 6 c++
$ ./a.out
Enter any two string:-
abc
abc
Difference in Strings= 0
Equal Strings

[sammei@kali] ~/Desktop/sammei/practical 6 c++
$ ./a.out
Enter any two string:-
abc
abd
Difference in Strings= -1
Unequal Strings

[sammei@kali] ~/Desktop/sammei/practical 6 c++
$ ./a.out
Enter any two string:-
Abc
abc
Difference in Strings= -2097152
Unequal Strings

[sammei@kali] ~/Desktop/sammei/practical 6 c++
$ ./a.out
Enter any two string:-
abc
abD
Difference in Strings= 31
Unequal Strings

[sammei@kali] ~/Desktop/sammei/practical 6 c++
$
```

Practical 6

Task 6

Source Code:

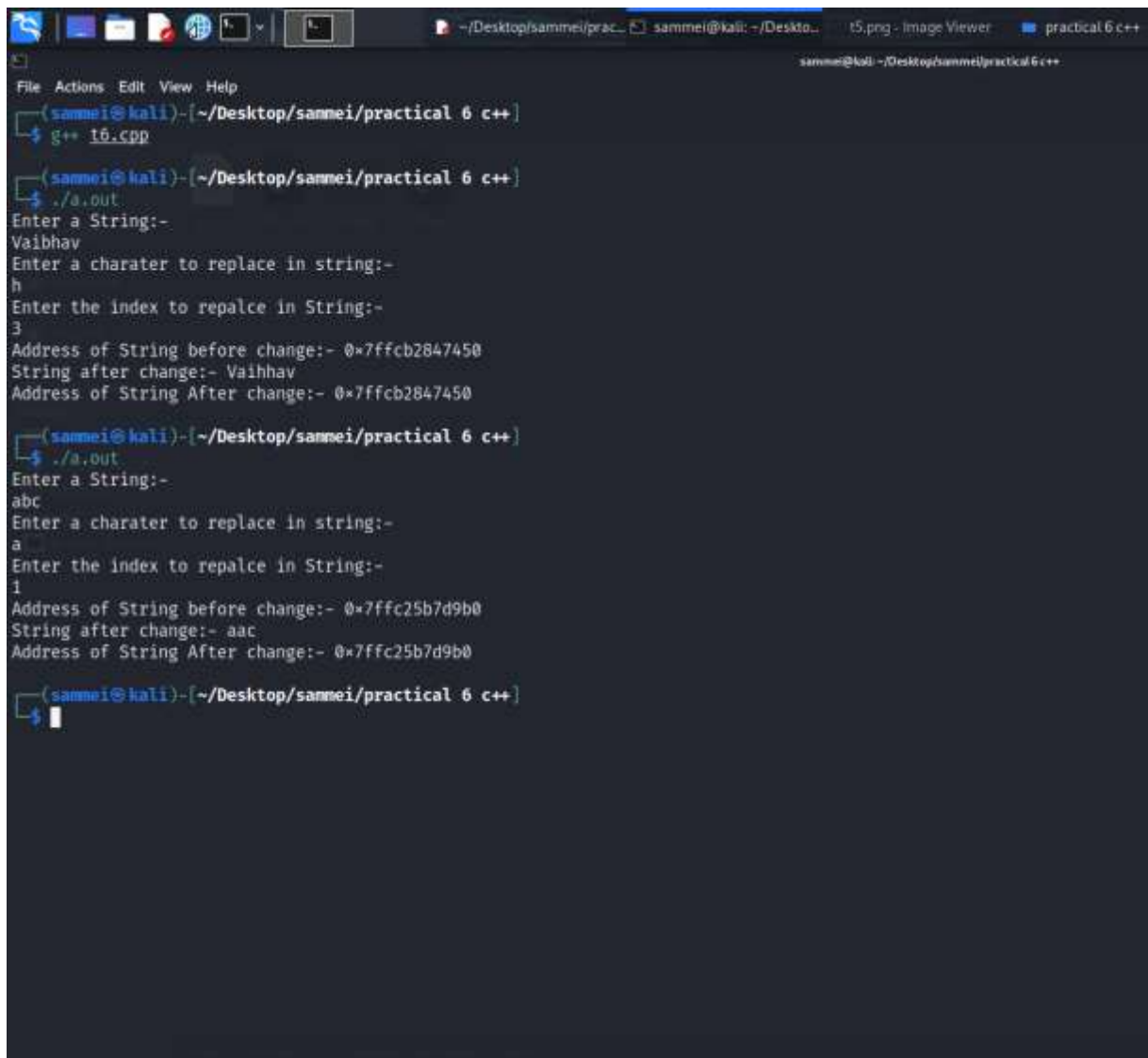
```
#include
<iostream>

#include <string>

using namespace std;

int main()
{
    string s;
    char c;
    int i;
    cout<<"Enter a String:-\n";
    getline(cin,s);
    cout<<"Enter a charater to replace in string:- \n";
    cin>>c;
    cout<<"Enter the index to repalce in String:-\n";
    cin>>i;
    cout<<"Address of String before change:- "<<&s<<"\n";
    s[i]=c;
    cout<<"String after change:- "<<s<<"\n";
    cout<<"Address of String After change:- "<<&s<<"\n";
    return 0;
}
```


Output



```
(sammei@kali) ~/Desktop/sammei/practical 6 c++  
$ g++ t6.cpp  
  
(sammei@kali) ~/Desktop/sammei/practical 6 c++  
$ ./a.out  
Enter a String:-  
Vaibhav  
Enter a charater to replace in string:-  
h  
Enter the index to repalce in String:-  
3  
Address of String before change:- 0x7ffcb2847450  
String after change:- Vaiahav  
Address of String After change:- 0x7ffcb2847450  
  
(sammei@kali) ~/Desktop/sammei/practical 6 c++  
$ ./a.out  
Enter a String:-  
abc  
Enter a charater to replace in string:-  
a  
Enter the index to repalce in String:-  
1  
Address of String before change:- 0x7ffc25b7d9b0  
String after change:- aac  
Address of String After change:- 0x7ffc25b7d9b0  
  
(sammei@kali) ~/Desktop/sammei/practical 6 c++  
$
```

Practical 7

Task 1

Source Code:

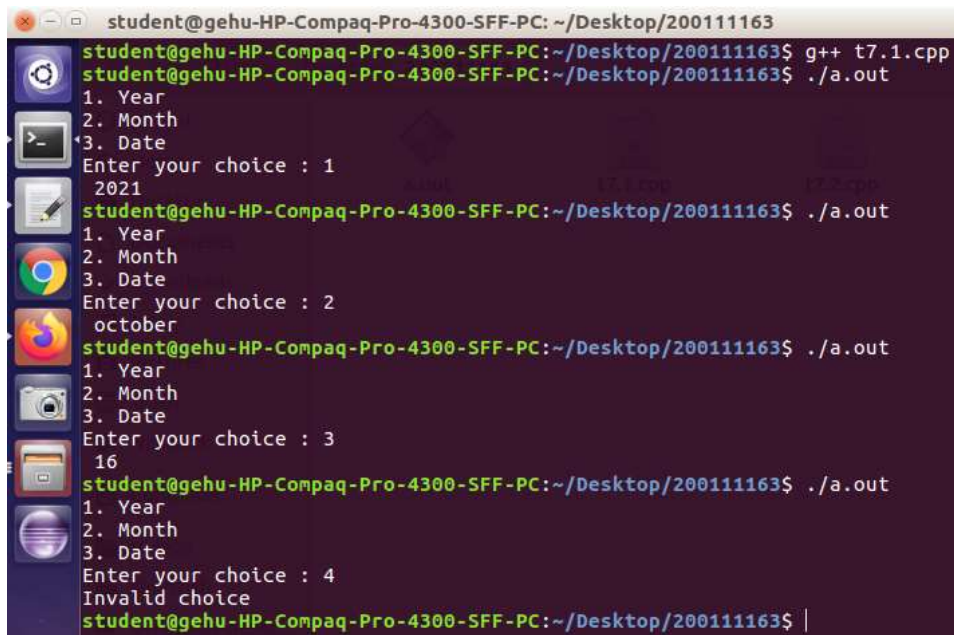
```
#include
<iostream>

#include <string>
using namespace std;
int main()
{
    int yr,ch;
    string month="october";
    int date=16;
    yr=2021;
    cout<<"1. Year\n";
    cout<<"2. Month\n";
    cout<<"3. Date\n";
    cout<<"Enter your choice : ";
    cin>>ch;

    switch(ch)
    {

    case 1:
        cout<<" "<<yr<<"\n";
        break;
    case 2:
        cout<<" "<<month<<"\n";
        break;
    case 3:
        cout<<" "<<date<<"\n";
        break;
    default:
        cout<<"Invalid choice\n";
        break;
    }
    return 0;
}
```

Output



```
student@gehu-HP-Compaq-Pro-4300-SFF-PC: ~/Desktop/200111163
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ g++ t7.1.cpp
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ ./a.out
1. Year
2. Month
3. Date
Enter your choice : 1
2021
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ ./a.out
1. Year
2. Month
3. Date
Enter your choice : 2
october
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ ./a.out
1. Year
2. Month
3. Date
Enter your choice : 3
16
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ ./a.out
1. Year
2. Month
3. Date
Enter your choice : 4
Invalid choice
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ |
```

Practical 7

Task 2

Source Code:

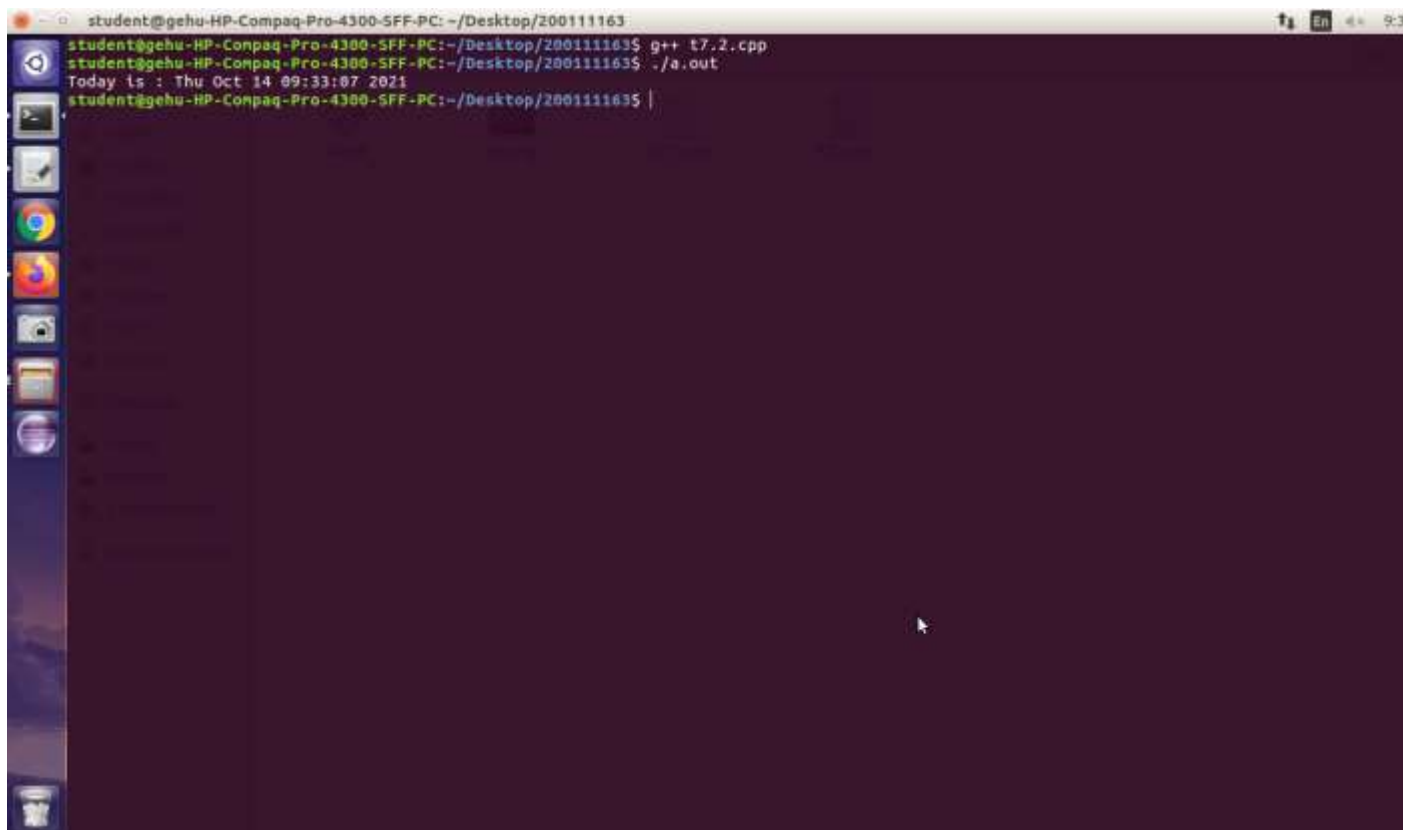
```
#include
<iostream>

#include <ctime>
using namespace std;
int main()
{
    time_t current_time;
    current_time = time(NULL);

    char *tm = ctime(&current_time);
    cout << "Today is : " << tm;

    return 0;
}
```

Output



```
student@gehu-HP-Compaq-Pro-4300-SFF-PC: ~/Desktop/200111163
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ g++ t7.2.cpp
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ ./a.out
Today is : Thu Oct 14 09:33:07 2021
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$
```

Practical 7

Task 3 V1

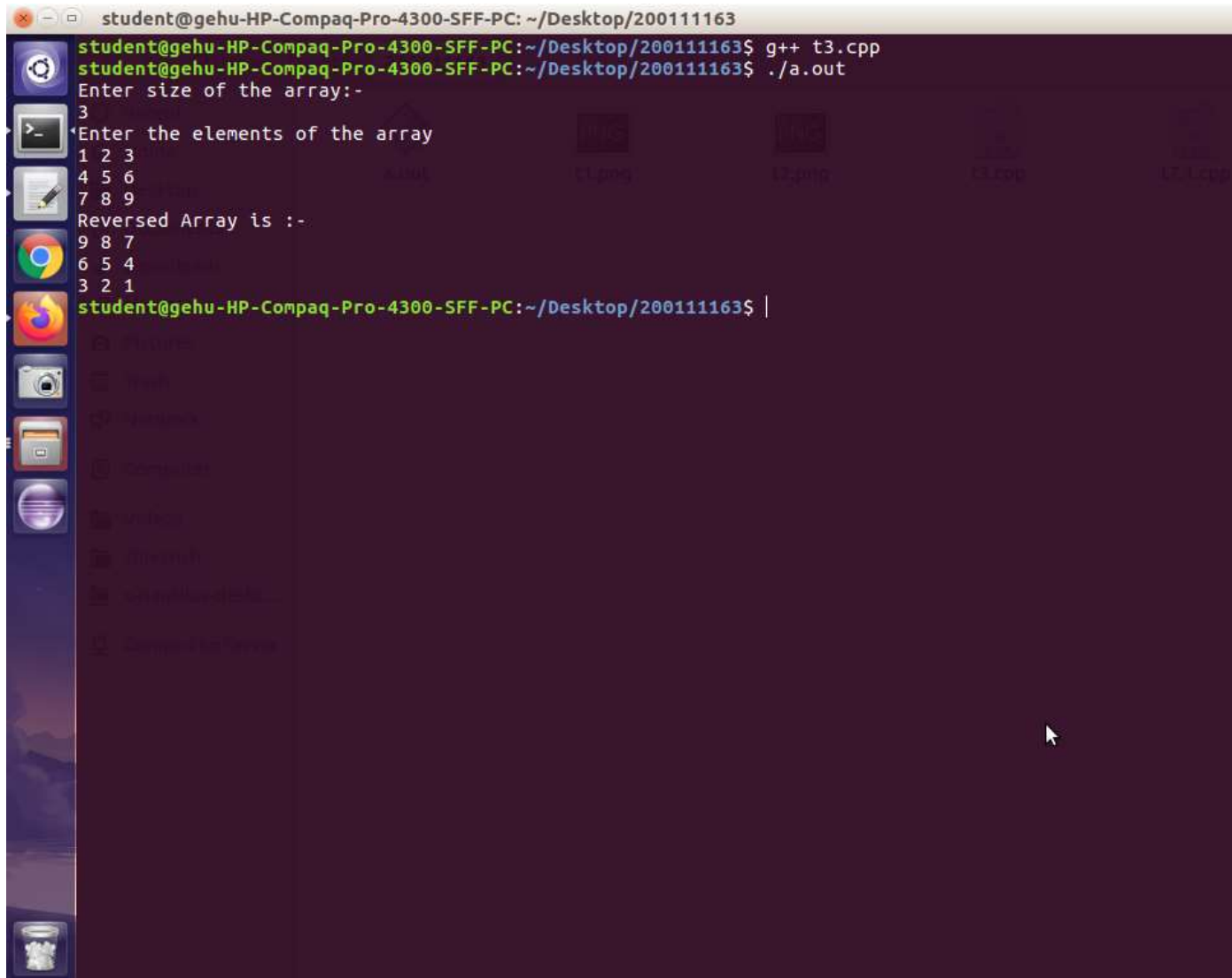
Source Code:

```
# include
<iostream>

using namespace std;

int main()
{
    int n,i,j;
    cout<<"Enter size of the array:-\n";
    cin>>n;
    int a[n][n];
    cout<<"Enter the elements of the array\n";
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            cin>>a[i][j];
        }
    }
    cout<<"Reversed Array is :-\n";
    for(i=n-1;i>=0;i--)
    {
        for(j=n-1;j>=0;j--)
        {
            cout<<a[i][j]<<" ";
        }
        cout<<"\n";
    }
    return 0;
}
```

Output



