Mathematical Expression vs. C Expression

Mathematical Expression

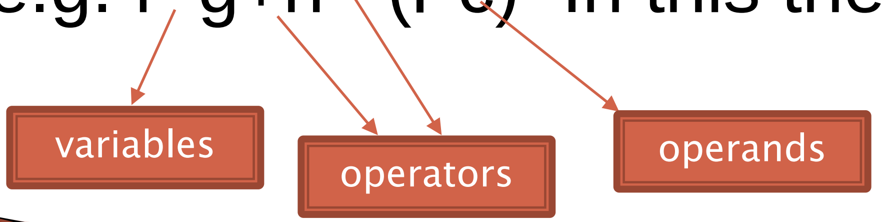
- Mathematical Expression Language(MEL) is a programming language that lets a programmer define rules relationships in the form of algebraic equations.
- The syntax allows you to express one or more equations using the standard notation are:
- An algebraic expression in mathematics is an expression which is made up of variables and constants with operations(addition, subtraction etc.)
  - It includes Monomial Expression, Binomial Expression and Polynomial Expression.

Expression in C

An expression in C :

- is a combination of operands and operators. Operators are the actions performed and operands are the data items on which action is to be performed.
- Once the expressions are executed the values are stored in variables.
- The expressions are executed based on the precedence of operators.

e.g. f=g+h –(l*c) In this the bracket value will execute first.



