#  Lab 2

#  Arithmetic Operations

**Arithmetic Operators**

C++ uses four basic arithmetic operators, +, -,\*, / for addition, subtraction, multiplication and division. These operators work on all the data type.

**Remainder Operator**

The remainder operator only works on the integer variables. It is represented by the %, percent symbol also called modulus operator. It finds the remainder when one value is divided by another.

**Program 1**

*#include <iostream>*

*using namespace std;*

*int main()*

*{*

 *cout<< "6%8="<< 6%8 << endl;*

 *cout<<"7%8=" << 7%8 << endl;*

 *cout<<"8%8="<< 8%8 << endl;*

 *cout<<"9%8="<< 9%8 << endl;*

 *cout<<"10%8="<< 10%8 << endl;*

*}*

**Output of Program 1**

**Arithmetic Assignment Operator**

C++ offers several ways to shorten your code. One of them is to use the assignment operator.

The following statement is common in most languages

*total=total+item*

The Arithmetic assignment operator combines the assignment and arithmetic operators such as;

*total += item*

Other operators are +=,-=,\*=,/= and %=.

**Program 2**

*#include <iostream>*

*using namespace std;*

*int main()*

*{*

 *int ans=27;*

 *ans += 10; // ans=ans+10*

 *cout<< ans <<endl;*

 *ans -= 7; // ans=ans-7*

 *cout<< ans <<endl;*

 *ans \*= 2; // ans=ans\*2*

 *cout<< ans <<endl;*

 *ans /= 3; // ans=ans/3*

 *cout<< ans <<endl;*

 *ans %= 3; // ans=ans%3*

 *cout<< ans <<endl;*

*}*

**Output of Program 2**

####

#### Increment Operator

#### Increment operator is used to add value 1 to the value of an existing variable.

#### *count=count +1;*

#### You can use arithmetic assignment operator

#### *count+=1;*

####

#### Or use the increment operator

#### *++count;*

#### Prefix and Postfix

#### The increment operator can be used in two ways;

#### Prefix means that the operator precedes the variable. Post fix means that the operator follows the variable.

#### *Totalweight=avgweight\* ++count*

####

#### Decrement Operator

#### It is used in the same way as decreasing the value with 1 and uses prefix and postfix representation.

#### Library Function

#### Many activities in C++ are carried out using library functions. These functions perform file access, mathematical computation and data conversion.

#### Program 4

#### *#include <iostream>*

#### *#include <cmath>*

#### *using namespace std;*

#### *int main()*

#### *{*

####  *double number, answer;*

####

####

####  *cout<< "Enter a number="<< endl;*

####  *cin>> number;*

####  *answer=sqrt(number);*

####  *cout<<"Square root =" << answer << endl;*

####  *return 0;*

#### *}*

##### Out Put of Program 4

#### LAB TASKS

#### Program No 1

#### Write a program to declare two integers, assign them random values, and perform the arithmetic operations Addition, subtraction, multiplication, division and modulus. Display the results on the screen

#### Program No 2

#### Write a program which calculates the kinetic energy K.E=$\frac{1}{2}mv^{2}$. Take values of m and v from keyboard.

#### Program No 3

Temperature of a city in Fahrenheit degrees is input through the keyboard. Write a program to convert this temperature into Centigrade degrees.

C = (F-32) /1.8

#### Program No 4

If a five-digit number is input through the keyboard, write a program to calculate the sum of its digits.

**(Hint: Use the modulus operator ‘%’)**

Sample output:

Enter a 5 digit single number: 12423

Sum of all digits of the number is 12

**NOTE: Your input is a single number not 5 different inputs**

**Explanation:**

**Inital value of a (input number): a = 567**

**Iteration 1:**

 b = a%10 → 567%10 = 7

 sum = sum+b → 0+7 = 7

 a = a/10 → 567/10 = 56

**Iteration 2:**

 b = a%10 → 56%10 = 6

 sum = sum+b → 7+6 = 13

 a = a/10 → 56/10= 5

**Iteration 3:**

 b = a%10 → 5%10 = 5

 sum = sum+b → 13+5= 18

 a = a/10 → 5/10 = 0

Now, the value of a is "0", condition will be fasle

**Output will be 18**

*Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*Marks Obtained: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*Instructor’s Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*