```
student@gehu-HP-Compaq-Pro-4300-SFF-PC: ~/Desktop/200111163
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ g++ t3.cpp
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ ./a.out
Enter size of the array:-
3
Enter the elements of the array
1 2 3
4 5 6
7 8 9
Reversed Array is :-
9 8 7
6 5 4
3 2 1
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ |
```

The screenshot shows a terminal window on a Linux system. The user is in the directory ~/Desktop/200111163. They compile a C++ program t3.cpp using g++ and then run the resulting executable a.out. The program prompts for the size of the array (3) and then for the elements of the array (1 2 3, 4 5 6, 7 8 9). It then displays the reversed array (9 8 7, 6 5 4, 3 2 1). The terminal window has a dark purple background and a sidebar with various application icons on the left.

Practical 7

Task 3 V2

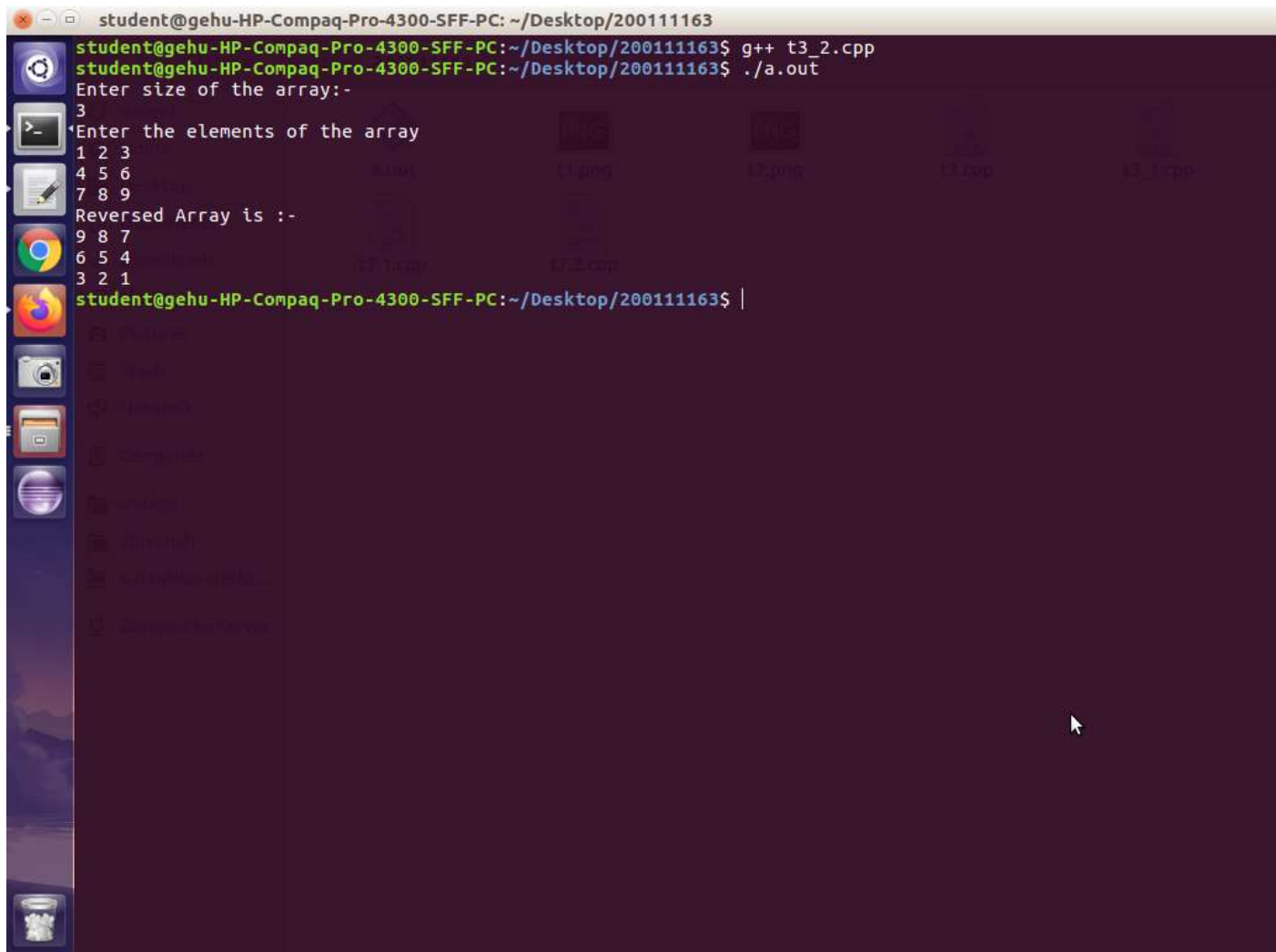
Source Code:

```
# include
<iostream>

using namespace std;

int main()
{
    int n,i,j;
    cout<<"Enter size of the array:-\n";
    cin>>n;
    int a[n][n];
    cout<<"Enter the elements of the array\n";
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            cin>>a[i][j];
        }
    }
    cout<<"Reversed Array is :-\n";
    for(i=0;i<3;i++)
    {
        for(j=0;j<3;j++)
        {
            cout<<10-a[i][j]<<" ";
        }
        cout<<"\n";
    }
    return 0;
}
```

Output



```
student@gehu-HP-Compaq-Pro-4300-SFF-PC: ~/Desktop/200111163
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ g++ t3_2.cpp
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ ./a.out
Enter size of the array:-
3
Enter the elements of the array
1 2 3
4 5 6
7 8 9
Reversed Array is :-
9 8 7
6 5 4
3 2 1
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ |
```

The screenshot shows a terminal window on a Linux desktop. The user is in the directory ~/Desktop/200111163. They compile a C++ file t3_2.cpp using g++ and then run the resulting executable a.out. The program prompts for the size of the array (3) and then for the elements (1 2 3, 4 5 6, 7 8 9). It then displays the reversed array (9 8 7, 6 5 4, 3 2 1). The desktop background is dark purple, and the left sidebar contains icons for various applications and system utilities.

Practical 7

Task 3 V3

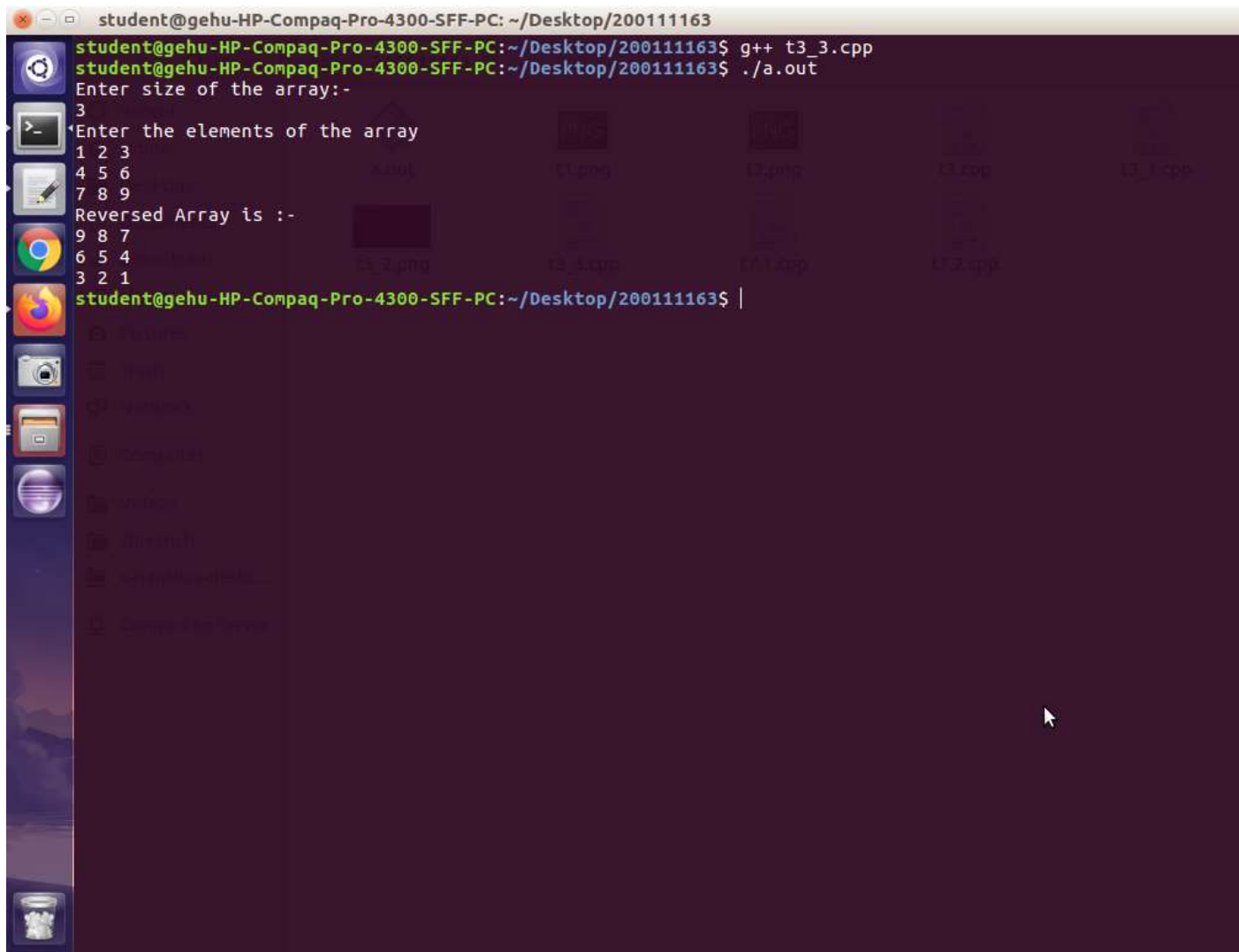
Source Code:

```
# include
<iostream>

using namespace std;

int main()
{
    int n,i,j;
    cout<<"Enter size of the array:-\n";
    cin>>n;
    int a[n][n],b[n][n];
    cout<<"Enter the elements of the array\n";
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            cin>>a[i][j];
        }
    }
    cout<<"Reversed Array is :-\n";
    for(i=n-1;i>=0;i--)
    {
        for(j=n-1;j>=0;j--)
        {
            b[n-i-1][n-j-1]=a[i][j];
        }
    }
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            cout<<b[i][j]<<" ";
        }
        cout<<"\n";
    }
    return 0;
}
```

Output



```
student@gehu-HP-Compaq-Pro-4300-SFF-PC: ~/Desktop/200111163
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ g++ t3_3.cpp
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ ./a.out
Enter size of the array:-
3
Enter the elements of the array
1 2 3
4 5 6
7 8 9
Reversed Array is :-
9 8 7
6 5 4
3 2 1
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ |
```

The screenshot shows a terminal window on a Linux system. The user is in the directory ~/Desktop/200111163. They compile a C++ file t3_3.cpp using g++ and then run the resulting executable a.out. The program prompts for the size of the array (3) and then for the elements of the array (1 2 3, 4 5 6, 7 8 9). It then displays the reversed array (9 8 7, 6 5 4, 3 2 1). The desktop background is a dark purple color with various icons on the left side.

Practical 7

Task 3 V4

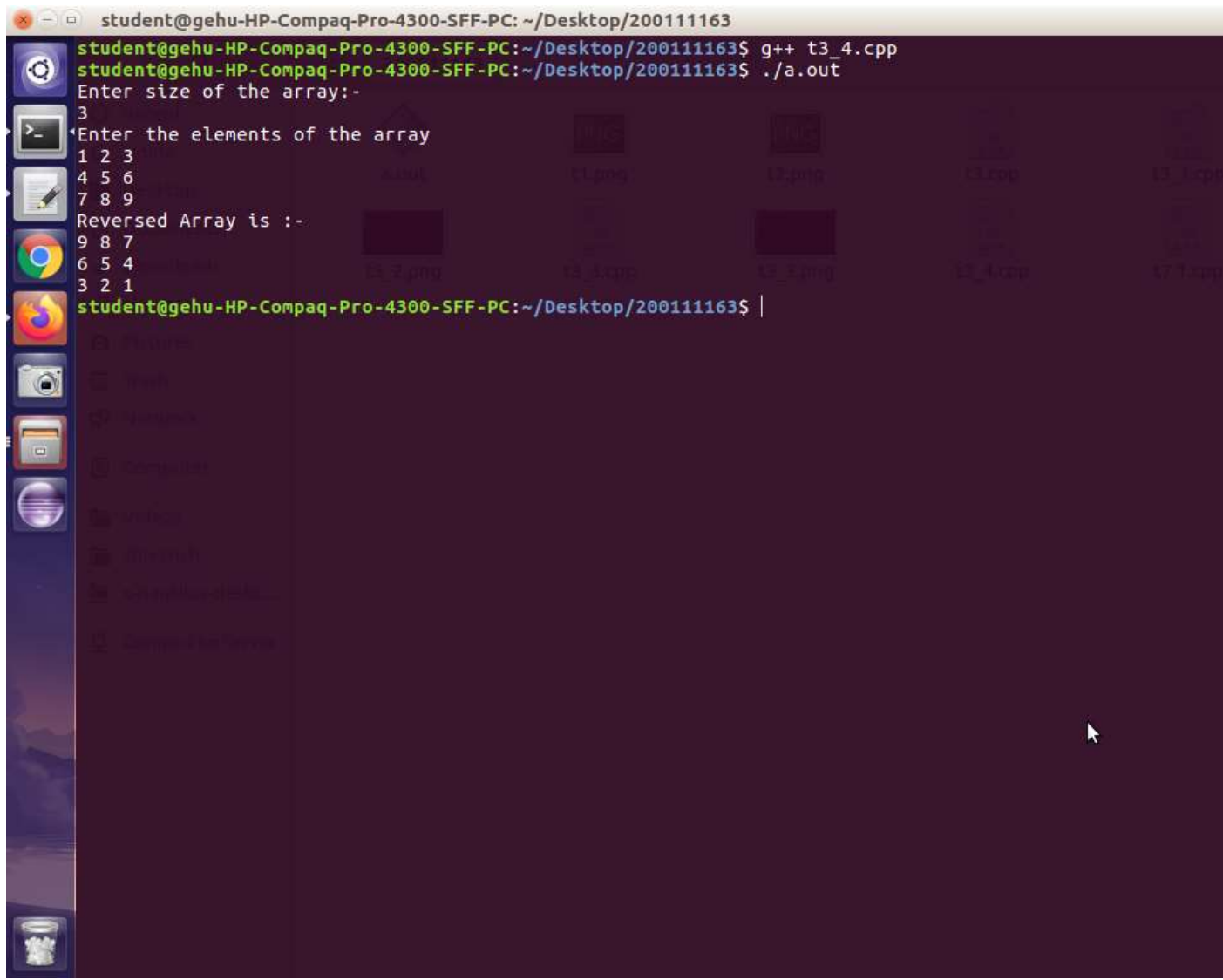
Source Code:

```
# include
<iostream>

using namespace std;

int main()
{
    int n,i,j;
    cout<<"Enter size of the array:-\n";
    cin>>n;
    int a[n][n],b[n][n];
    cout<<"Enter the elements of the array\n";
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            cin>>a[i][j];
        }
    }
    cout<<"Reversed Array is :-\n";
    for(i=0;i<3;i++)
    {
        for(j=0;j<3;j++)
        {
            b[i][j]=10-a[i][j];
        }
    }
    for(i=0;i<3;i++)
    {
        for(j=0;j<3;j++)
        {
            cout<<b[i][j]<<" ";
        }
        cout<<"\n";
    }
    return 0;
}
```

Output



```
student@gehu-HP-Compaq-Pro-4300-SFF-PC: ~/Desktop/200111163
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ g++ t3_4.cpp
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ ./a.out
Enter size of the array:-
3
Enter the elements of the array
1 2 3
4 5 6
7 8 9
Reversed Array is :-
9 8 7
6 5 4
3 2 1
student@gehu-HP-Compaq-Pro-4300-SFF-PC:~/Desktop/200111163$ |
```

The screenshot shows a terminal window on a Linux system. The user is in the directory ~/Desktop/200111163. They compile a C++ file t3_4.cpp using g++ and then run the resulting executable a.out. The program prompts for the size of the array (3) and then for the elements (1 2 3, 4 5 6, 7 8 9). It then displays the reversed array (9 8 7, 6 5 4, 3 2 1). The terminal window has a dark background and a sidebar with application icons on the left.

Practical 7

Task 4 V1

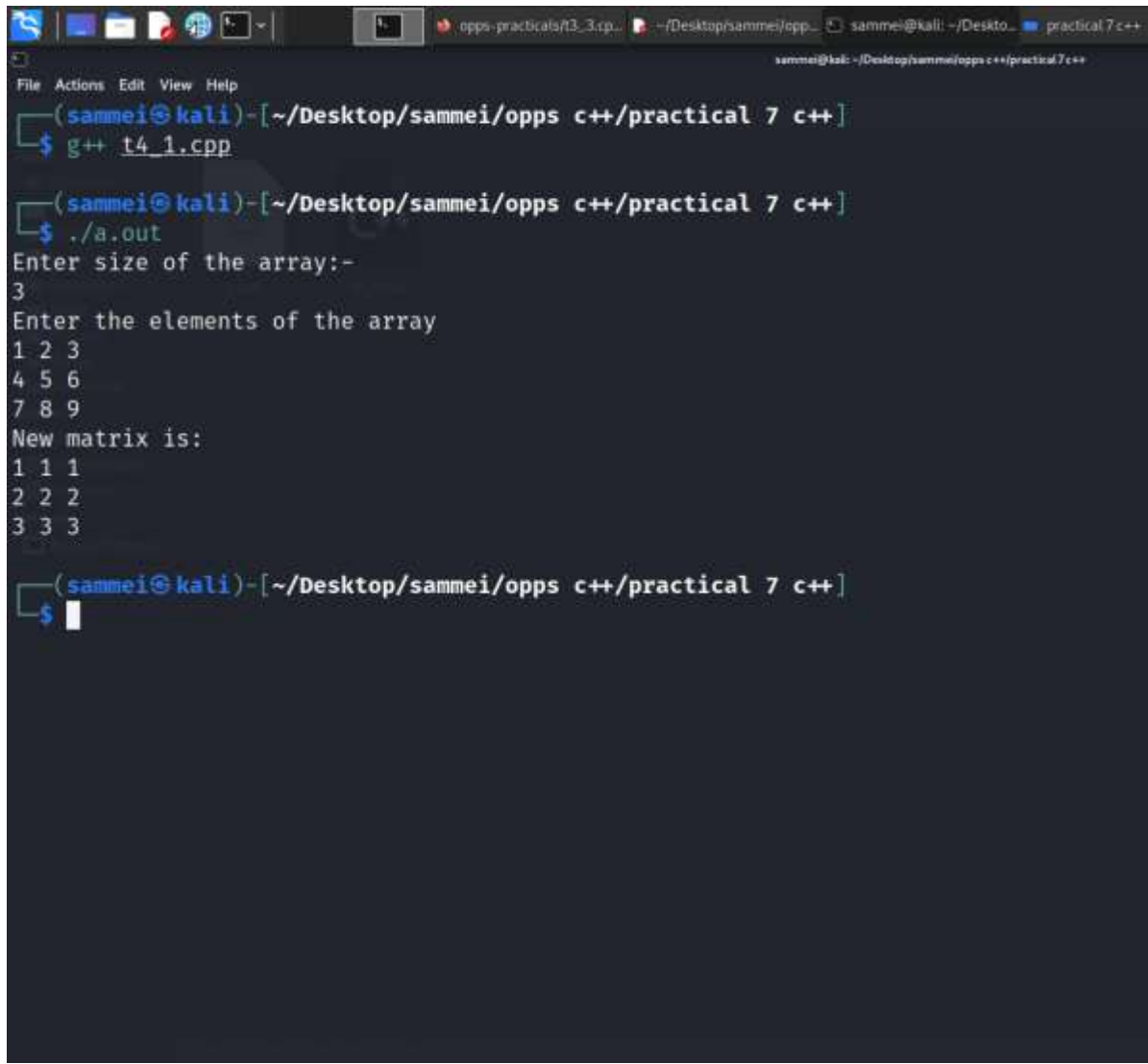
Source Code:

```
# include
<iostream>

using namespace std;

int main()
{
    int n,i,j;
    cout<<"Enter size of the array:-\n";
    cin>>n;
    int a[n][n],b[n][n];
    cout<<"Enter the elements of the array\n";
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            cin>>a[i][j];
        }
    }
    cout<<"New matrix is:\n";
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            cout<<a[0][i]<<" ";
        }
        cout<<"\n";
    }
    return 0;
}
```

Output



The screenshot shows a terminal window with the following content:

```
(sammei@kali)~[/Desktop/sammei/ops c++/practical 7 c++]
$ g++ t4_1.cpp

(sammei@kali)~[/Desktop/sammei/ops c++/practical 7 c++]
$ ./a.out
Enter size of the array:-
3
Enter the elements of the array
1 2 3
4 5 6
7 8 9
New matrix is:
1 1 1
2 2 2
3 3 3

