

### 3. a. Operator precedence and associativity

Aim: - To write a C program to evaluate expressions using operator precedence and associativity.

Software used: - Turbo C.

Algorithm:-

Step1:- Start

Step2:- Read input values A, B, C, D, E.

Step3:- Read input values F, G, i;

Step4:- Calculate  $x = A+B*C + (D*E) +F*G$ .

Step5:- Calculate  $y = A/B*C-B+A*D/3$ .

Step6:- Calculate  $z = A+++B---A$ .

Step7:- Calculate  $J = (i++)+(++i)$ .

Step8:-Display x.

Step9:-Display y.

Step10:-Display z.

Step11:-Display J.

Step12:-Stop.

Theory: -

To evaluate the following expressions using operator precedence and associativity.

$A = 20, B = 10, C = 30, D = 30, E = 20, F = 10, G = 20, i = 1$

$$\begin{aligned}
x &= A+B*C+(D*E) +F*G. \\
&= 20+10*30+(30*20)+10*20. \\
&= 20+10*30+600+10*20. \\
&= 20+300+600+10*20. \\
&= 20+300+600+200. \\
&= 1120.
\end{aligned}$$

$$\begin{aligned}
y &= A/B*C-B+A*D/3. \\
&= 20/10*30-10+20*30/3. \\
&= 2*30-10+20*30/3. \\
&= 2*30-10+20*10. \\
&= 60-10+20*10. \\
&= 60-10+200. \\
&= 50+200. \\
&= 250.
\end{aligned}$$

$$\begin{aligned}
z &= A+++B---A. \\
&= 20+++10---20. \\
&= 9
\end{aligned}$$

$$\begin{aligned}
J &= (i++)+(++i). \\
&= (1++)+(++1). \\
&= 4.
\end{aligned}$$

Program:-

```
#include<stdio.h>
#include<math.h>
#include<conio.h>
void main( )
{
int A, B, C, D, E;
int G, i;
int x, y, z, J;
clrscr( );
printf("enter A, B, C, D, E ");
scanf("%d%d%d%d%d",&A ,&B, &C,&D ,&E);
printf("enter G, i");
scanf("%d%d%d",&G , &i);
x = A+B*C+(D*E)+F*G;
y = A/B*C-B+A*D/3;
z = A+++B---A;
J = (i++)+(++i);
printf(" x = %d", x);
printf(" y = %d", y);
printf(" z = %d", z);
printf(" J = %d", J);
getch( );
}
```

Flow Chart:-

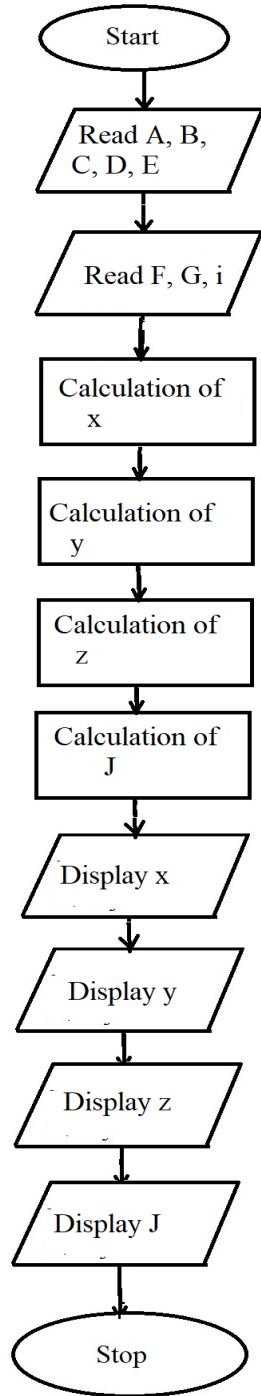


Fig: Flow Chart of Operator precedence and associativity.

Output:-

enter A, B, C, D, E =

enter F, G, i=

x =

y =

z =

J =

Result: - The expressions using operator precedence and associativity are evaluated by writing a C program.

### 3. b. The maximum of three numbers using conditional operator

Aim: - To write a C program to find the maximum of three numbers using conditional operator.

Software used: - Turbo C.

Algorithm:-

Step1:- Start

Step2:- Read input values a, b, c.

Step3:- Find the maximum of three numbers using conditional operator.

Step4:-Display the maximum of three numbers.

Step5:-Stop.

