Chapter 1
Review of C++ Programming

What are Statements in a C++ Program?

Statements are fragments of C++ program that are executed in sequence

- There are four kinds of statements in C++ program. They are:

1)**Declaration statement**: Used to declare identifiers before their usage. Eg: int a, b, sum;   Values can be provided to the variables along with the declaration. This kind of statement is known as variable initialisation statement. Eg: float pi = 3.14;

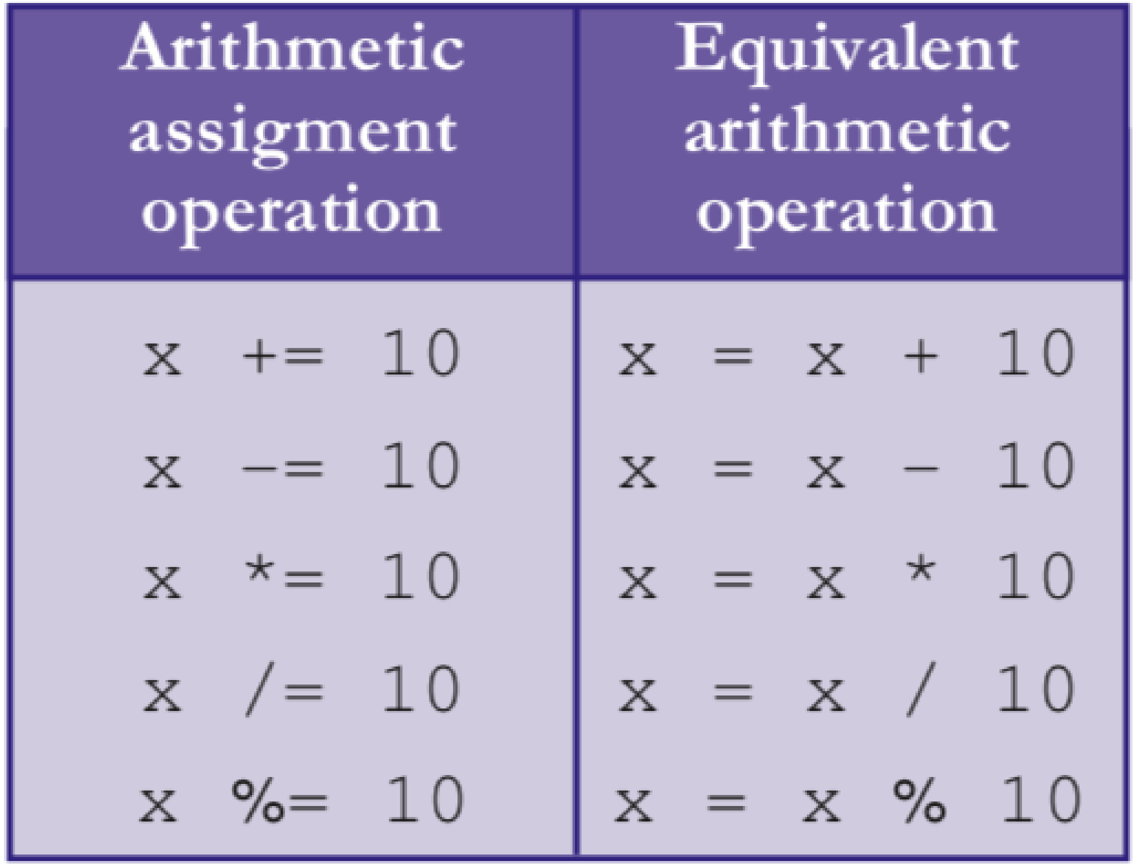
2)**Output statement**: Used to perform output operation. Eg: cout<<“Hello world”;   Here cout is a pre-defined identifier and << is an insertion operator or put to operator.

3)**Assignment statement**: Used to store a data in a memory location. Eg: n=253; Here = is called Assignment operator.

4)**Input statement**: Used to perform input operation. Eg: cin >> a >> b; Here cin is a predefined identifier and >> is an extraction operator or get from operator.

Arithmetic Assignment Operators

- A simple arithmetic statement can be expressed in a more condensed form using arithmetic assignment operators.
- For example, a=a+10 can be represented as a+=10.
- Here += is an arithmetic assignment operator.
- The arithmetic assignment operators in C++ are +=, -=, *=, /=, %=



Arithmetic assigment operation	Equivalent arithmetic operation
`x += 10`	`x = x + 10`
`x -= 10`	`x = x - 10`
`x *= 10`	`x = x * 10`
`x /= 10`	`x = x / 10`
`x %= 10`	`x = x % 10`

What is Increment Operator ?