(sammei@kali)~[/Desktop/sammei/ops c++/practical 7 c++]
$
```

Practical 7

Task 4 V2

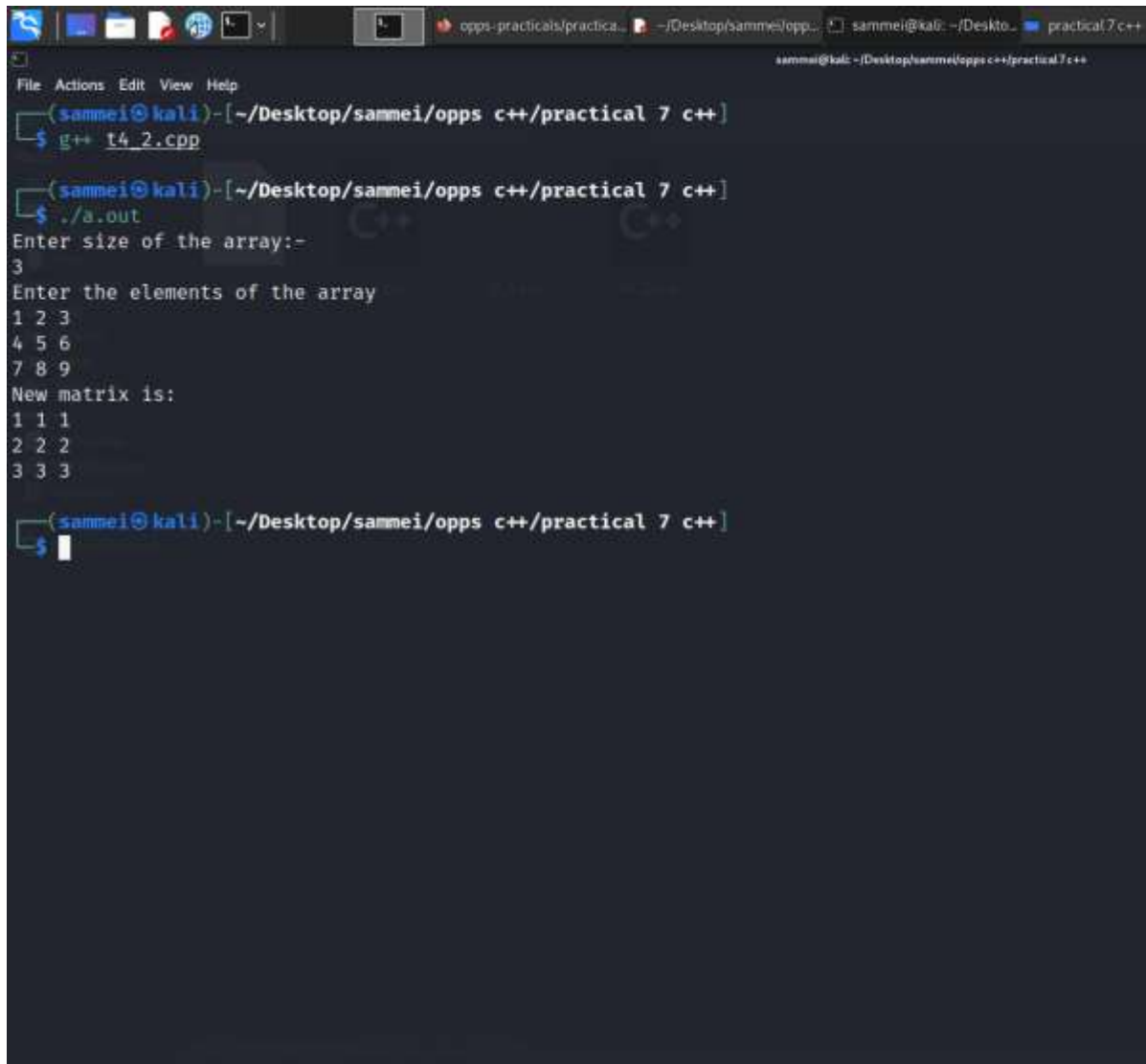
Source Code:

```
# include
<iostream>

using namespace std;

int main()
{
    int n,i,j;
    cout<<"Enter size of the array:-\n";
    cin>>n;
    int a[n][n],b[n][n];
    cout<<"Enter the elements of the array\n";
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            cin>>a[i][j];
        }
    }
    cout<<"New matrix is:\n";
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            cout<<a[i][n-1]/3<<" ";
        }
        cout<<"\n";
    }
    return 0;
}
```

Output



```
sammei@kali: ~/Desktop/sammei/ops c++/practical 7 c++  
File Actions Edit View Help  
(sammei@kali)~[~/Desktop/sammei/ops c++/practical 7 c++]  
$ g++ t4_2.cpp  
(sammei@kali)~[~/Desktop/sammei/ops c++/practical 7 c++]  
$ ./a.out  
Enter size of the array:-  
3  
Enter the elements of the array  
1 2 3  
4 5 6  
7 8 9  
New matrix is:  
1 1 1  
2 2 2  
3 3 3  
(sammei@kali)~[~/Desktop/sammei/ops c++/practical 7 c++]  
$
```


Practical 7

Task 4 V3

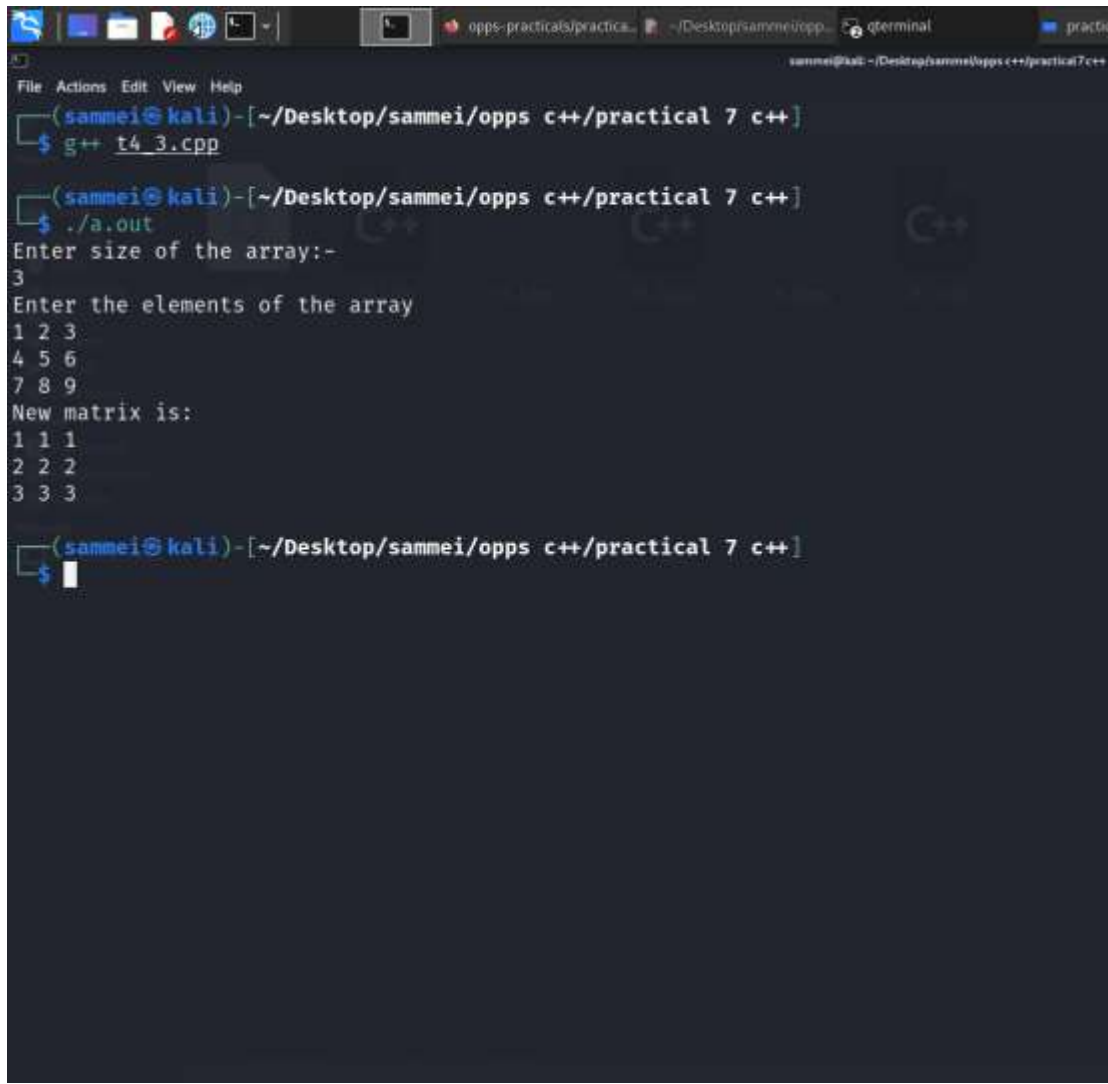
Source Code:

```
# include
<iostream>

using namespace std;

int main()
{
    int n,i,j;
    cout<<"Enter size of the array:-\n";
    cin>>n;
    int a[n][n],b[n][n];
    cout<<"Enter the elements of the array\n";
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            cin>>a[i][j];
        }
    }
    cout<<"New matrix is:\n";
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            cout<<a[i][j]-(2*i+j)<<" ";
        }
        cout<<"\n";
    }
    return 0;
}
```

Output



The screenshot shows a terminal window with the following content:

```
(sammei@kali) - [~/Desktop/sammei/ops c++/practical 7 c++]
$ g++ t4_3.cpp

(sammei@kali) - [~/Desktop/sammei/ops c++/practical 7 c++]
$ ./a.out
Enter size of the array:-
3
Enter the elements of the array
1 2 3
4 5 6
7 8 9
New matrix is:
1 1 1
2 2 2
3 3 3

(sammei@kali) - [~/Desktop/sammei/ops c++/practical 7 c++]
$
```

Practical 7

Task 5

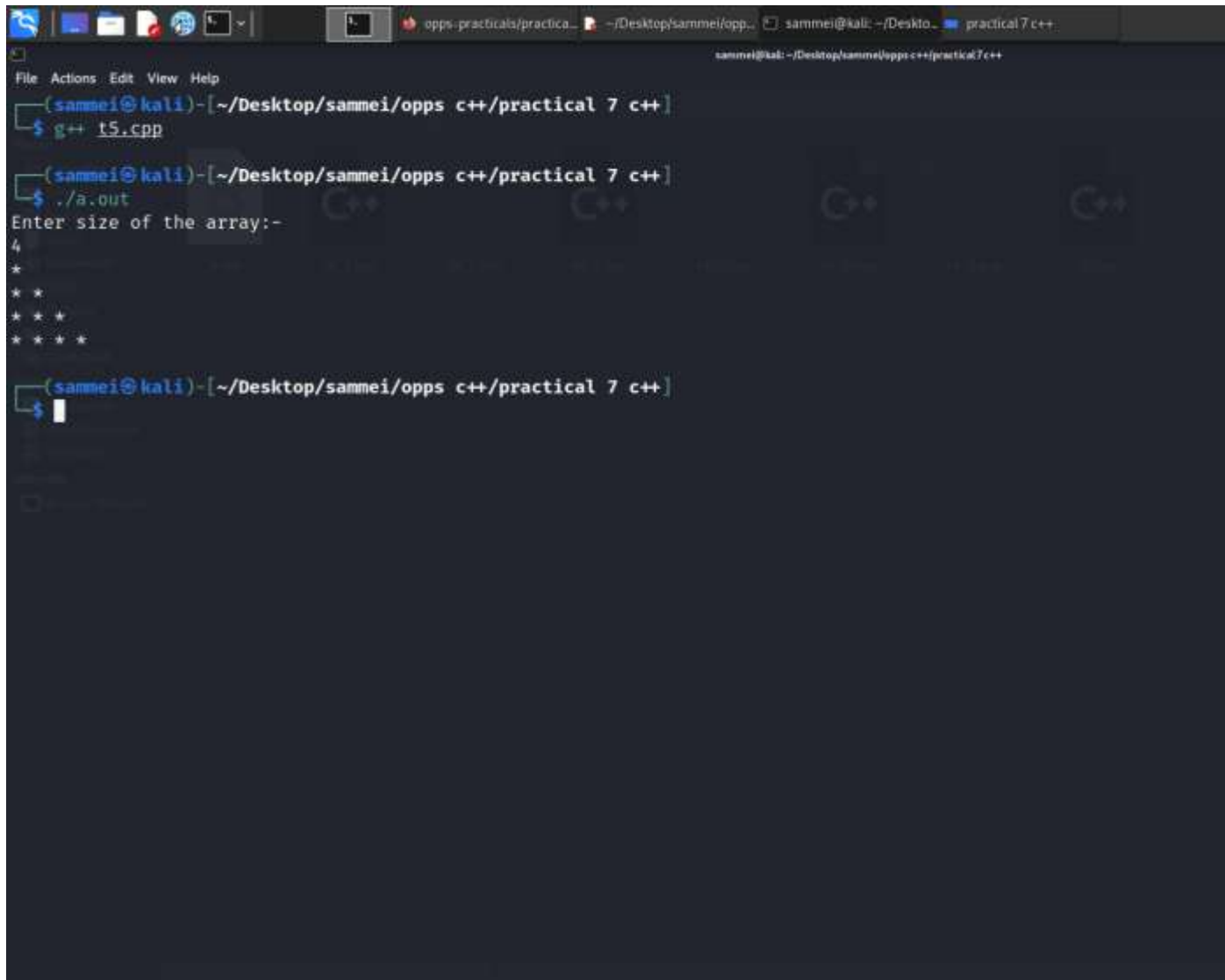
Source Code:

```
# include
<iostream>

using namespace std;

int main()
{
    int n,i,j;
    cout<<"Enter size of the array:-\n";
    cin>>n;
    char a[n][n];
    for(i=0;i<n;i++)
    {
        for(j=0;j<=i;j++)
        {
            a[i][j]='*';
        }
    }
    for(i=0;i<n;i++)
    {
        for(j=0;j<=i;j++)
        {
            cout<<a[i][j]<<" ";
        }
        cout<<"\n";
    }
    return 0;
}
```

Output



The screenshot shows a terminal window with the following content:

```
File Actions Edit View Help
(sammei@kali) - [~/Desktop/sammei/ops c++/practical 7 c++]
$ g++ t5.cpp

(sammei@kali) - [~/Desktop/sammei/ops c++/practical 7 c++]
$ ./a.out
Enter size of the array:-
4
*
* *
* * *
* * * *
```

The terminal window has a dark background and a light-colored text. The prompt is `(sammei@kali) - [~/Desktop/sammei/ops c++/practical 7 c++]`. The user enters `g++ t5.cpp` and then `./a.out`. The program prompts for the size of the array, and the user enters `4`. The program then prints a pattern of asterisks.

Practical 7

Task 6

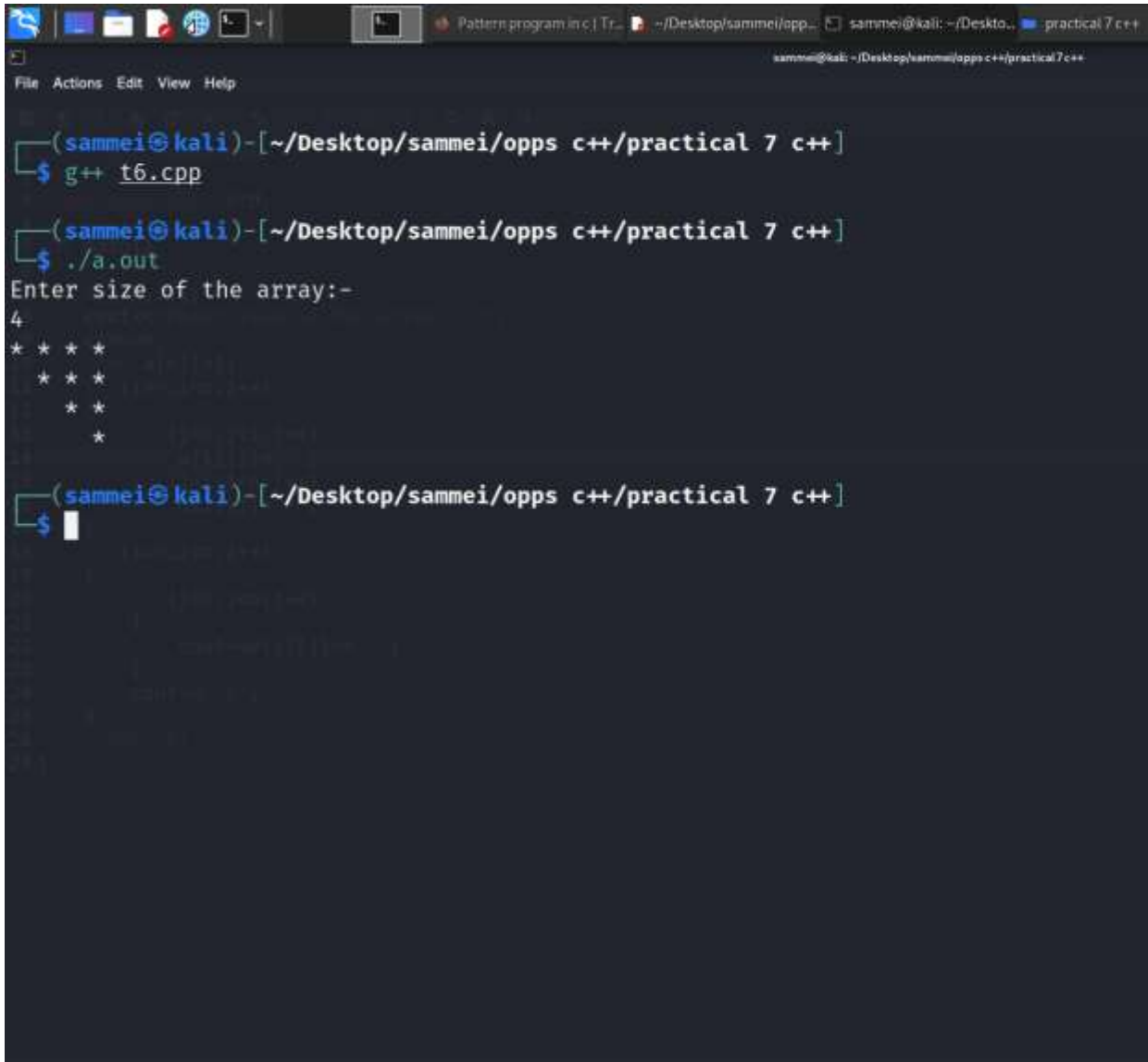
Source Code:

```
# include
<iostream>

using namespace std;

int main()
{
    int n,i,j;
    cout<<"Enter size of the array:-\n";
    cin>>n;
    char a[n][n];
    for(i=0;i<n;i++)
    {
        for(j=0;j<i;j++)
            a[i][j]=' ';
        for(j=i;j<n;j++)
            a[i][j]='*';
    }
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            cout<<a[i][j]<<" ";
        }
        cout<<"\n";
    }
    return 0;
}
```

Output



```
(sammei@kali)-[~/Desktop/sammei/opps c++/practical 7 c++]
$ g++ t6.cpp

(sammei@kali)-[~/Desktop/sammei/opps c++/practical 7 c++]
$ ./a.out
Enter size of the array:-
4
* * * *
 * * *
  * *
   *