Theory: -

To find the maximum of three numbers using conditional operator is given by the expression

$$((a > b \ \&\& \ a > c)? a: ((b > c)? b: c))$$

if  $a > b$  and  $a > c$  then maximum number is  $a$  else  $b > c$ ,  $b$  is the maximum number else  $c$  is the maximum number.

Program:-

```
#include<stdio.h>
int main( )
{
int a, b, c, maximum;
printf("enter a, b, c = ");
scanf("%d%d%d", &a, &b, &c);
maximum = ((a > b && a > c)?a:(b > c)?b:c);
printf("maximum = ", maximum);
return 0;
}
```

## Flow Chart:-

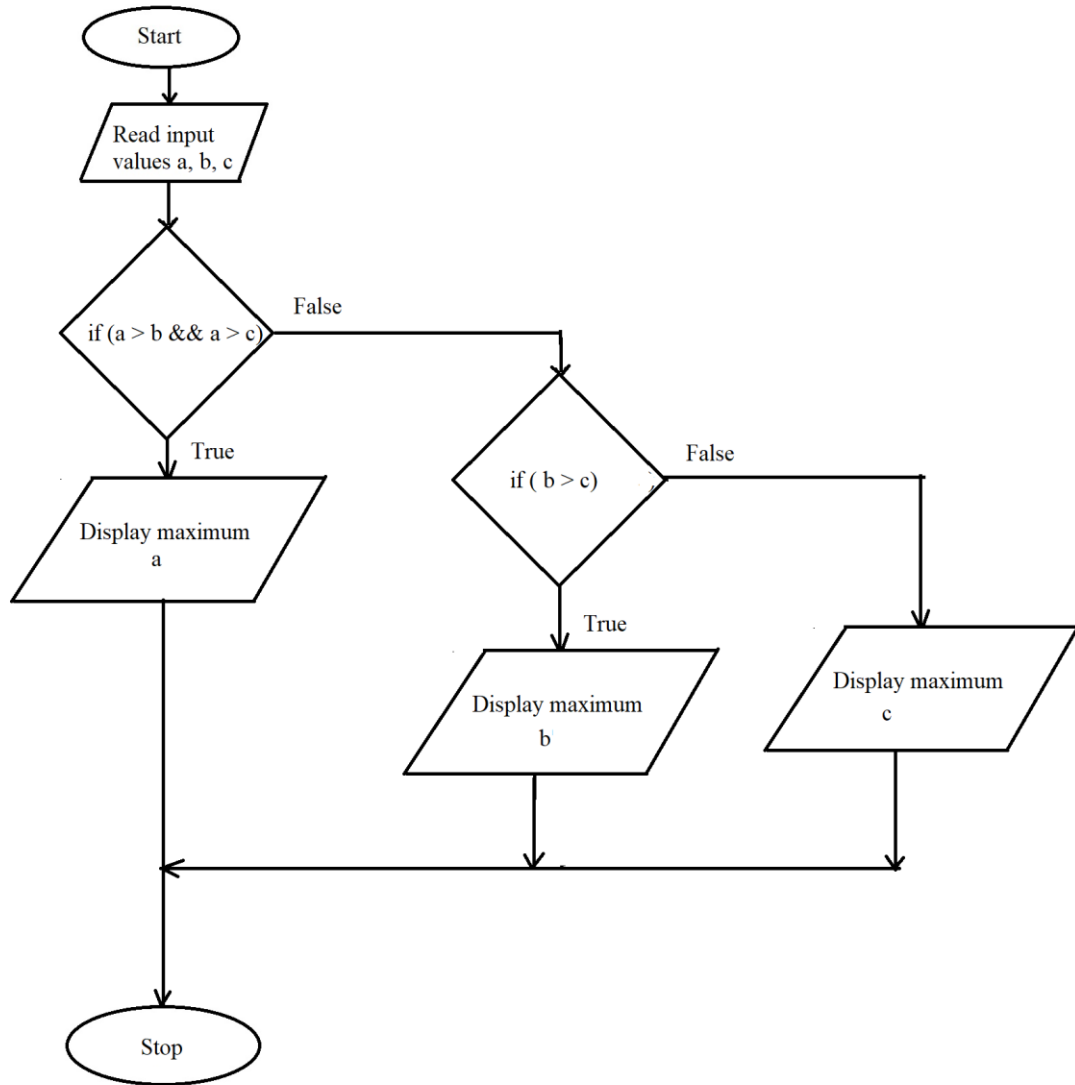


Fig: Flow Chart of the maximum of three given numbers.

Output:-

enter a, b, c =

maximum =

Result: - The maximum of three numbers is found by using a C program.