- The increment operator is represented by ++ symbol.
- It is a unary operator.
- It adds 1 to the content of the operand variable and the result is stored in it.
- There are two forms of increment operator;

1) **Prefix form (change and use method.):** In Prefix form, the value of the variable in increased by 1 immediately. Eg: ++a

2) **Postfix form (use and change method.) :** In Postfix form, the value of the variable is increased only in the next statement. Eg: a++

What is Decrement Operator ?

- The decrement operator is represented by -- symbol.
- It is a unary operator.
- It subtracts 1 from the content of the operand variable and the result is stored in it
- There are two forms of decrement operator;

1) **Prefix form** In Prefix form, the value of the variable in decreased by 1 immediately

2) **Postfix form** In Postfix form, the value of the variable is decreased only in the next statement.

What is Cascading?

- The input, output and assignment operators (>>, << and =) may appear more than once in the respective statements. It is known as cascading.
- Eg:
- cin >> a >> b >> c;
- cout << "Sum of " << n << "numbers = " << sum;
- a = b = c;

What are Jump Statements?

- Jump statements are used to jump unconditionally to a different statement. It is used to alter the flow of control unconditionally.
- There are three types of jump statements in C++

a) **Break**: break statement is used to terminate a loop or switch statement.

b) **Continue**: continue statement is used to continue to the beginning of a loop. When a continue statement is executed in a loop it skips the remaining statements in the loop and proceeds with the next iteration of the loop.

c) **Goto**: goto statement is used for unconditional jump. It transfers the control from one part of the program to another

What are tokens?

- Tokens are the basic building blocks of a C++ program.
- There are five types of tokens in C++.

1) **Keywords**: Keywords are tokens that carry a specific meaning to the language compiler. Eg. int, switch etc..

2) **Identifiers**: Identifiers are user defined words that are used to name different program elements such as memory locations, statements, functions, classes etc. Identifiers used for naming memory location is known as variables. Identifiers assigned to statements are known as labels. Identifiers used for set of statements are known as functions.

3) **Literal** : Literals are data items that never change their values during the program running. They are also known as constants. There are 4 types of literals: Integer Literal, Floating Point Literal, Character Literal, String Literal

4) **Punctuators**: Special symbols that have syntactic or semantic meaning to the compiler. Eg: #,:,’,”,() ,[]

5) **Operators**: Operators are the tokens that trigger some kind of operations. The operations applied on a set of data called operands. Eg: +, - , * , /

What are Data Types?

- These are means to identify the type of data and associated operations handling these data.
- Data types are classified into **fundamental** and **user-defined** data types.
- Fundamental data types represent atomic values and they include int, char, float, double and void.

What are type modifiers?

- Type modifiers are used to modify the size of memory space and range of data supported by the basic data types.
- Eg. long, short, signed, unsigned

What are expressions?

- Expressions are constituted by operators and operands to perform an operation. Based on the operators used, there are different types of expressions like ,
- i). **Arithmetic expressions**: Arithmetic expressions are also divided into

  a). **Integer expression** :All operands in the expressions are integers. An integer expression yields an integer result. Eg: a+b

  b). **Floating point (decimal) expression**: All operands in the expression are floating points(decimals).A floating point expression yields a floating point result. Eg: a+b
- ii). **Relational expression** : It consists of numeric or character data as operands and they return true or false as outputs. Eg: a>b
- iii). **Logical expression** : It uses relational expressions as operands and return true or false as results. Eg: a>b && a>c

What is type conversion?

- Type conversion means converting one data type to another data type.
- There are two types of type conversion:

1) **Implicit type conversion (Type Promotion)**: also known as automatic type conversion is performed by the compiler. The conversion is always from lower type to higher type.
Eg: 6+2.5=8.5

2) **Explicit type conversion (Type casting)**: refers to conversion that is performed explicitly using cast operator. The operator used for this purpose is known as cast operator. The cast operator takes on the format cast type (expression)

- eg int a = (int) 10.5 , Here the value 10.5 is converted to integer type

Previous Questions

- 1. Which among the following is an insertion operator ?
  [✓ (a) <<] (b) >> (c) < (d) >
- 2.What are the main components of a looping statement ?
- 3. How do continue and break statement differ in a loop ?
- 4. ……………. is an exit control loop.
  a)for loop b)while loop [✓ c)do …while loop] d)break
- 5.Explain switch statement with an example.
- 6.Compare continue and break statement ?

- 7. Compare the selection statements ‘if’ and switch
- 8. Define Jump statements. Explain any two.
- 9. Explain about nested loops
- 10. The input operator in C++ is ....
- 11. List the type modifiers in C++