(sammei@kali)-[~/Desktop/sammei/opps c++/practical 7 c++]
$
```

Practical 7

Task 7

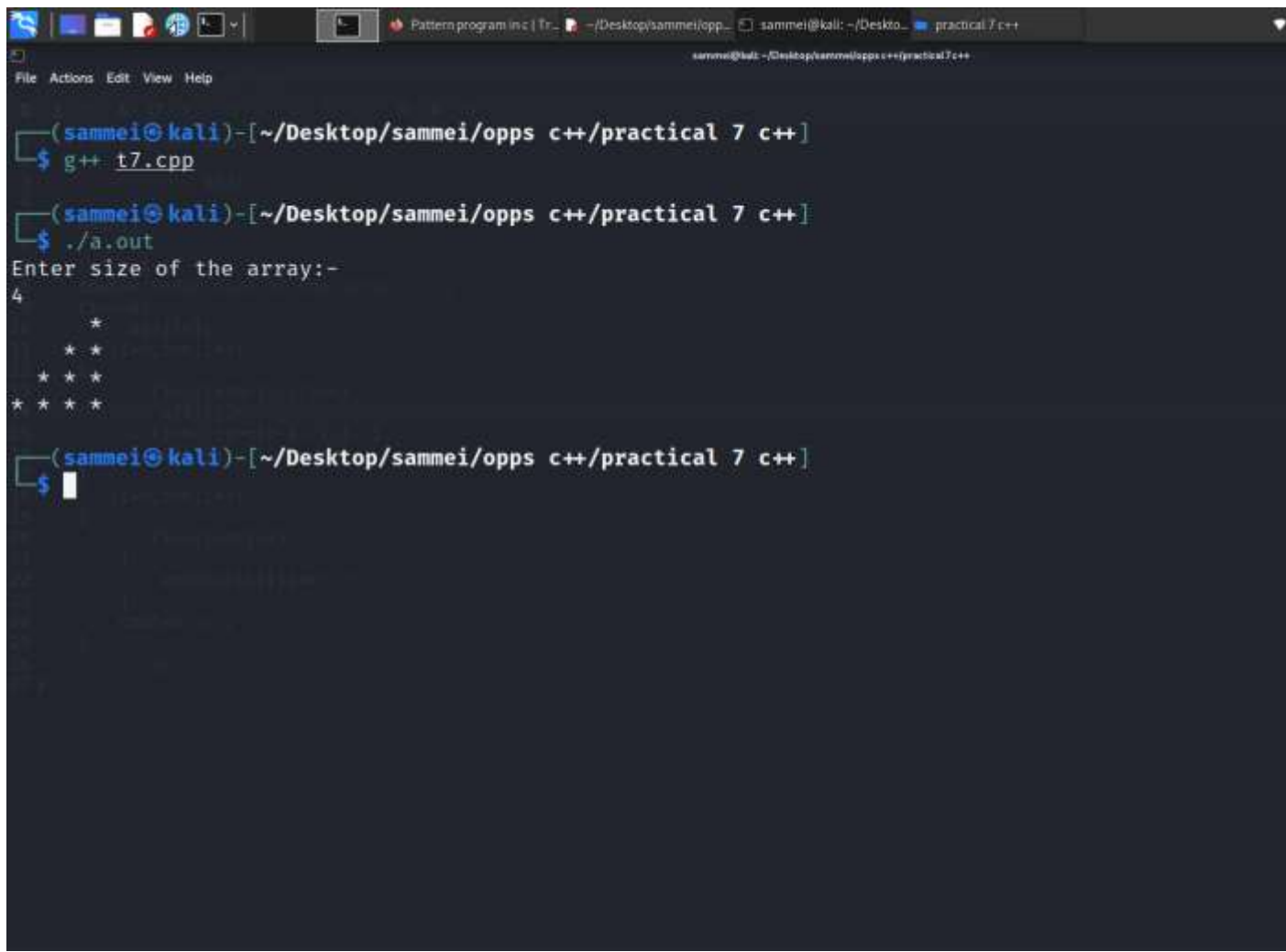
Source Code:

```
# include
<iostream>

using namespace std;

int main()
{
    int n,i,j;
    cout<<"Enter size of the array:-\n";
    cin>>n;
    char a[n][n];
    for(i=0;i<n;i++)
    {
        for(j=0;j<(n-i-1);j++)
            a[i][j]=' ';
        for(j=n-1;j>=(n-i-1);j--)
            a[i][j]='*';
    }
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            cout<<a[i][j]<<" ";
        }
        cout<<"\n";
    }
    return 0;
}
```

Output



```
(sammei@kali) - [~/Desktop/sammei/ops c++/practical 7 c++]
$ g++ t7.cpp

(sammei@kali) - [~/Desktop/sammei/ops c++/practical 7 c++]
$ ./a.out
Enter size of the array:-
4
   *
  * *
 * * *
* * * *
```


Practical 7

Task 8

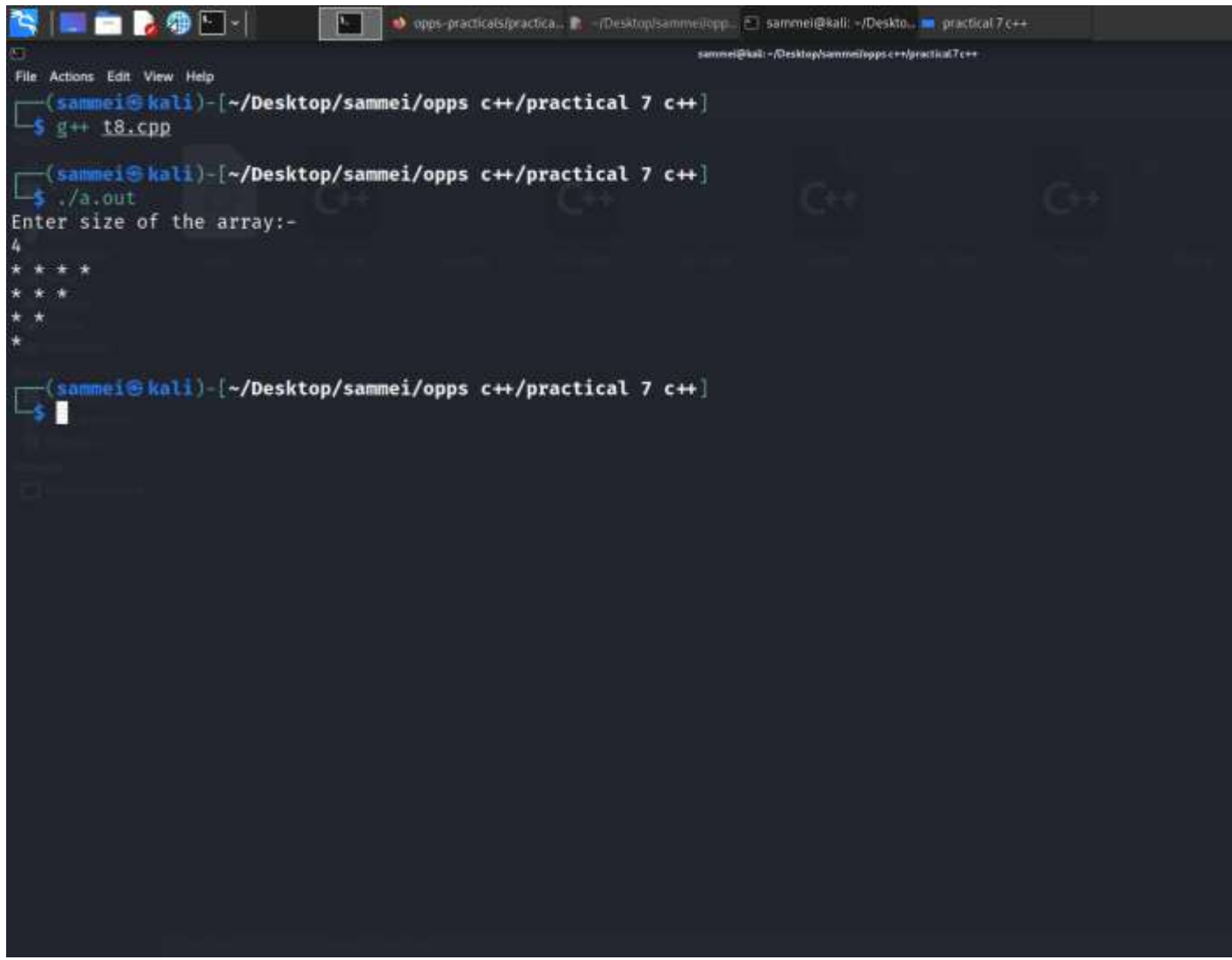
Source Code:

```
# include
<iostream>

using namespace std;

int main()
{
    int n,i,j;
    cout<<"Enter size of the array:-\n";
    cin>>n;
    char a[n][n];
    for(i=n-1;i>=0;i--)
    {
        for(j=i;j>=0;j--)
        {
            a[i][j]='*';
        }
    }
    for(i=n-1;i>=0;i--)
    {
        for(j=i;j>=0;j--)
        {
            cout<<a[i][j]<<" ";
        }
        cout<<'\\n';
    }
    return 0;
}
```

Output



```
(sammei@kali) - [~/Desktop/sammei/ops c++/practical 7 c++]
$ g++ t8.cpp

(sammei@kali) - [~/Desktop/sammei/ops c++/practical 7 c++]
$ ./a.out
Enter size of the array:-
4
* * * *
* * *
* *
*

```

Practical 8

Task 1

Source Code:

```
#include
<iostream>

using namespace std;

int main()
{
    int *p=[10,20,30];
    cout<<*p;
    p++;
    cout<<(*p);
    return 0;
}
```

Output



```
Terminal
gehu@lab7-pc10:~/Desktop/200111163$ g++ t1.cpp
t1.cpp: In function 'int main()':
t1.cpp:7:10: error: expected identifier before numeric constant
    int *p=[10,20,30];
           ^
t1.cpp:7:12: error: expected ']' before ',' token
    int *p=[10,20,30];
           ^,
t1.cpp: In lambda function:
t1.cpp:7:12: error: expected '{' before ',' token
t1.cpp: In function 'int main()':
t1.cpp:7:12: warning: lambda expressions only available with -std=c++11 or -std=gnu++11
t1.cpp:7:12: error: cannot convert 'main()::<lambda()>' to 'int*' in initialization
t1.cpp:7:13: error: expected unqualified-id before numeric constant
    int *p=[10,20,30];
           ^
gehu@lab7-pc10:~/Desktop/200111163$ _
```

Practical 8

Task 2 V1

Source Code:

```
#include
<iostream>

using namespace std;

int main()
{
    int arr[]={10,20,30};
    int *p;
    p=&arr;
    cout<<*p<<"\n";
    p++;
    cout<<*p<<"\n";
    return 0;
}
```

Output



Practical 8

Task 2 V2

Source Code:

```
#include
<iostream>

using namespace std;

int main()
{
    int arr[]={10,20,30};
    int *p;
    p=arr;
    cout<<*p<<"\n";
    p++;
    cout<<*p<<"\n";
    return 0;
}
```

Output



```
Terminal
gehu@lab7-pc10:~/Desktop/200111163$ g++ t2_1.cpp
gehu@lab7-pc10:~/Desktop/200111163$ ./a.out
10
20
gehu@lab7-pc10:~/Desktop/200111163$ _
```

Practical 8

Task 3 V1

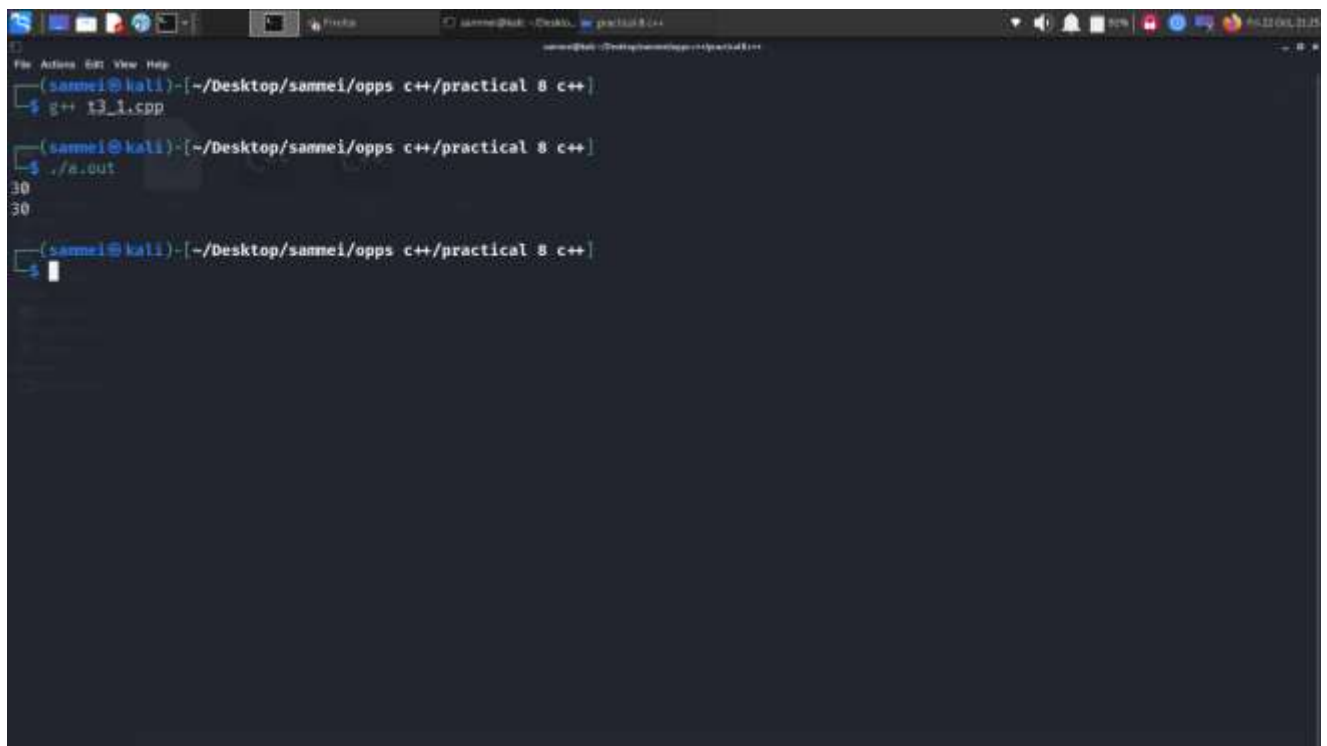
Source Code:

```
#include
<iostream>

using namespace std;

int main()
{
    int a=30;
    int *p;
    p=&a;
    int **q;
    q=&p;
    cout<<*p<<"\n";
    cout<<**q<<"\n";
    return 0;
}
```

Output



```
File Actions Edit View Help
(sannei@kali)~/Desktop/sannei/opps c++/practical 8 c++
$ g++ t3_1.cpp
(sannei@kali)~/Desktop/sannei/opps c++/practical 8 c++
$ ./a.out
30
30
(sannei@kali)~/Desktop/sannei/opps c++/practical 8 c++
$
```

Practical 8

Task 3 V2

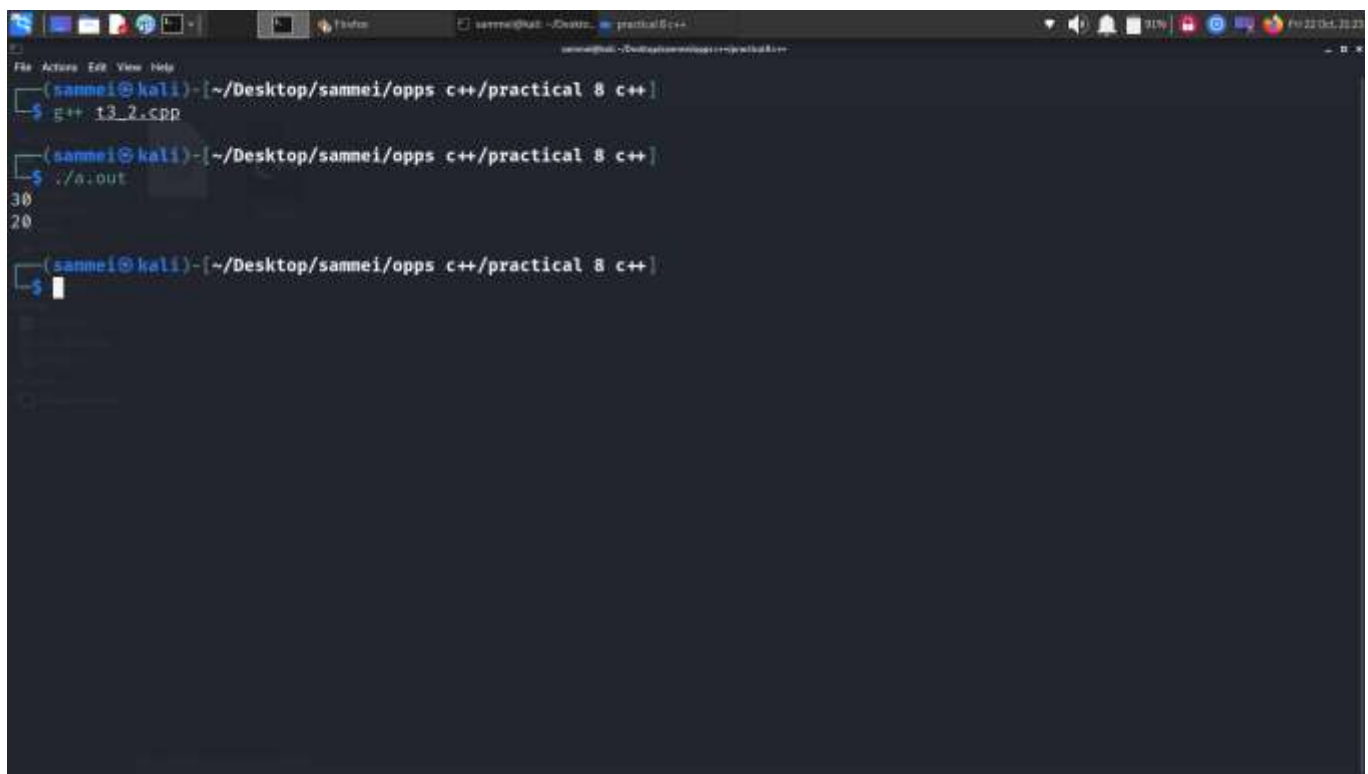
Source Code:

```
#include
<iostream>

using namespace std;

int main()
{
    int a=30;
    int *p;
    p=&a;
    int **q;
    q=&p;
    cout<<**q<<"\n";
    **q=20;
    cout<<**q<<"\n";
    return 0;
}
```

Output