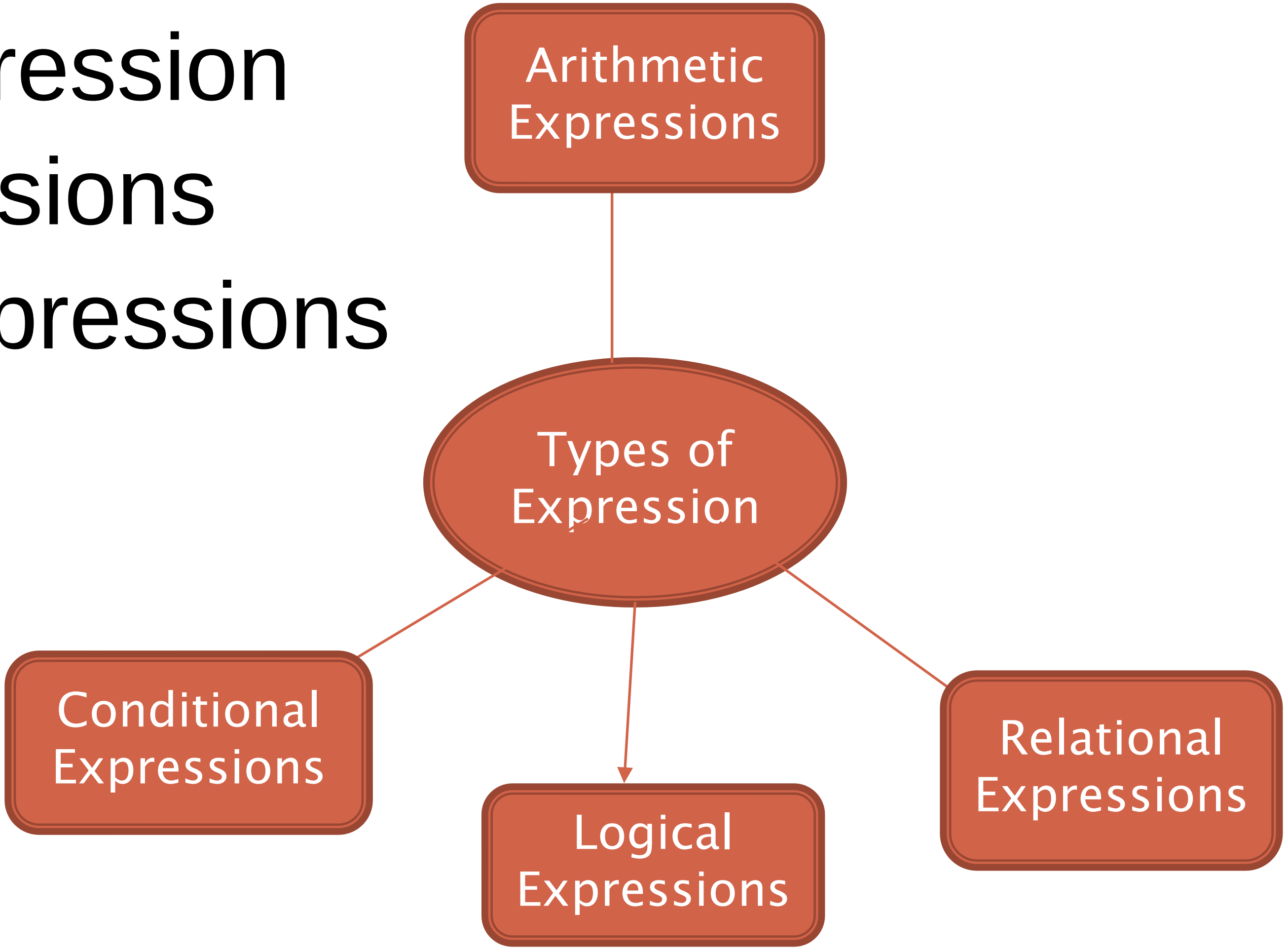
variables

operators

operands

Types of Expression

- Arithmetic Expression
- Relational Expression
- Logical Expressions
- Conditional Expressions



Arithmetic Expressions:

These Expressions are evaluated in specific order based on the operators precedence and result will stored in variable after that.

E.g. D=a+b –(a*c)

If a=2,b=3 and c=4

After putting values :

D=2+3 –(2*4)

Priority is given to parenthesis (bracket) values so (20*40)will solved first then + and – operator.

Answer will be :

(2*4)=8; 2+3=5

So 5-8=-3

Value of D= -3

Precedence of operators

Operator symbol	Functionality	Associativity
* / %	multiplication, division, and modulus (remainder)	left to right
+ -	addition and subtraction	left to right
=	assignment	right to left

Program:

```
#include<stdio.h>
void main()
{
int a=2,b=3,c=4,D;
D=a+b –(a*c);
printf(“Result is:%d”, D);
}
```

Output is Result = -3

Relational Expressions:

- Relational Expressions include operators are >,<,== and != .
- Relational Expressions are used to compare two operands.
- A numeric values cannot be compared with the string value
- The result after the evaluation of theses expressions are either true of false. Here, 0 value is equivalent to false and non-zero is equivalent to true.

e.g.

A=c>b

If c=10 and b=20

Output is false (0)

Program

```
#include<stdio.h>
void main()
{
int a=4,b=5,c=3,D;
D=a*b>a+c;
printf(“Result is:%d”, D);
}
```

Output: Result is 1

Logical Expressions

- Relational and arithmetic expressions are connected with the logical operators, and the result after execution is stored in variable.
- It is a complex test condition to take a decision.
- The result after evaluating is either true of false.

e.g. D=(a+b)>c && a<b

a>b||b>a

If a=2,b=4,c=3;

Then (2+4)>3 && 2<4

Result is :True(1)

Program

```
include<stdio.h>
void main()
{
int a=2,b=4,c=3,D;
D=(a+b)>c && a<b
printf(“Result is:%d”, D);
}
```

Output: Result is 1

Conditional Expressions

- These expressions will perform the executing after checking the values in first two expressions and based on that third expression will be performed.
- A conditional operator is also known as ternary operator.
- e.g. Exp1?Exp2(true):Exp3(false)

4>3?4:3

Result is: 4 (true)

Program

```
include<stdio.h>
void main()
{
int a=2,b=4,c=3,D;
D=(2*3)<1?1:0
printf(“Result is:%d”, D);
}
```

Output: Result is 0(false)

References:

Student reference link:
https://ecomputernotes.com/what-is-c/types-and-variables/what-is-expressions-type-of-expression

THANK YOU