

statements

Lecture Note: 5

Expressions

An expression is a combination of variables, constants, operators and function call. It can be arithmetic, logical and relational for example:-

int z= x+y // arithmetic expression

a>b //relational

a==b // logical

func(a, b) // function call

Expressions consisting entirely of constant values are called *constant expressions*.

So, the expression

$121 + 17 - 110$

is a constant expression because each of the terms of the expression is a constant value. But if i were declared to be an integer variable, the expression

$180 + 2 - j$

would not represent a constant expression.

Operator

This is a symbol use to perform some operation on variables, operands or with the constant. Some operator required 2 operand to perform operation or Some required single operation.

Several operators are there those are, arithmetic operator, assignment, increment , decrement, logical, conditional, comma, size of , bitwise and others.

1. Arithmetic Operator

This operator used for numeric calculation. These are of either Unary arithmetic operator, Binary arithmetic operator. Where Unary arithmetic operator required

only one operand such as +, -, ++, --, !, tiled. And these operators are addition, subtraction, multiplication, division. Binary arithmetic operator on other hand required two operand and its operators are +(addition), -(subtraction), *(multiplication), /(division), %(modulus). But modulus cannot applied with floating point operand as well as there are no exponent operator in c.

Unary (+) and Unary (-) is different from addition and subtraction.

When both the operand are integer then it is called integer arithmetic and the result is always integer. When both the operand are floating point then it is called floating arithmetic and when operand is of integer and floating point then it is called mix type or mixed mode arithmetic . And the result is in float type.

2.Assignment Operator

A value can be stored in a variable with the use of assignment operator. The assignment operator(=) is used in assignment statement and assignment expression. Operand on the left hand side should be variable and the operand on the right hand side should be variable or constant or any expression. When variable on the left hand side is occur on the right hand side then we can avoid by writing the compound statement. For example,

```
int x= y;
```

```
int Sum=x+y+z;
```

3.Increment and Decrement

The Unary operator ++, --, is used as increment and decrement which acts upon single operand. Increment operator increases the value of variable by one .Similarly decrement operator decrease the value of the variable by one. And these operator can only used with the variable, but can't use with expression and constant as ++6 or ++(x+y+z).

It again categories into prefix post fix . In the prefix the value of the variable is incremented 1st, then the new value is used, where as in postfix the operator is written after the operand(such as m++,m--).

EXAMPLE

```
let y=12;
```

```
z= ++y;
```

```
y= y+1;
```

```
z= y;
```

Similarly in the postfix increment and decrement operator is used in the operation . And then increment and decrement is perform.

EXAMPLE

```
let x= 5;
```

```
y= x++;
```

```
y=x;
```

```
x= x+1;
```

4.Relational Operator

It is use to compared value of two expressions depending on their relation. Expression that contain relational operator is called relational expression.

Here the value is assign according to true or false value.

a.(a>=b) || (b>20)

b.(b>a) && (e>b)

c. 0(b!=7)

5. Conditional Operator

It sometimes called as ternary operator. Since it required three expressions as operand and it is represented as (? , :).

SYNTAX

`exp1 ? exp2 :exp3`

Here exp1 is first evaluated. It is true then value return will be exp2 . If false then exp3.

EXAMPLE

```
void main()
{
    int a=10, b=2
    int s= (a>b) ? a:b;
    printf("value is:%d");
}
```

Output:

Value is:10

6. Comma Operator

Comma operator is use to permit different expression to be appear in a situation where only one expression would be used. All the expression are separator by comma and are evaluated from left to right.

EXAMPLE

```
int i, j, k, l;
for(i=1,j=2;i<=5;j<=10;i++;j++)
```

7. Sizeof Operator

Size of operator is a Unary operator, which gives size of operand in terms of byte that occupied in the memory. An operand may be variable, constant or data type qualifier.

Generally it is used make portable program(program that can be run on different machine) . It determines the length of entities, arrays and structures when their size are not known to the programmer. It is also use to allocate size of memory dynamically during execution of the program.

EXAMPLE

```
main( )  
{  
    int sum;  
    float f;  
    printf( "%d%d" ,size of(f), size of (sum) );  
    printf("%d%d", size of(235 L), size of(A));  
}
```