```
(sammei@kali) ~/Desktop/sammei/opps c++/practical 8 c++
$ g++ t3_2.cpp
(sammei@kali) ~/Desktop/sammei/opps c++/practical 8 c++
$ ./a.out
30
20
(sammei@kali) ~/Desktop/sammei/opps c++/practical 8 c++
$
```

Practical 8

Task 4

Source Code:

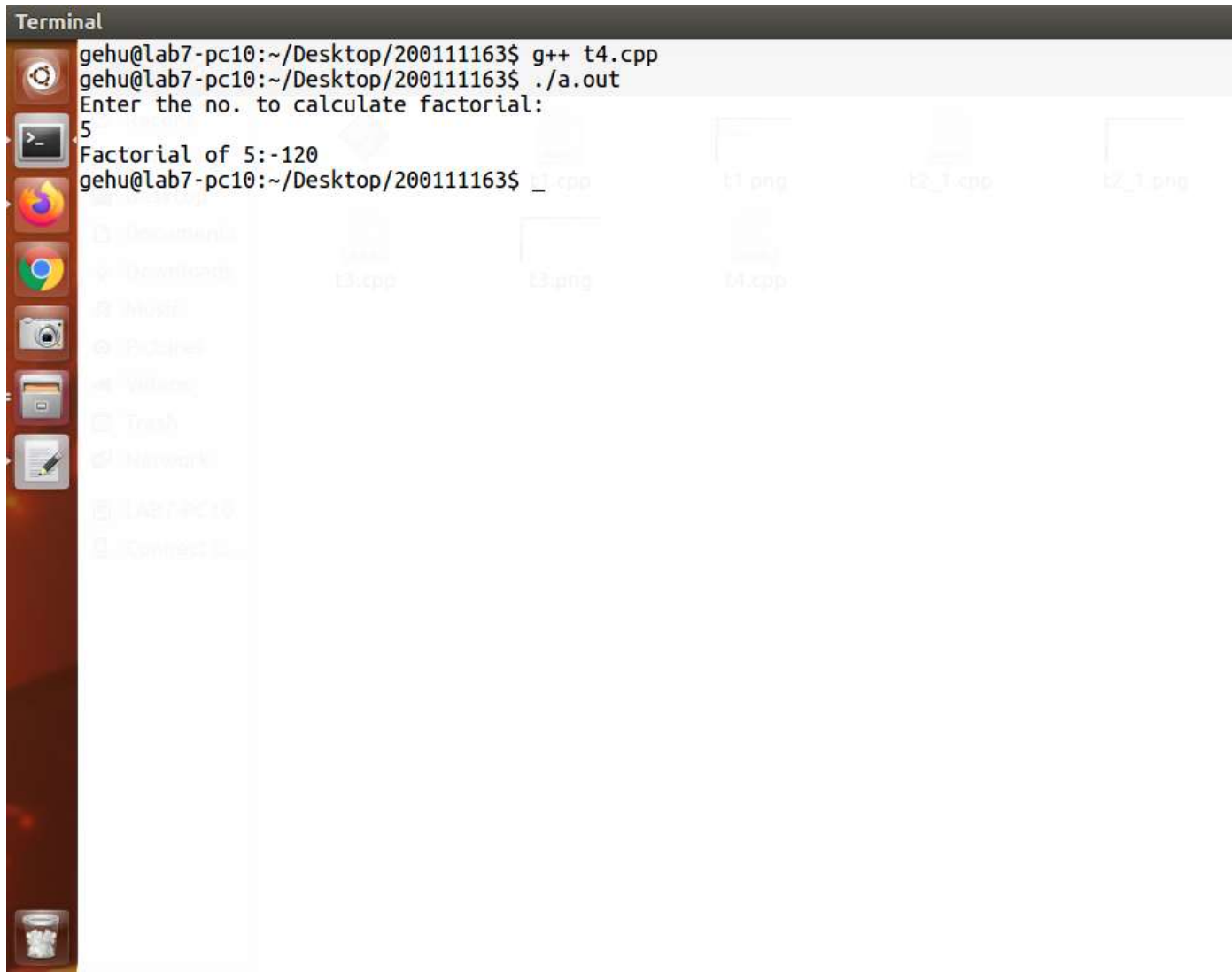
```
#include
<iostream>

using namespace std;

void fac(int n)
{
    int f=1,i;
    for(i=n;i>0;i--)
        f=f*i;
    cout<<"Factorial of "<<n<<":-"<<f<<"\n";
}

int main()
{
    cout<<"Enter the no. to calculate factorial:\n";
    int n;
    cin>>n;
    fac(n);
    return 0;
}
```


Output



```
Terminal
gehu@lab7-pc10:~/Desktop/2001111163$ g++ t4.cpp
gehu@lab7-pc10:~/Desktop/2001111163$ ./a.out
Enter the no. to calculate factorial:
5
Factorial of 5:-120
gehu@lab7-pc10:~/Desktop/2001111163$
```

The screenshot shows a terminal window titled "Terminal" on a Linux desktop. The user is in the directory ~/Desktop/2001111163. They compile a C++ file t4.cpp using g++ and then run the resulting executable a.out. The program prompts for a number to calculate its factorial, and the user enters 5. The output is "Factorial of 5:-120". The desktop background is a light blue gradient, and the left sidebar contains various application icons like Firefox, Chrome, and file managers.

Practical 8

Task 5

Source Code:

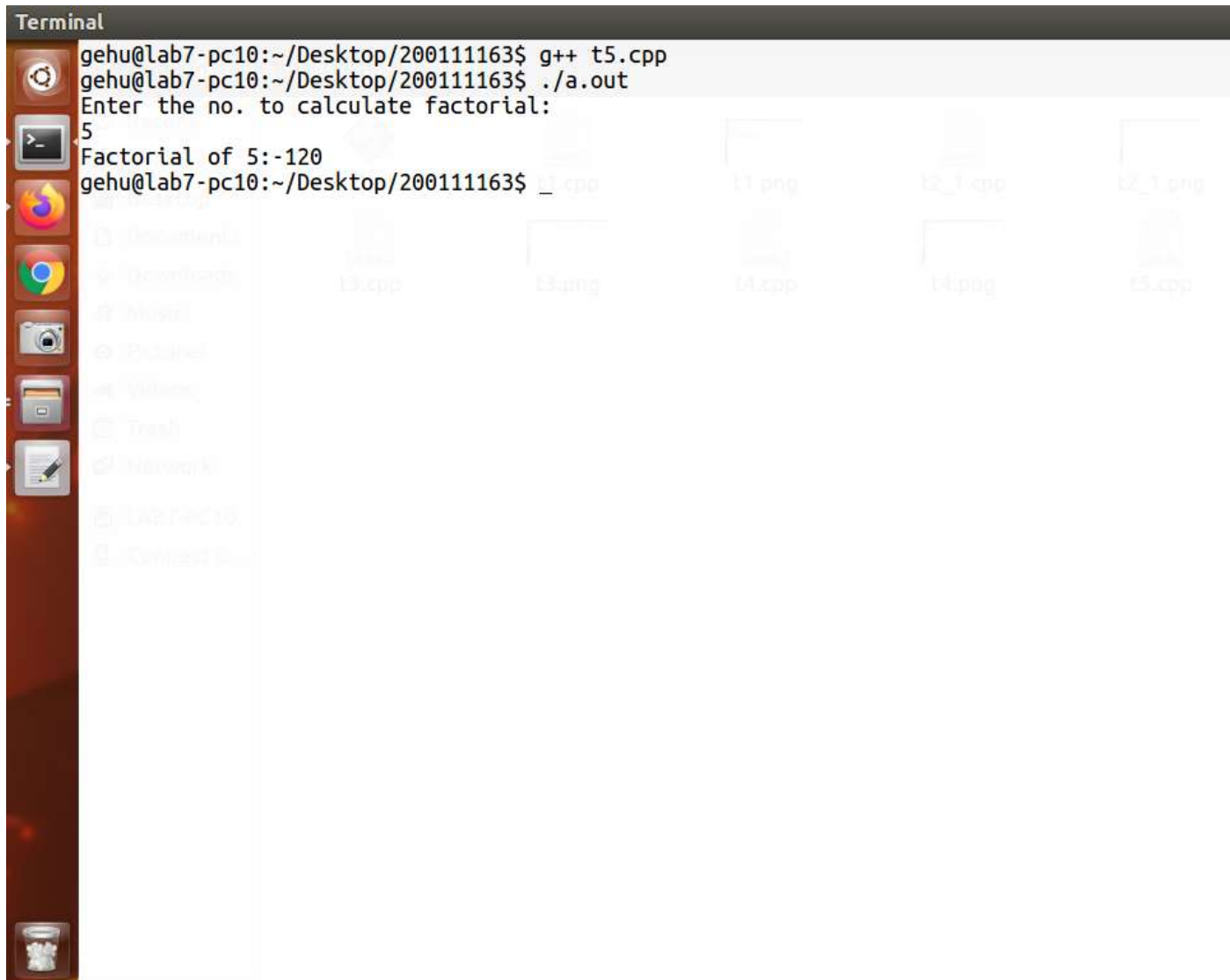
```
#include
<iostream>

using namespace std;

int fac(int n)
{
    if(n==0)
        return 1;
    else
        return (n*fac(n-1));
}

int main()
{
    cout<<"Enter the no. to calculate factorial:\n";
    int n,f=0;
    cin>>n;
    f=fac(n);
    cout<<"Factorial of "<<n<<":- "<<f<<"\n";
    return 0;
}
```

Output



```
Terminal
gehu@lab7-pc10:~/Desktop/2001111163$ g++ t5.cpp
gehu@lab7-pc10:~/Desktop/2001111163$ ./a.out
Enter the no. to calculate factorial:
5
Factorial of 5:-120
gehu@lab7-pc10:~/Desktop/2001111163$ _
```

The screenshot shows a terminal window titled "Terminal" on a Linux desktop. The user is in the directory ~/Desktop/2001111163. They compile a C++ file t5.cpp using g++ and then run the resulting executable a.out. The program prompts for a number to calculate its factorial, and the user enters 5. The output is "Factorial of 5:-120". The desktop background is a light blue gradient, and the left sidebar shows various application icons like Firefox, Chrome, and the Dash menu.

Practical 8

Task 6

Source Code:

```
# include
<iostream>

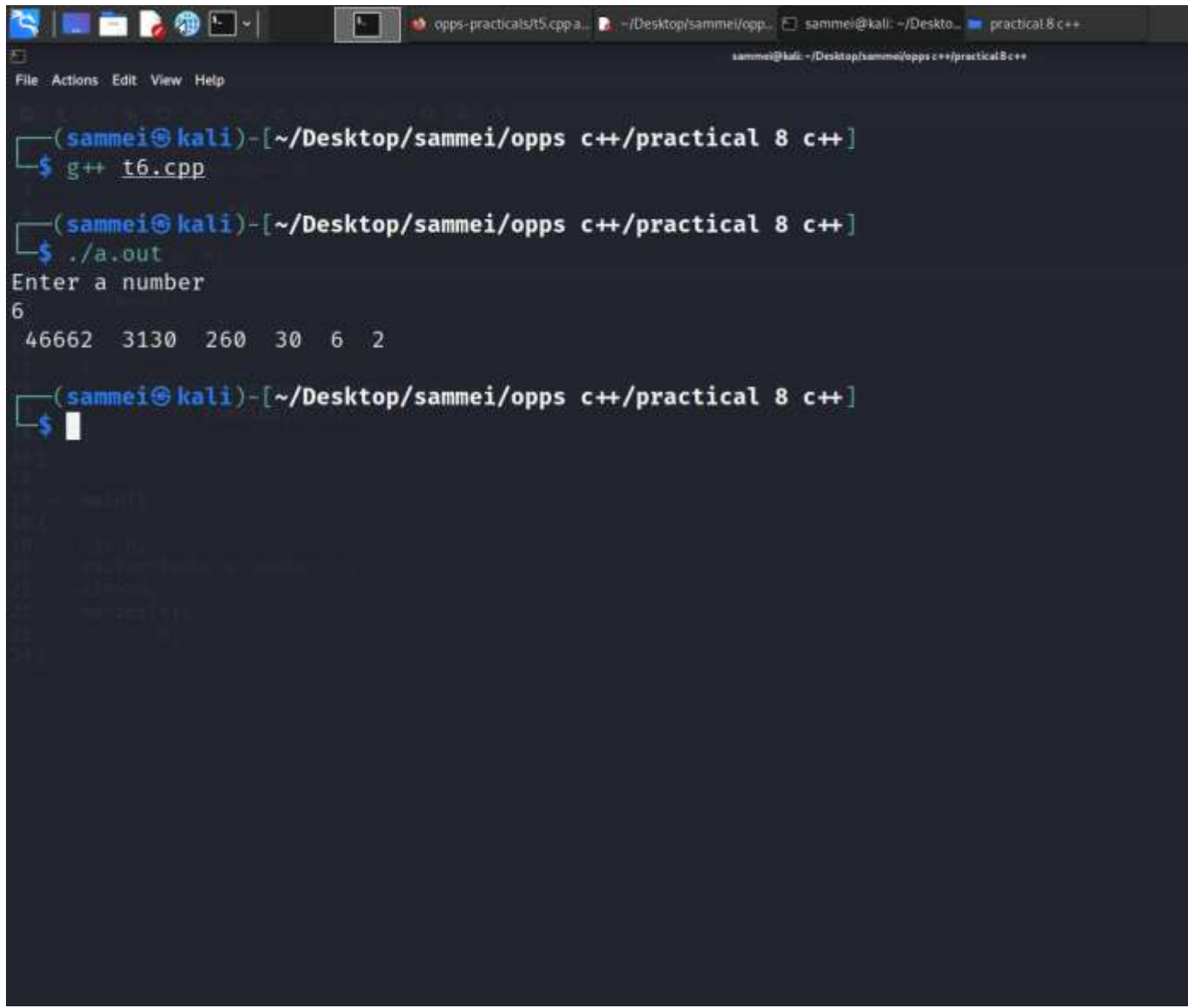
# include <bits/stdc++.h>

using namespace std;

int series(int n)
{
    if(n==0)
        return 1;
    else
    {
        cout<<" "<<(pow(n,n)+n)<<" ";
        return (series(n-1));
    }
}

int main()
{
    int n;
    cout<<"Enter a number\n";
    cin>>n;
    series(n);
    return 0;
}
```

Output



The screenshot shows a terminal window with the following content:

```
(sammei@kali)-[~/Desktop/sammei/opps c++/practical 8 c++]
$ g++ t6.cpp

(sammei@kali)-[~/Desktop/sammei/opps c++/practical 8 c++]
$ ./a.out
Enter a number
6
46662 3130 260 30 6 2

(sammei@kali)-[~/Desktop/sammei/opps c++/practical 8 c++]
$
```

The terminal window has a dark background and a light-colored text. The prompt is `(sammei@kali)-[~/Desktop/sammei/opps c++/practical 8 c++]`. The user enters `g++ t6.cpp` and `./a.out`. The output of the program is `Enter a number` followed by `6` and the sequence of numbers `46662 3130 260 30 6 2`. The user then enters a blank line at the prompt.

Practical 8

Task 7 V1

Source Code:

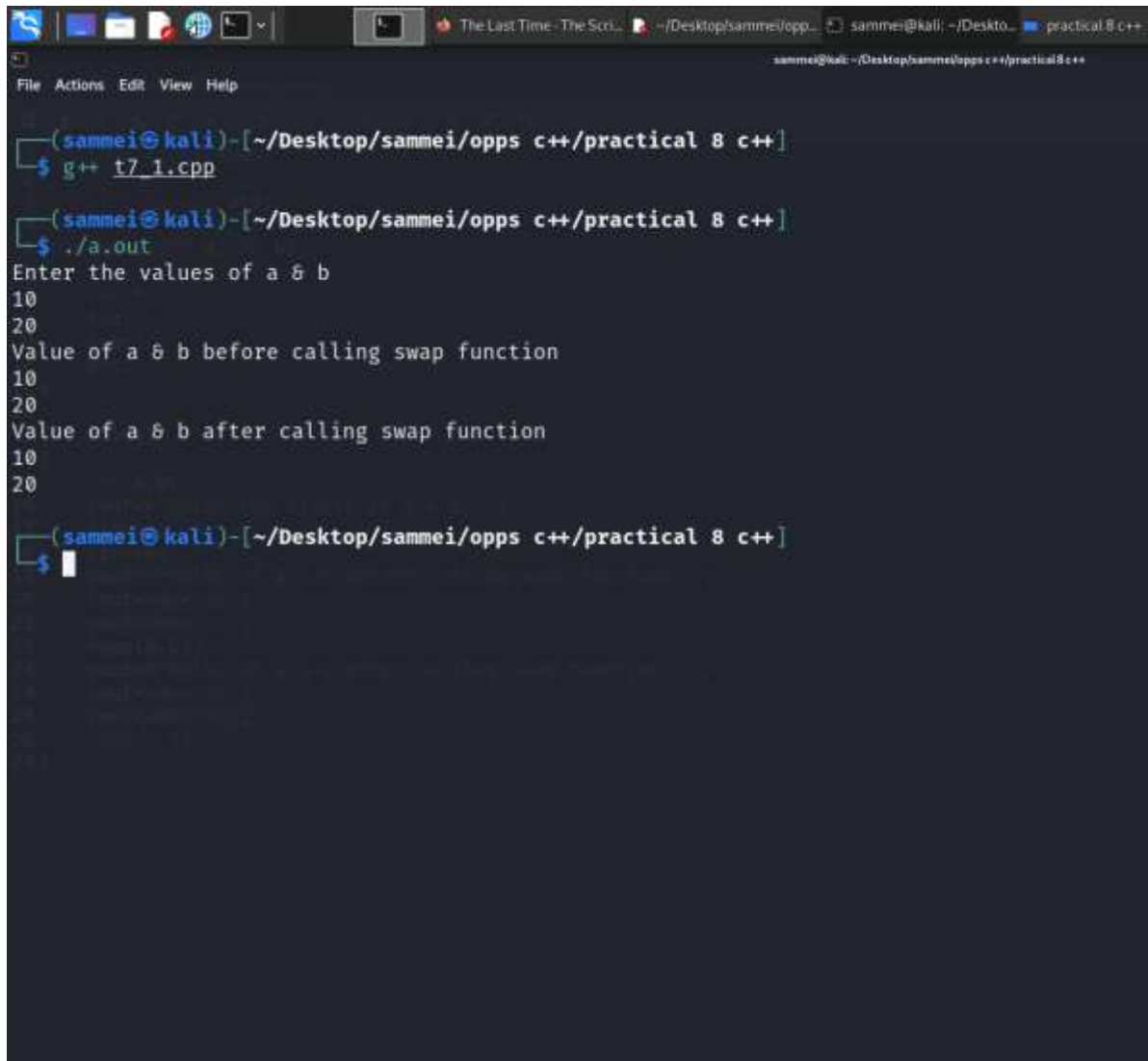
```
#include
<iostream>

using namespace std;

void swap(int a,int b)
{
    int t;
    t=a;
    a=b;
    b=t;
}

int main()
{
    int a,b;
    cout<<"Enter the values of a & b\n";
    cin>>a;
    cin>>b;
    cout<<"Value of a & b before calling swap function\n";
    cout<<a<<"\n";
    cout<<b<<"\n";
    swap(a,b);
    cout<<"Value of a & b after calling swap function\n";
    cout<<a<<"\n";
    cout<<b<<"\n";
    return 0;
}
```

Output



```
(sammei@kali) - [~/Desktop/sammei/opps c++/practical 8 c++]
$ g++ t7_1.cpp

(sammei@kali) - [~/Desktop/sammei/opps c++/practical 8 c++]
$ ./a.out
Enter the values of a & b
10
20
Value of a & b before calling swap function
10
20
Value of a & b after calling swap function
10
20

