**LAB MANUAL 03**

**INPUT/OUTPUT**

**Lab Objectives:**

At the end of this lab students will know about

* **How to take input**
* **How to make equations**
* **How to use different types of identifiers**
* **Compound Assignment**

# C++ USER INPUT

You have already learned that cout is used to output (print) values. Now we will use cin to get user input.

cin is a predefined variable that reads data from the keyboard with the extraction operator (>>).

In the following example, the user can input a number, which is stored in the variable x. Then we print the value of x:

**EXAMPLE**

int x;

cout << "Type a number: "; // Type a number and press enter cin >> x; // Get user input from the keyboard

cout << "Your number is: " << x; // Display the input value

# STRING TYPES

The string type is used to store a sequence of characters (text). This is not a built-in type, but it behaves like one in its most basic usage. String values must be surrounded by double quotes:

**EXAMPLE**

string greeting = "Hello"; cout << greeting;

To use strings, you must include an additional header file in the source code, the <string> library:

**EXAMPLE**

// Include the string library #include <string>

// Create a string variable string greeting = "Hello";

// Output string value cout << greeting;

# BOOLEAN TYPES

A boolean data type is declared with the bool keyword and can only take the values true or false. When the value is returned, true = 1 and false = 0.

**EXAMPLE**

bool isCodingFun = true; bool isFishTasty = false;

cout << isCodingFun; // Outputs 1 (true) cout << isFishTasty; // Outputs 0 (false)

# ARITHMETIC OPERATORS

Arithmetic operators are used to perform common mathematical operations.

|  |  |  |  |
| --- | --- | --- | --- |
| **Operator** | **Name** | **Description** | **Example** |
| **+** | **Addition** | **Adds together two values** | **x + y** |
| **-** | **Subtraction** | **Subtracts one value from another** | **x - y** |

|  |  |  |  |
| --- | --- | --- | --- |
| **\*** | **Multiplication** | **Multiplies two values** | **x \* y** |
| **/** | **Division** | **Divides one value by another** | **x / y** |
| **%** | **Modulus** | **Returns the division remainder** | **x % y** |
| **++** | **Increment** | **Increases the value of a variable by 1** | **++x** |
| **--** | **Decrement** | **Decreases the value of a variable by 1** | **--x** |

# ASSIGNMENT OPERATORS

Assignment operators are used to assign values to variables.

In the example below, we use the **assignment** operator (=) to assign the value **10** to a variable called **x**:

**EXAMPLE**

int x = 10;

# COMPARISON OPERATORS

Comparison operators are used to compare two values.

**Note:** The return value of a comparison is either true (1) or false (0).

In the following example, we use the **greater than** operator (>) to find out if 5 is greater than 3:

**EXAMPLE**

int x = 5; int y = 3;

cout << (x > y); // returns 1 (true) because 5 is greater than 3

A list of all comparison operators:

|  |  |  |
| --- | --- | --- |
| **Operator** | **Name** | **Example** |
| == | Equal to | x == y |
| != | Not equal | x != y |
| > | Greater than | x > y |
| < | Less than | x < y |
| >= | Greater than or equal to | x >= y |
| <= | Less than or equal to | x <= y |

**COMPOUND ASSIGNMENT (+=, -=, \*=, /=, %=, >>=,**

**<<=, &=, ^=, |=)**

Compound assignment operators modify the current value of a variable by performing an operation on it. They are equivalent to assigning the result of an operation to the first operand:

|  |  |
| --- | --- |
| **expression** | **equivalent to...** |
| y += x; | y = y + x; |

|  |  |
| --- | --- |
| x -= 5; | x = x - 5; |
| x /= y; | x = x / y; |
| price \*= units + 1; | price = price \* (units+1); |

and the same for all other compound assignment operators. For example:

// compound assignment operators #include <iostream>

using namespace std;

int main ()

{

int a, b=3; a = b; a+=2;

cout << a;

}

// equivalent to a=a+2

**Tasks:**

**Question # 1: Write a program to take two float numbers then find remainder of them by using type casting in integer form.**

**Question # 2: Write a program to take input name, address and age from user, then display data on screen.**

**Question # 3: Write a program to take input a character and display its ASCII code.**

**Question # 4: Take an amount from user, interest rate and number of years from user let suppose 1000, 5% and 3. Find Interest amount for those years. (e.g. output for above values is 150)**

**Question # 5: Write a program to take dividend and divisor. Then display the quotient and remainder.(e.g. 20 3. Quotient=6, Remainder=2)**

**Question # 6: Write a program to take input base and height of triangle. Now calculate area by using formula Area=1/2 x base x height;.**

**Question # 7: Write a program to take temperature in Celsius and convert it into Fahrenheit by using F=9/5 \*C +32;.**

**Question # 8: Write a program to take three digit numbers from user then display its reverse order.**