PRACTICAL 1 – Basic I/O Programs

AIM:

To write basic I/O Programs

Theory:

Introduction: C++ is an object-oriented programming language. It was developed by Bjarne Stroustrup at AT&T Bell Laboratories in Murray Hill, New Jersey, USA, in the early 1980's. C++ is a superset of C. Most of what we already know about C applies to C++ also. Therefore, almost all C programs are also C++ programs. However, there are a few minor differences that will prevent a C program to run under C++ compiler.

Advantages: Portability, Mid-level programming language, Object-Oriented, Multi-paradigm programming language, Memory management.

Disadvantages: Pointers, No garbage collection, unsafe, Complex, No custom operators, No built-in threads, lack of algebraic data types.

Applications: C++ is widely used in operating systems, browsers, libraries, banking applications, Cloud systems, many databases and compilers for other languages also use C++ as backend, Embedded systems.

Header file: Header files contain definitions of Functions and variables which is imported or used into any C++ program.

Functions: A function in C++ is a group of statements that together perform a specific task. Every C/C++ program has at least one function that the name is main. The main function is called by the operating system by which our code is executed. We can make n number of function in a single program but we can make only one main function in a single program. Every program has only one main function.

Datatypes:

- **Built-in:**
  - **Integral Type**
    - Int
    - Char
  - **Floating type**
    - Float
    - Double
- **User-Defined:**
  - Structure
  - Union
  - Class
  - Enumeration

- **Derived type:**
  - Array
  - Function
  - Pointer
  - Reference

Q1: Write a program in C++ to print the sum of two numbers entered by user.

CODE:

```
#include <iostream>

using namespace std;

int main()

{

   int a, b, c;

   cout << "\nEnter two numbers: ";

   cin >> a >> b;

   c = a + b;

   cout << "\nSum of two numbers = " << c;

   return 0;

}
```

OUTPUT:

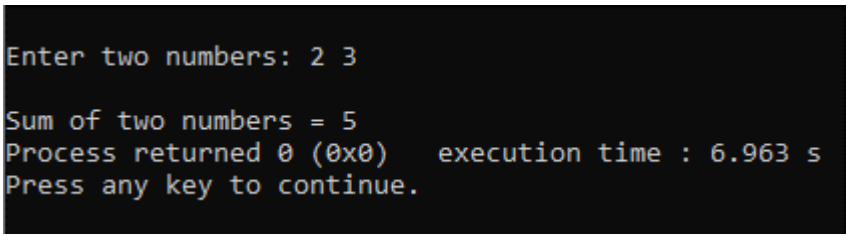

Fig1. Output for C++ program to print the sum of two numbers entered by user.

Q2. Write a program in C++ to find size of fundamental data types

CODE:

```
#include <iostream>
using namespace std;
int main()
{
   cout << "\nSize of int is " << sizeof(int);
   cout << "\nSize of int is " << sizeof(float);
   cout << "\nSize of int is " << sizeof(char);
   cout << "\nSize of int is " << sizeof(double);
}
```

OUTPUT:

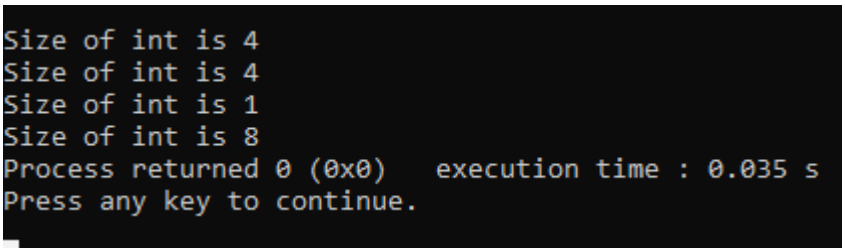

Fig2. Output for C++ program to find size of fundamental data types.

Q3. Write C++ program to swap two numbers entered by user.

CODE:

```
#include <iostream>
using namespace std;
int main()
{
   int a, b, temp;
   cout << "\nEnter value of a and b: ";
   cin >> a >> b;
   cout << "\nBefore swap a = " << a << " and b = " << b;
```

```
    temp = a;
    a = b;
    b = temp;
    cout << "\nAfter swap a = " << a << " and b = " << b;
}
```

OUTPUT:

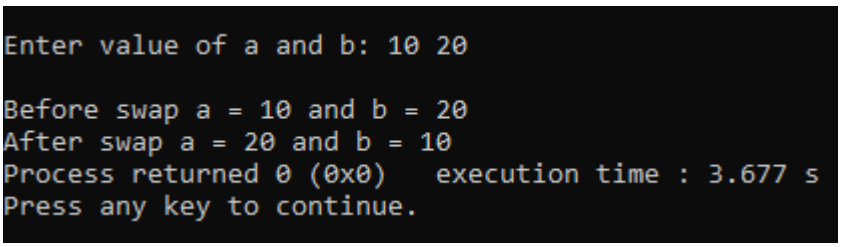

Fig3. Output for C++ program to swap two numbers entered by user

Q4. Write C++ program to calculate the volume of a cube

CODE:

```
#include <iostream>
#include <math.h>
using namespace std;
int main()
{
    int a, b;
    cout << "\nEnter side of a cube: ";
    cin >> a;
    b = pow(a, 3);
    cout << "\nVolume of cube = " << b;
}
```

OUTPUT:

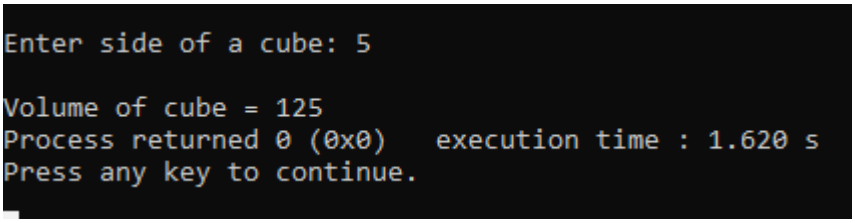

Fig4. Output for C++ program to calculate the volume of a cube