(sammei@kali) - [~/Desktop/sammei/opps c++/practical 8 c++]
$
```

Practical 8

Task 7 V2

Source Code:

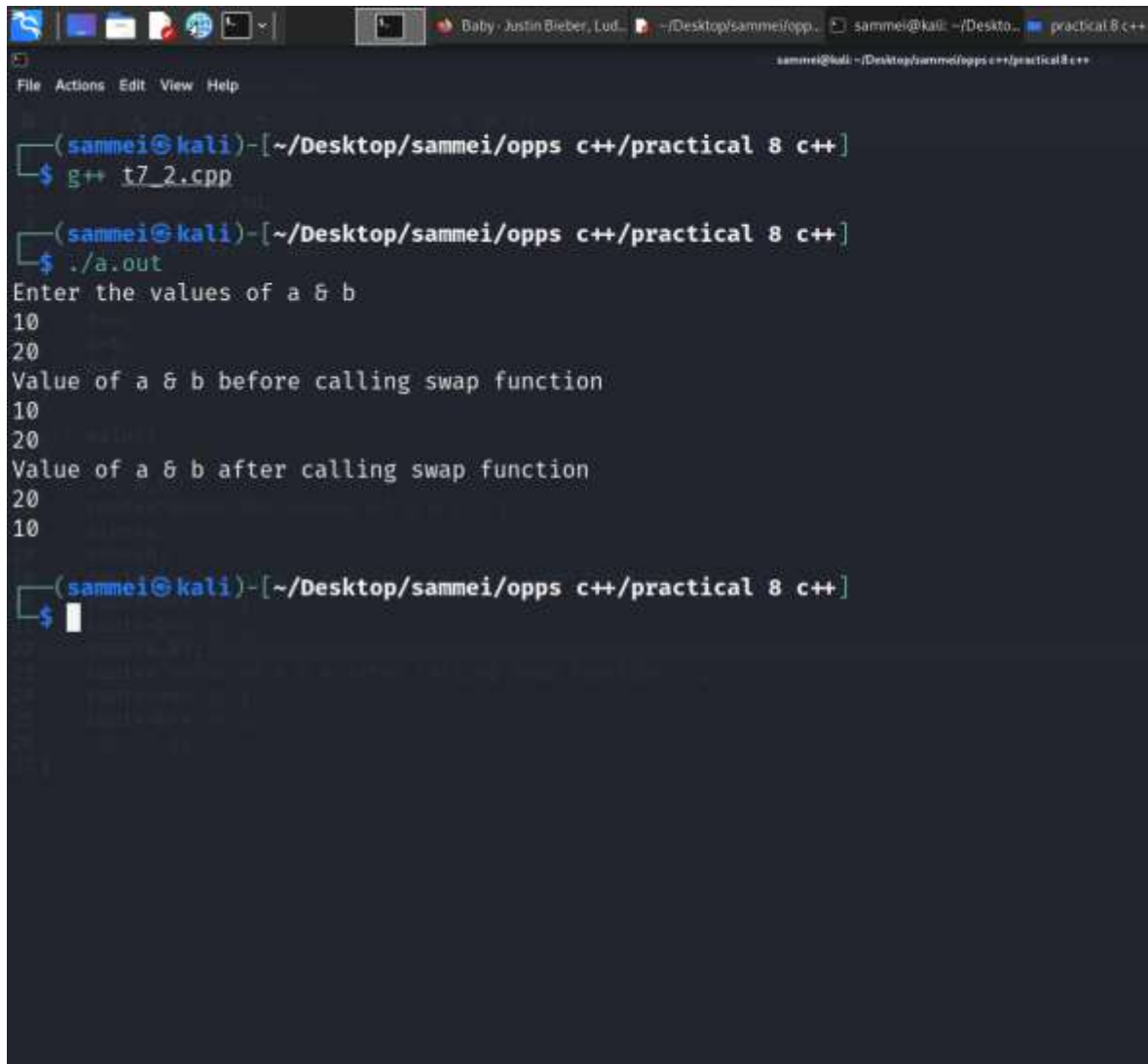
```
#include
<iostream>

using namespace std;

void swap(int &a,int &b)
{
    int t;
    t=a;
    a=b;
    b=t;
}

int main()
{
    int a,b;
    cout<<"Enter the values of a & b\n";
    cin>>a;
    cin>>b;
    cout<<"Value of a & b before calling swap function\n";
    cout<<a<<"\n";
    cout<<b<<"\n";
    swap(a,b);
    cout<<"Value of a & b after calling swap function\n";
    cout<<a<<"\n";
    cout<<b<<"\n";
    return 0;
}
```


Output



```
(sammei@kali)~[/Desktop/sammei/ops c++/practical 8 c++]
$ g++ t7_2.cpp

(sammei@kali)~[/Desktop/sammei/ops c++/practical 8 c++]
$ ./a.out
Enter the values of a & b
10
20
Value of a & b before calling swap function
10
20
Value of a & b after calling swap function
20
10

(sammei@kali)~[/Desktop/sammei/ops c++/practical 8 c++]
$
```

Practical 8

Task 7 V2

Source Code:

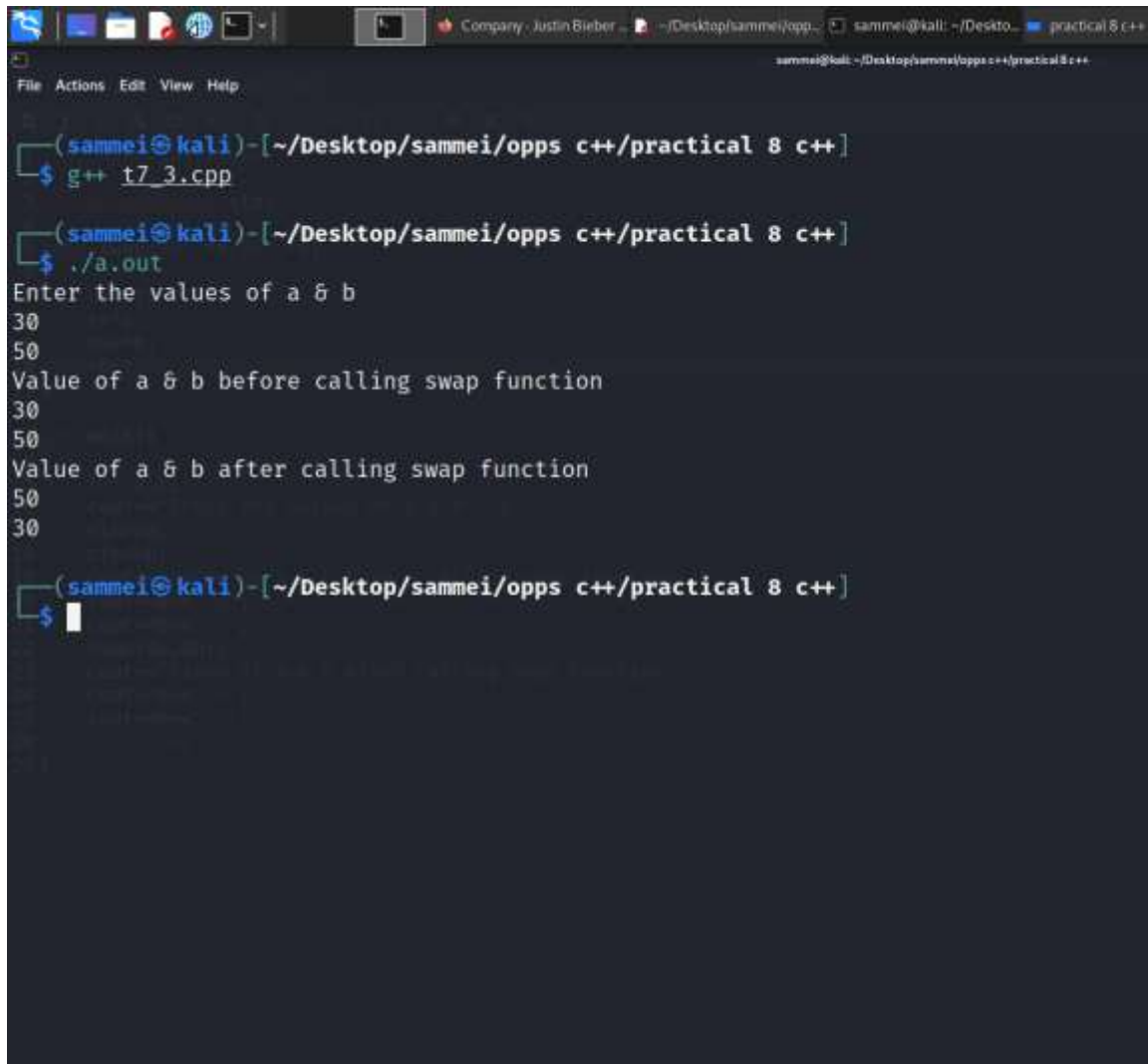
```
#include
<iostream>

using namespace std;

void swap(int *a,int *b)
{
    int t;
    t=*a;
    *a=*b;
    *b=t;
}

int main()
{
    int a,b;
    cout<<"Enter the values of a & b\n";
    cin>>a;
    cin>>b;
    cout<<"Value of a & b before calling swap function\n";
    cout<<a<<"\n";
    cout<<b<<"\n";
    swap(&a,&b);
    cout<<"Value of a & b after calling swap function\n";
    cout<<a<<"\n";
    cout<<b<<"\n";
    return 0;
}
```

Output



The screenshot shows a terminal window with a dark background. At the top, there is a taskbar with several icons and open windows. The terminal window has a menu bar with 'File', 'Actions', 'Edit', 'View', and 'Help'. The prompt is '(sammei@kali) - [~/Desktop/sammei/ops c++/practical 8 c++]'. The user enters 'g++ t7_3.cpp' and then './a.out'. The program prompts for 'Enter the values of a & b', and the user enters '30' and '50'. The program then displays 'Value of a & b before calling swap function' followed by '30' and '50'. Next, it displays 'Value of a & b after calling swap function' followed by '50' and '30'. The terminal ends with the prompt '(sammei@kali) - [~/Desktop/sammei/ops c++/practical 8 c++]' and a '\$' prompt.

```
(sammei@kali) - [~/Desktop/sammei/ops c++/practical 8 c++]
$ g++ t7_3.cpp

(sammei@kali) - [~/Desktop/sammei/ops c++/practical 8 c++]
$ ./a.out
Enter the values of a & b
30
50
Value of a & b before calling swap function
30
50
Value of a & b after calling swap function
50
30

(sammei@kali) - [~/Desktop/sammei/ops c++/practical 8 c++]
$
```

Practical 9

Task 1 V1

Source Code:

```
#include
<iostream>

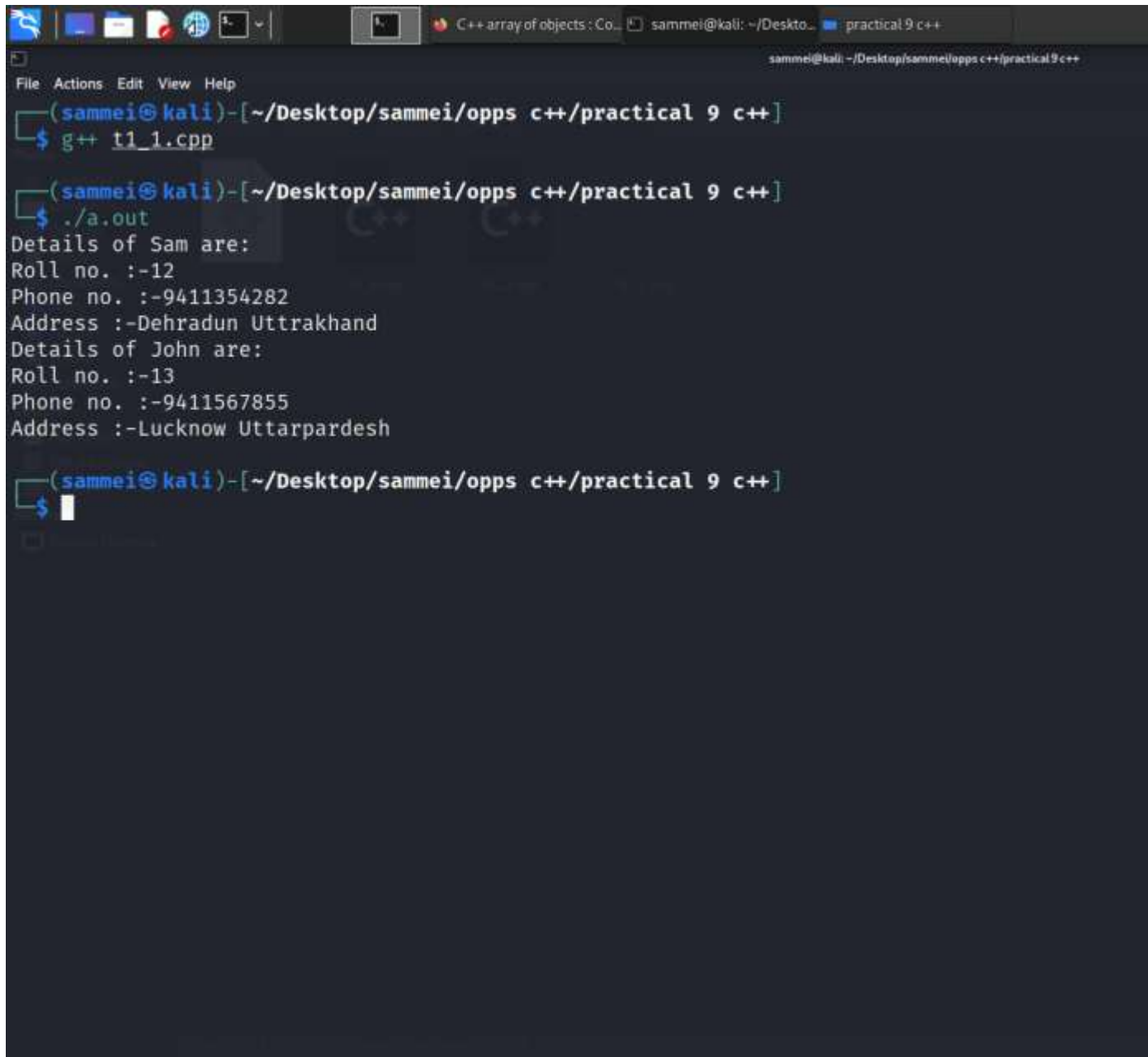
#include <string>

using namespace std;

class Student
{
    public:
        int rno;
        long int phn;
        string adrs;
        string name;
};

int main()
{
    Student obj1;
    Student obj2;
    obj1.rno=12;
    obj1.phn=9411354282;
    obj1.adrs="Dehradun Uttrakhand";
    obj1.name="Sam";
    obj2.rno=13;
    obj2.phn=9411567855;
    obj2.adrs="Lucknow Uttarparadesh";
    obj2.name="John";
    cout<<"Details of "<<obj1.name<<" are:\n";
    cout<<"Roll no. :-"<<obj1.rno<<"\n";
    cout<<"Phone no. :-"<<obj1.phn<<"\n";
    cout<<"Address :-"<<obj1.adrs<<"\n";
    cout<<"Details of "<<obj2.name<<" are:\n";
    cout<<"Roll no. :-"<<obj2.rno<<"\n";
    cout<<"Phone no. :-"<<obj2.phn<<"\n";
    cout<<"Address :-"<<obj2.adrs<<"\n";
    return 0;
}
```

Output



The screenshot shows a terminal window with a dark background. The title bar at the top indicates the current directory is `~/Desktop/sammei/opps c++/practical 9 c++`. The terminal content shows the following sequence of commands and output:

```
(sammei@kali)-[~/Desktop/sammei/opps c++/practical 9 c++]
$ g++ t1_1.cpp

(sammei@kali)-[~/Desktop/sammei/opps c++/practical 9 c++]
$ ./a.out
Details of Sam are:
Roll no. :-12
Phone no. :-9411354282
Address :-Dehradun Uttrakhand
Details of John are:
Roll no. :-13
Phone no. :-9411567855
Address :-Lucknow Uttarparadesh

(sammei@kali)-[~/Desktop/sammei/opps c++/practical 9 c++]
$
```

Practical 9

Task 1 V2

Source Code:

```
#include
<iostream>

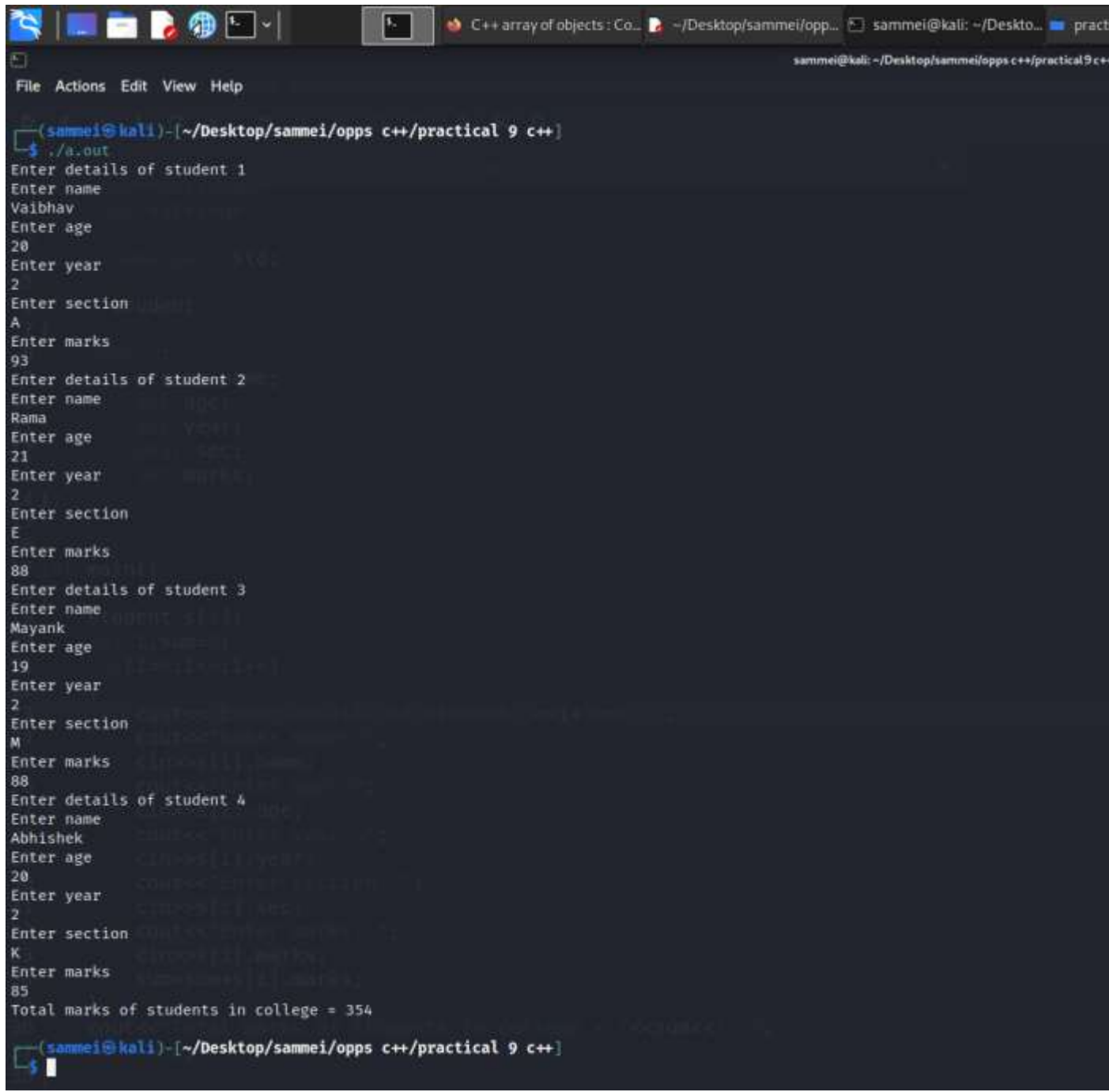
#include <string>

using namespace std;

class student
{
    public:
        string name;
        int age;
        int year;
        char sec;
        int marks;
};

int main()
{
    student s[4];
    int i,sum=0;
    for(i=0;i<4;i++)
    {
        cout<<"Enter details of student "<<i+1<<"\n";
        cout<<"Enter name\n";
        cin>>s[i].name;
        cout<<"Enter age\n";
        cin>>s[i].age;
        cout<<"Enter year\n";
        cin>>s[i].year;
        cout<<"Enter section\n";
        cin>>s[i].sec;
        cout<<"Enter marks\n";
        cin>>s[i].marks;
        sum=sum+s[i].marks;
    }
    cout<<"Total marks of students in college = "<<sum<<"\n";
    return 0;
}
```

Output



