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## CHAPTER – 15

### BIT WISE OPERATION

#### BIT WISE OPERATORS

Computers represent all data internally as sequences of **bits**. Each bit can assume the value *0* or the value *1*. On most systems, a sequence of 8 **bits** forms a byte, the standard storage unit for a variable of type **char**. Other data types are stored in larger number of bytes. The *bit wise operators* are used to manipulate the **bits** of integral operands (**char**, **short**, **int**, and **long**, both **signed** and **unsigned**). Unsigned integers are normally used with the **bit wise operators**.

The **bit wise** operators are: **bit wise AND** (**&**), **bit wise inclusive OR** (**|**), bitwise **exclusive OR** (**^**), **left shift** (**<<**), **right shift** (**>>**), and **complement** (**~**). The **bit wise AND**, bit wise **inclusive OR**, and **bit wise exclusive OR** operators compare their two operands **bit by bit**.

The **bit wise AND** operator sets each **bit** in the result to *1* if the corresponding bit in both operands is *1*. The **bit wise inclusive OR** operator sets each **bit** in the result to *1* if the corresponding **bit** in either (or both) operands is *1*. The **bit wise exclusive OR** operator sets each **bit** in the result to *1* if the corresponding **bit** in exactly one operand is *1*. The **left shift** operator shifts the **bits** of its left operand to the left by the number of bits specified in its right operand. The **right shift** operator shifts the bits in its left operand to the right by the number of **bits** specified in its right operand. The **bit wise complement** operator sets all *0* bits its operand to *1* in the result and sets all *1* bits to *0* in the result, otherwise referred to as “*taking the one’s complement of the value*”.

Each **bit wise operator** (except the bit wise **complement operator**) has a corresponding assignment operator. These assignment operators are used in a similar manner to the arithmetic assignment operators.