```

(sammei@kali)~/Desktop/sammei/opps c++/practical 9 c++
$ ./a.out
Enter details of student 1
Enter name
Vaibhav
Enter age
20
Enter year
2
Enter section
A
Enter marks
93
Enter details of student 2
Enter name
Rama
Enter age
21
Enter year
2
Enter section
E
Enter marks
88
Enter details of student 3
Enter name
Mayank
Enter age
19
Enter year
2
Enter section
M
Enter marks
88
Enter details of student 4
Enter name
Abhishek
Enter age
20
Enter year
2
Enter section
K
Enter marks
85
Total marks of students in college = 354
(sammei@kali)~/Desktop/sammei/opps c++/practical 9 c++

```

Practical 9

Task 2

Source Code:

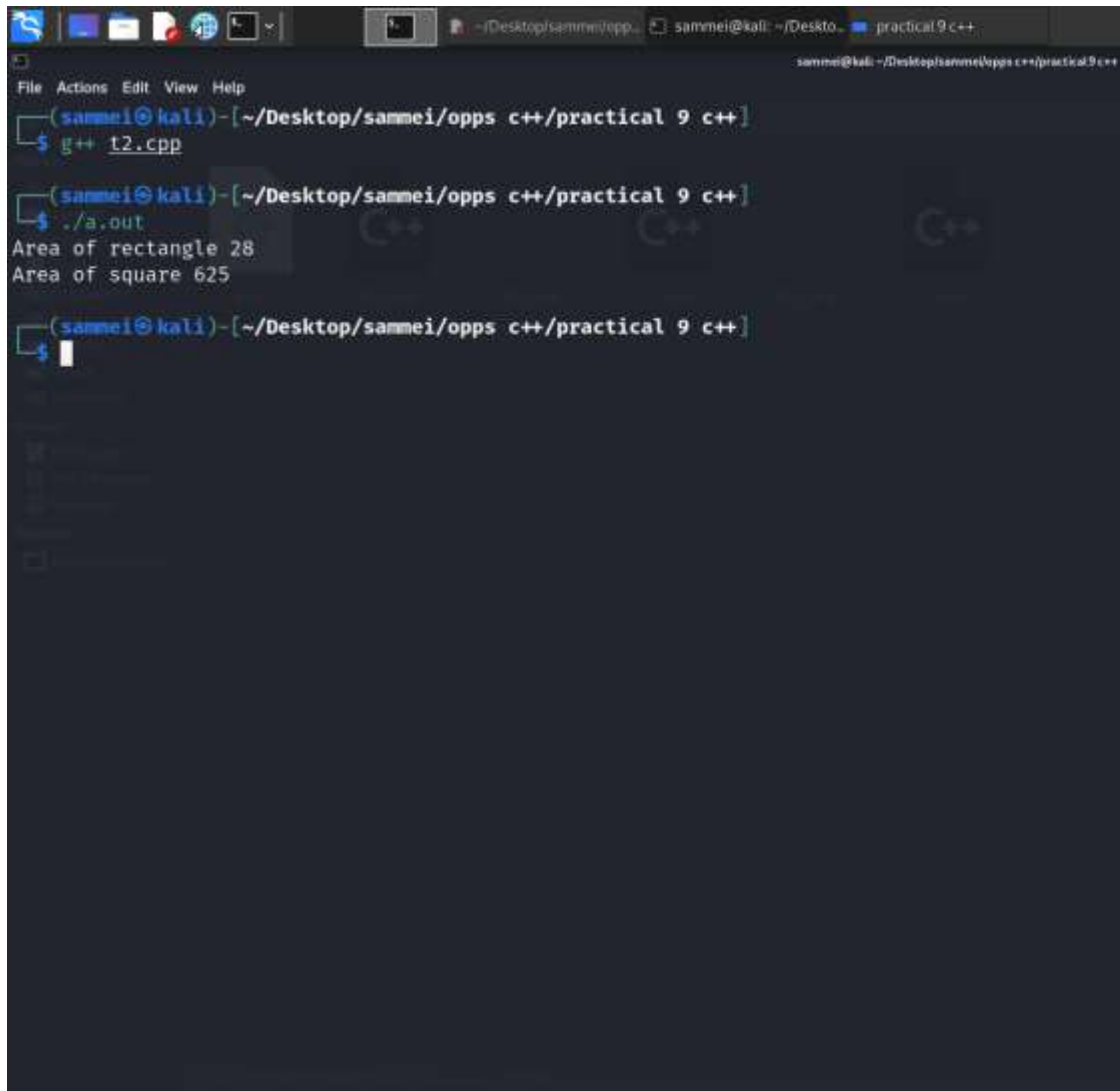
```
#include
<iostream>

using namespace std;

class Area
{
    public:
        int length;
        int breadth;
        Area( int l, int b )
        {
            length = l;
            breadth = b;
        }
        Area( int l )
        {
            length = l;
        }
        int printAreaR()
        {
            return length * breadth;
        }
        int printAreaS()
        {
            return length * length;
        }
};

int main()
{
    Area rt1( 7, 4 );
    Area sq2(25);
    cout << "Area of rectangle " << rt1.printAreaR() << endl;
    cout << "Area of square " << sq2.printAreaS() << endl;
    return 0;
}
```


Output



The screenshot shows a terminal window with the following content:

```
File Actions Edit View Help
(sammei@kali)-[~/Desktop/sammei/ops c++/practical 9 c++]
$ g++ t2.cpp

(sammei@kali)-[~/Desktop/sammei/ops c++/practical 9 c++]
$ ./a.out
Area of rectangle 28
Area of square 625

(sammei@kali)-[~/Desktop/sammei/ops c++/practical 9 c++]
$
```

Practical 9

Task 3

Source Code:

```
#include
<iostream>

using namespace std;

class item
{
    static int count;
    int number;
public:
    void getdata(int a)
    {
        number=a;
        count++;
    }

    void getcount(void)
    {
        cout<<"Count : "<<count<<"\n";
    }
};

int item::count;

int main()
{
    item a,b,c;
    cout<<'\\n'<<"Before reading data"<<'\\n';
    a.getcount();
    b.getcount();
    c.getcount();

    cout<<'\\n'<<"After while data"<<'\\n';
    a.getdata(123);
    a.getcount();
    b.getdata(456);
    b.getcount();
    c.getdata(789);
    c.getcount();
}
```

```

        cout<<'\\n'<<"After reading data"<<'\\n';

        a.getcount();
        b.getcount();
        c.getcount();
        return 0;
    }

```

Output

```

(sammei@kali)-[~/Desktop/sammei/ops c++/practical 9 c++]
$ g++ t3.cpp

(sammei@kali)-[~/Desktop/sammei/ops c++/practical 9 c++]
$ ./a.out

Before reading data
Count :0
Count :0
Count :0

After while data
Count :1
Count :2
Count :3

After reading data
Count :3
Count :3
Count :3

(sammei@kali)-[~/Desktop/sammei/ops c++/practical 9 c++]
$

```

Practical 9

Task 4

Source Code:

```
#include
<iostream>

#include <string>

using namespace std;

class student
{
    public:
        string name;
        int age;
        int marks;
        friend int add(student s1,student s2,student s3);
};

int add(student s1,student s2,student s3)
{
    int sum=0;
    sum=sum+s1.marks+s2.marks+s3.marks;
    cout<<"Total marks of students in college = "<<sum<<"\n";
    return 0;
}

int main()
{
    student s1,s2,s3;
    s1.name="Sammei";
    s1.age=20;
    s1.marks=93;
    s2.name="Rama";
    s2.age=20;
    s2.marks=88;
    s3.name="Masky";
    s3.age=20;
    s3.marks=85;
    int i,sum=0;
    sum=add(s1,s2,s3);
    return 0;
}
```

Output

```

(sammei@kali)~/Desktop/sammei/opps c++/practical 9 c++
$ g++ t4.cpp

(sammei@kali)~/Desktop/sammei/opps c++/practical 9 c++
$ ./a.out
Total marks of students in college = 266

(sammei@kali)~/Desktop/sammei/opps c++/practical 9 c++
$
1 // t4.cpp
2 // Author: Sammei
3 // Date: 01/10/2021
4 // Description: To calculate the total marks of students in college.
5 // Input: Number of students, marks of each student.
6 // Output: Total marks of students in college.
7 // Example:
8 // Input: 5
9 //          10 20 30 40 50
10 // Output: 150
11 // Code:
12 #include <iostream>
13 using namespace std;
14 int main()
15 {
16     int n;
17     int marks;
18     int sum = 0;
19     cin >> n;
20     for(int i = 0; i < n; i++)
21     {
22         cin >> marks;
23         sum = sum + marks;
24     }
25     cout << sum << endl;
26     return 0;
27 }

```

Practical 9

Task 5

Source Code:

```
#include
<iostream>

#include <string>

using namespace std;

class College
{
    public:
        string name;
        string address;
        long int phn;
};

typedef struct student
{
    string name;
    int age;
    long int phn;
}student;

int main()
{
    College obj;
    obj.name="Graphic Era Hill University";
    obj.address="Dehradun Uttrakhand";
    obj.phn=9445245637;

    student s1;
    s1.name="Vaibhav Kumar";
    s1.age=20;
    s1.phn=9411354282;

    cout<<"\nCollege Details :\n";
    cout<<obj.name<<'\\n';
    cout<<obj.address<<'\\n';
    cout<<obj.phn<<'\\n';

    cout<<"\nStudent Details :\n";
```

```

        cout<<s1.name<<'\\n';
        cout<<s1.age<<'\\n';
        cout<<s1.phn<<'\\n';
        return 0;
    }

```

Output

```

(sammei@kali)-[~/Desktop/sammei/ops c++/practical 9 c++]
$ g++ t5.cpp

(sammei@kali)-[~/Desktop/sammei/ops c++/practical 9 c++]
$ ./a.out
College Details :
Graphic Era Hill University
Dehradun Uttrakhand
9445245637

Student Details :
Vaibhav Kumar
20
9411354282

(sammei@kali)-[~/Desktop/sammei/ops c++/practical 9 c++]
$

```

Practical 9

Task 6

Source Code:

```
#include
<iostream>

#include <iomanip>

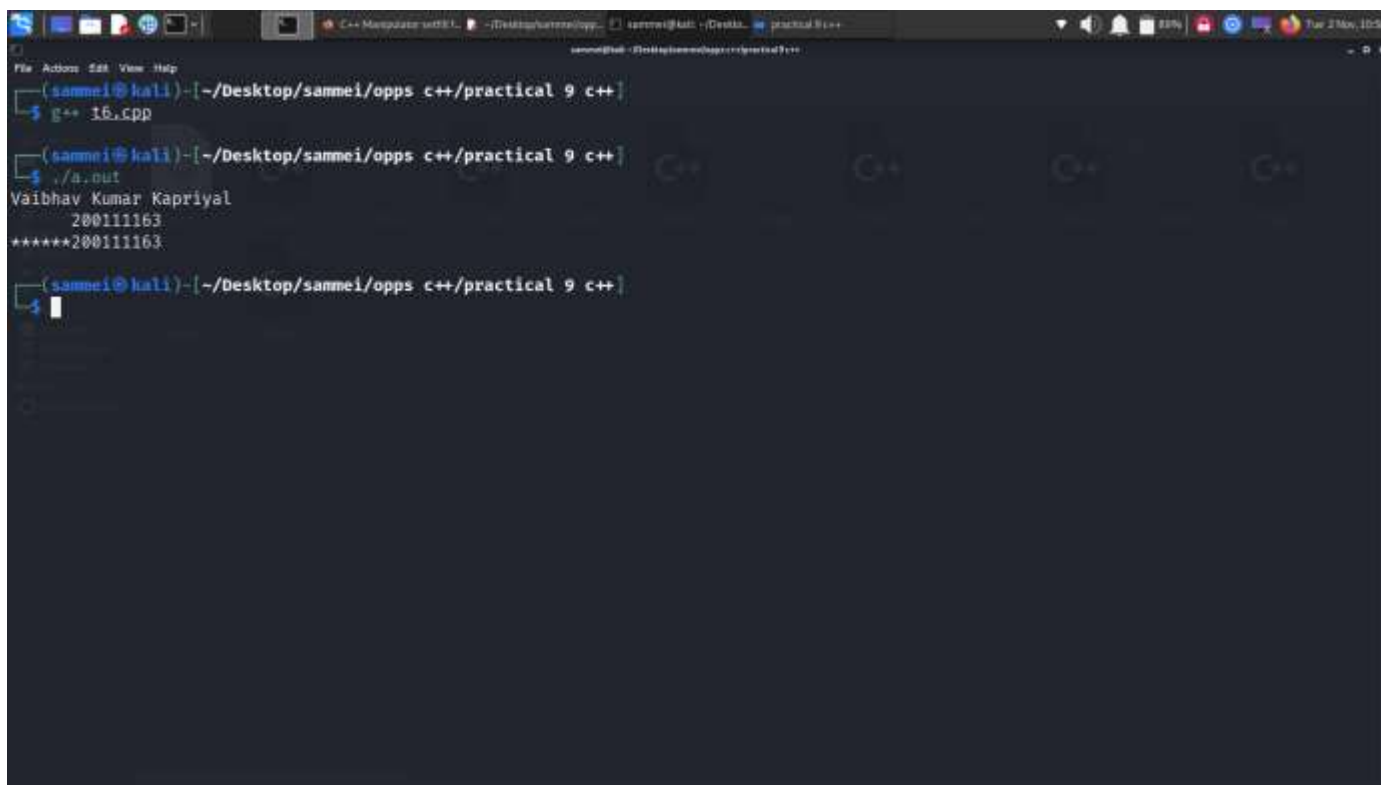
using namespace std;

int main ()
{
    cout<<"Vaibhav Kumar Kapriyal"<<endl;

    cout<<setw(15)<<200111163<<endl;

    cout<<setfill('*')<<setw(15)<<200111163<<endl;
    return 0;
}
```

Output



```
(sammei@kali)~/Desktop/sammei/opps c++/practical 9 c++|
$ g++ 16.cpp
(sammei@kali)~/Desktop/sammei/opps c++/practical 9 c++|
$ ./a.out
Vaibhav Kumar Kapriyal
200111163
*****200111163
(sammei@kali)~/Desktop/sammei/opps c++/practical 9 c++|
$
```


Practical 10

Task 1

Source Code:

```
#include
<iostream>

#include <string>

using namespace std;

class Directory
{
    public:
        string name;
        string address;
        long int telephn;
        long int mobilephn;
        string head;
};

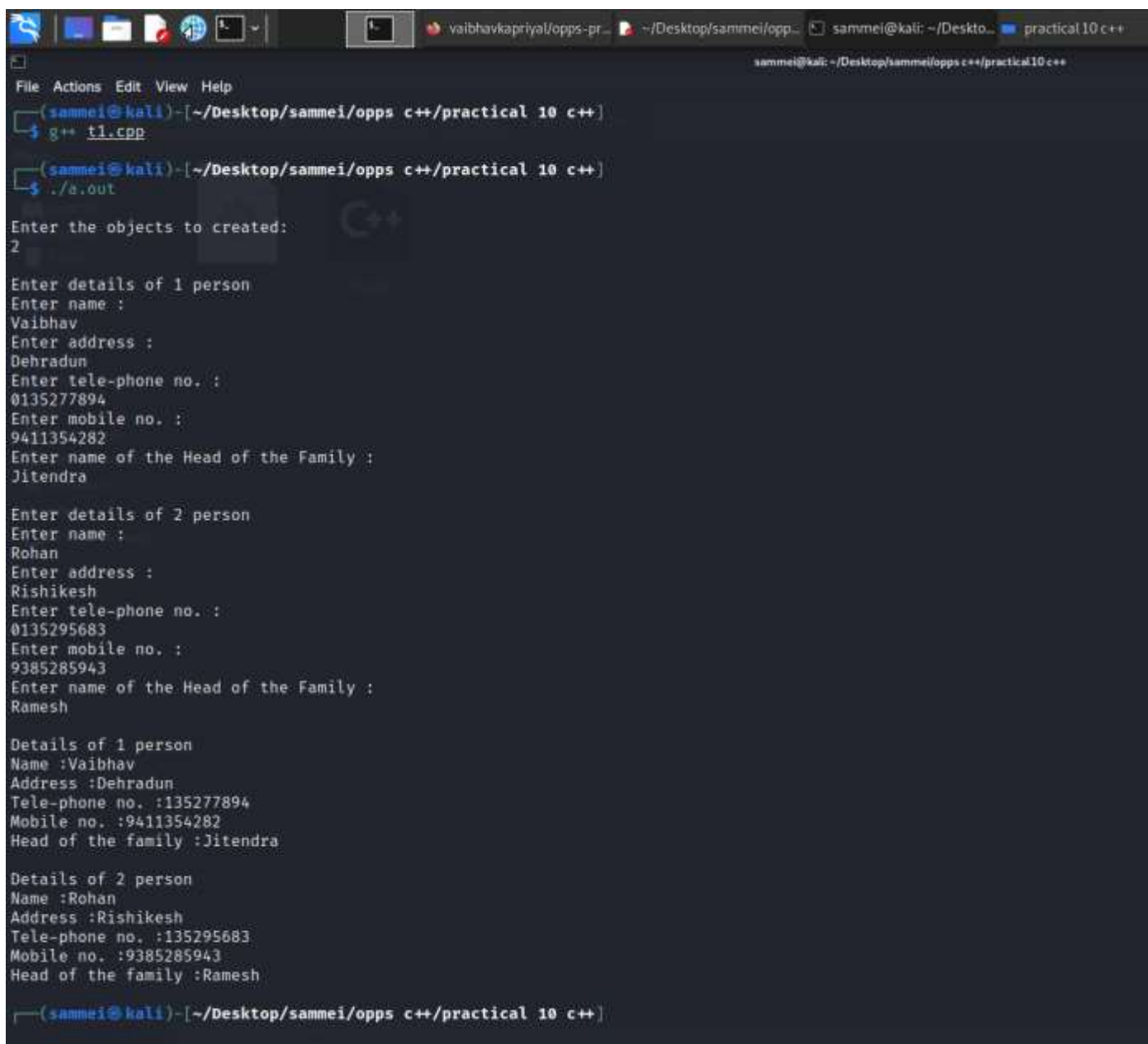
int main()
{
    cout<<"\nEnter the objects to created: \n";
    int n,i,sum=0;
    cin>>n;
    Directory d[n];
    for(i=0;i<n;i++)
    {
        cout<<"\nEnter details of "<<i+1<<" person\n";
        cout<<"Enter name :\n";
        cin>>d[i].name;
        cout<<"Enter address :\n";
        cin>>d[i].address;
        cout<<"Enter tele-phone no. :\n";
        cin>>d[i].telephn;
        cout<<"Enter mobile no. :\n";
        cin>>d[i].mobilephn;
        cout<<"Enter name of the Head of the Family :\n";
        cin>>d[i].head;
    }
    for(i=0;i<n;i++)
    {
```

```

        cout<<"\nDetails of "<<i+1<<" person\n";
        cout<<"Name : "<<d[i].name<<'\\n';
        cout<<"Address : "<<d[i].address<<'\\n';
        cout<<"Tele-phone no. : "<<d[i].telephn<<'\\n';
        cout<<"Mobile no. : "<<d[i].mobilephn<<'\\n';
        cout<<"Head of the family : "<<d[i].head<<'\\n';
    }
    return 0;
}

```

Output



```

(sammei@kali)~/Desktop/sammei/opps c++/practical 10 c++
$ g++ t1.cpp
(sammei@kali)~/Desktop/sammei/opps c++/practical 10 c++
$ ./a.out
Enter the objects to created:
2
Enter details of 1 person
Enter name :
Vaibhav
Enter address :
Dehradun
Enter tele-phone no. :
0135277894
Enter mobile no. :
9411354282
Enter name of the Head of the Family :
Jitendra

Enter details of 2 person
Enter name :
Rohan
Enter address :
Rishikesh
Enter tele-phone no. :
0135295683
Enter mobile no. :
9385285943
Enter name of the Head of the Family :
Ramesh

Details of 1 person
Name :Vaibhav
Address :Dehradun
Tele-phone no. :135277894
Mobile no. :9411354282
Head of the family :Jitendra

Details of 2 person
Name :Rohan
Address :Rishikesh
Tele-phone no. :135295683
Mobile no. :9385285943
Head of the family :Ramesh
(sammei@kali)~/Desktop/sammei/opps c++/practical 10 c++

```

Practical 10

Task 2

Source Code:

```
#include
<iostream>

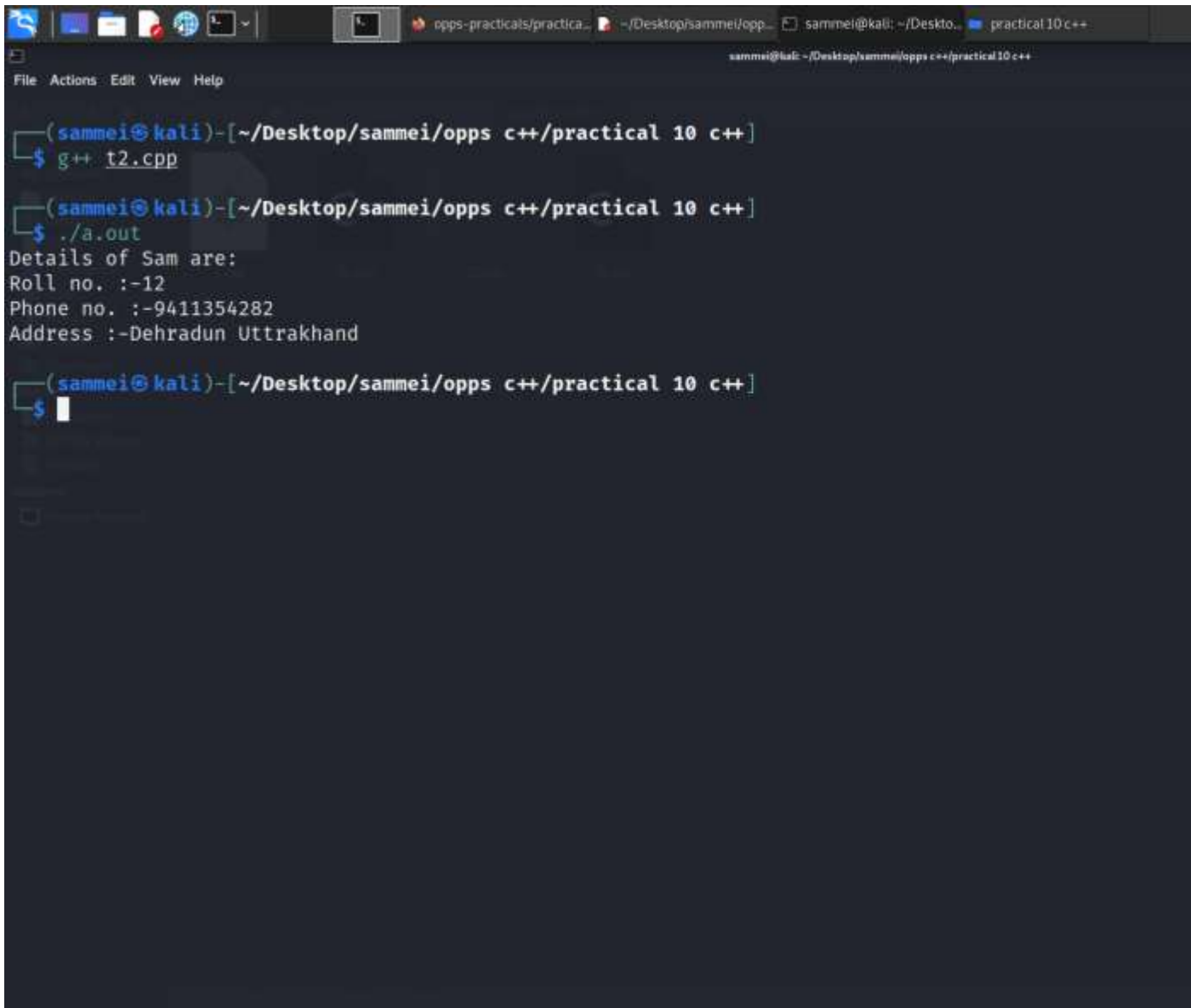
#include <string>

using namespace std;

class Student
{
    public:
        int rno;
        long int phn;
        string adrs;
        string name;
        void display()
        {
            cout<<"Details of "<<name<<" are:\n";
            cout<<"Roll no. :-"<<rno<<"\n";
            cout<<"Phone no. :-"<<phn<<"\n";
            cout<<"Address :-"<<adrs<<"\n";
        }
};

int main()
{
    Student *s=new Student;
    s->rno=12;
    s->phn=9411354282;
    s->adrs="Dehradun Uttrakhand";
    s->name="Sam";
    s->display();
    return 0;
}
```

Output

A screenshot of a terminal window on a Kali Linux system. The window title bar shows several open tabs, including 'opps-practicals/practica...', '~/Desktop/sammei/opp...', 'sammei@kali: ~/Desкто...', and 'practical 10 c++'. The terminal interface has a dark background with a menu bar at the top containing 'File', 'Actions', 'Edit', 'View', and 'Help'. The prompt is '(sammei@kali)~[~/Desktop/sammei/opps c++/practical 10 c++]'. The user enters '\$ g++ t2.cpp' and then '\$./a.out'. The output of the program is displayed: 'Details of Sam are:', 'Roll no. :-12', 'Phone no. :-9411354282', and 'Address :-Dehradun Uttrakhand'. The prompt returns to '\$' after the output.

```
(sammei@kali)~[~/Desktop/sammei/opps c++/practical 10 c++]
$ g++ t2.cpp
(sammei@kali)~[~/Desktop/sammei/opps c++/practical 10 c++]
$ ./a.out
Details of Sam are:
Roll no. :-12
Phone no. :-9411354282
Address :-Dehradun Uttrakhand
(sammei@kali)~[~/Desktop/sammei/opps c++/practical 10 c++]
$
```

Practical 10

Task 3

Source Code:

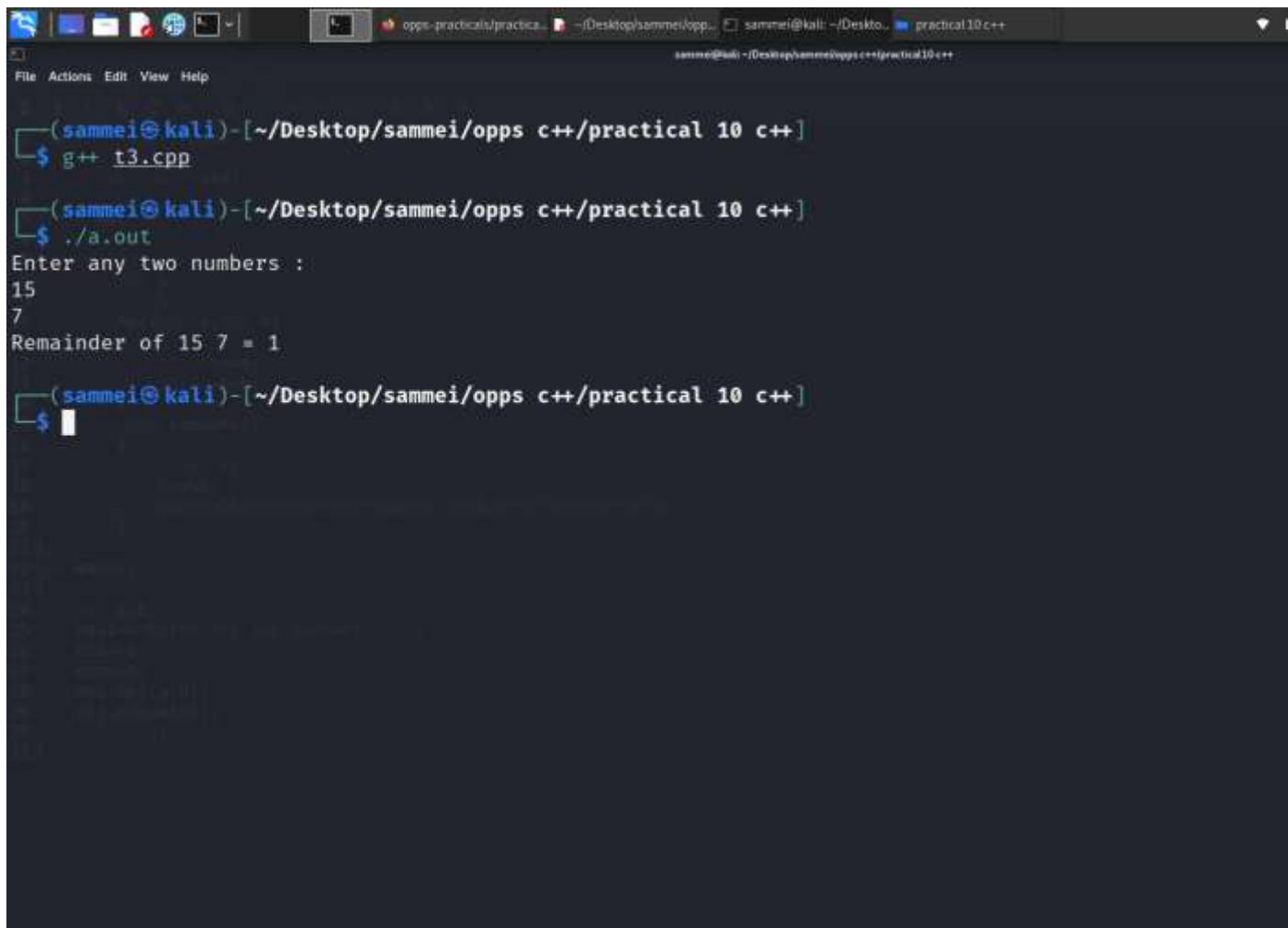
```
#include
<iostream>

using namespace std;

class Abc
{
    public:
        int a;
        int b;
        Abc(int a,int b)
        {
            this->a=a;
            this->b=b;
        }
        void compute()
        {
            float r;
            r=a%b;
            cout<<"Remainder of "<<a<<' '<<b<<" = "<<r<<'\n';
        }
};

int main()
{
    int a,b;
    cout<<"Enter any two numbers :\n";
    cin>>a;
    cin>>b;
    Abc obj(a,b);
    obj.compute();
    return 0;
}
```

Output



The screenshot shows a terminal window with a dark background. The window title bar includes icons for various applications and the text "practical10 c++". The terminal content shows a user named "sammei" at a "kali" machine. The user enters the command "g++ t3.cpp" to compile a C++ file. Then, they run the compiled program with "./a.out". The program prompts the user to "Enter any two numbers :", and the user enters "15" and "7" on separate lines. The program then outputs "Remainder of 15 7 = 1". The terminal prompt returns to the user, who has entered a dollar sign "\$" followed by a cursor.

```
(sammei@kali)-[~/Desktop/sammei/opps c++/practical 10 c++]
$ g++ t3.cpp

(sammei@kali)-[~/Desktop/sammei/opps c++/practical 10 c++]
$ ./a.out
Enter any two numbers :
15
7
Remainder of 15 7 = 1

(sammei@kali)-[~/Desktop/sammei/opps c++/practical 10 c++]
$
```

Practical 10

Task 4 V1

Source Code:

```
#include
<iostream>

using namespace std;

class Complex {

public:
    int a;

    void input() {
        cout << "Enter a number:\n ";
        cin >> a;
    }

    friend Complex operator < (const Complex& obj);

    void output() {
        cout<<"Smaller number is "<<a<<"\n";
    }

};

Complex operator < (Complex& obj1,Complex& obj2) {
    if(obj1.a<obj2.a)
        return (obj1.a);
    else
        return (obj2.a);
}

int main() {
    Complex complex1, complex2, result;

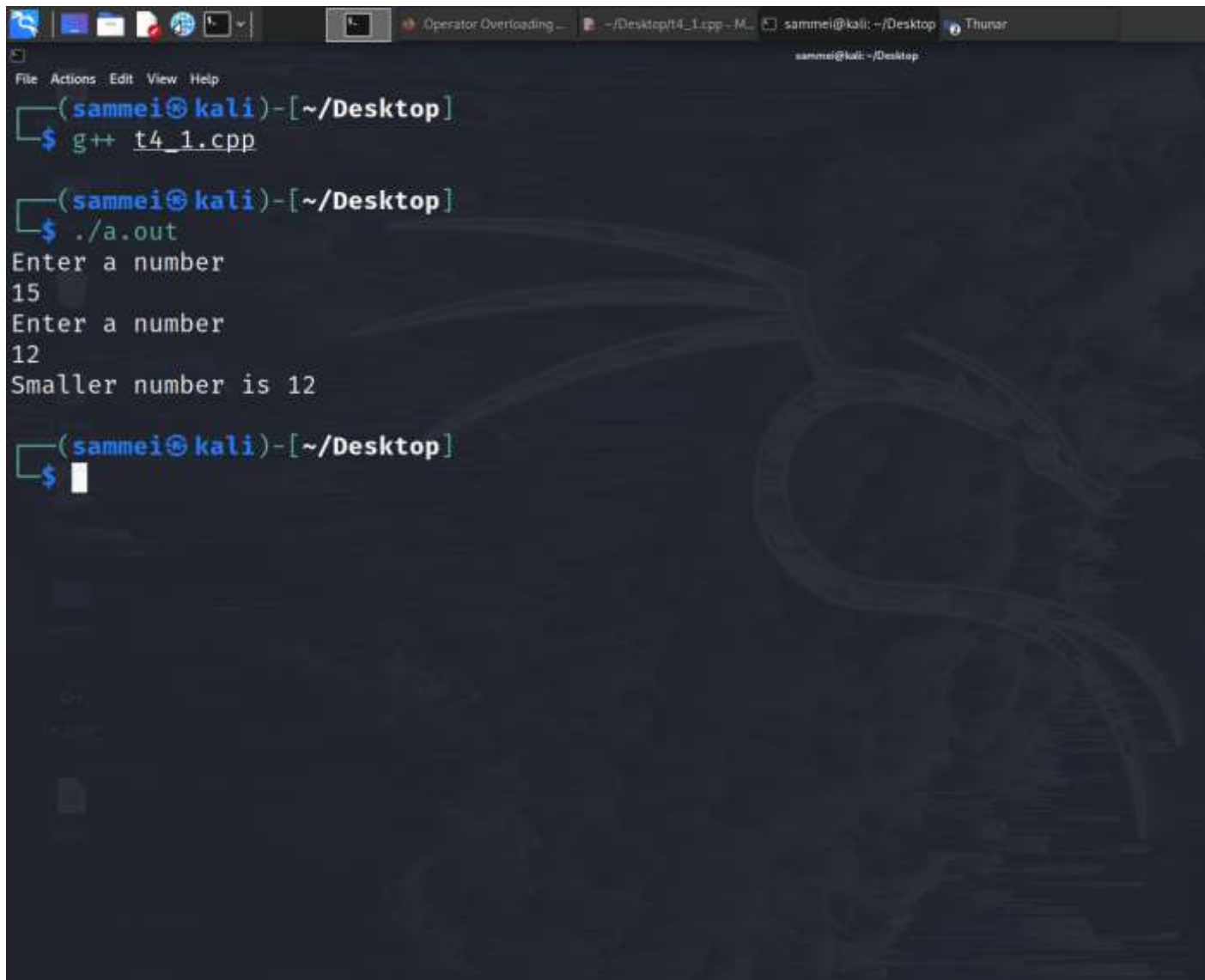
    complex1.input();

    complex2.input();

    result = complex1 < complex2;
    result.output();
}
```

```
    return 0;  
}
```

Output



```
(sammei@kali)-[~/Desktop]  
$ g++ t4_1.cpp  
  
(sammei@kali)-[~/Desktop]  
$ ./a.out  
Enter a number  
15  
Enter a number  
12  
Smaller number is 12  
  
(sammei@kali)-[~/Desktop]  
$
```


Practical 10

Task 4 V2

Source Code:

```
#include
<iostream>

using namespace std;

class Complex {
private:
    int real;
    int imag;

public:
    Complex() : real(0), imag(0) {}

    void input() {
        cout << "Enter real and imaginary parts respectively: ";
        cin >> real;
        cin >> imag;
    }

    Complex operator + (const Complex& obj) {
        Complex temp;
        temp.real = real + obj.real;
        temp.imag = imag + obj.imag;
        return temp;
    }

    void output() {
        if (imag < 0)
            cout << "Output Complex number: " << real << imag << "i";
        else
            cout << "Output Complex number: " << real << "+" << imag <<
        "i";
    }
};

int main() {
    Complex complex1, complex2, result;
```

```

cout << "Enter first complex number:\n";
complex1.input();

cout << "Enter second complex number:\n";
complex2.input();

result = complex1 + complex2;
result.output();

return 0;
}

```

Output

```

(sammei@kali)-[~/Desktop/sammei/ops c++/practical 10 c++]
$ g++ t4_2.cpp

(sammei@kali)-[~/Desktop/sammei/ops c++/practical 10 c++]
$ ./a.out
Enter first complex number:
Enter real and imaginary parts respectively: 4 8
Enter second complex number:
Enter real and imaginary parts respectively: 2 5
Output Complex number: 6+13i

(sammei@kali)-[~/Desktop/sammei/ops c++/practical 10 c++]
$

```