

# 18CSC304J/ Compiler Design

Submitted By:- ANANNYA P. NEOG (RA1911003010367)

## **Exp-11: Intermediate code generation – Quadruple, Triple, Indirect triple**

**Aim:-** To write code for Intermediate code generation – Quadruple, Triple, Indirect triple

### **Codes:-**

```
#include<stdio.h>
#include<ctype.h>
#include<stdlib.h>
#include<string.h>

void small();
void dove(int i);
int p[5]={0,1,2,3,4},c=1,i,k,l,m,pi;
char sw[5]={'=', '-', '+', '/', '*'},j[20],a[5],b[5],ch[2];

void main()
{
    printf("Enter the expression:");
    scanf("%s",j);
    printf("\nThe Intermediate code is:\n");
    small();
}

void dove(int i)
{
    a[0]=b[0]='\0';
    if(!isdigit(j[i+2])&&!isdigit(j[i-2]))
    {
        a[0]=j[i-1];
        b[0]=j[i+1];
    }
    if(isdigit(j[i+2]))
    {
        a[0]=j[i-1];
        b[0]='t';
        b[1]=j[i+2];
    }
    if(isdigit(j[i-2]))
    {
        b[0]=j[i+1];
        a[0]='t';
        a[1]=j[i-2];
        b[1]='\0';
    }
    if(isdigit(j[i+2]) && isdigit(j[i-2]))
```

```

{
    a[0]='t';
    b[0]='t';
    a[1]=j[i-2];
    b[1]=j[i+2];
    sprintf(ch,"%d",c);
    j[i+2]=j[i-2]=ch[0];
}
if(j[i]=='*')
    printf("\tt%d=%s*%s\n",c,a,b);
if(j[i]=='/')
    printf("\tt%d=%s/%s\n",c,a,b);
if(j[i]=='+')
    printf("\tt%d=%s+%s\n",c,a,b);if(j[i]=='-')
    printf("\tt%d=%s-%s\n",c,a,b);
if(j[i]=='=')
    printf("\t%c=t%d",j[i-1],--c);
    sprintf(ch,"%d",c);
    j[i]=ch[0];
    c++;
    small();
}

void small()
{
    pi=0;l=0;
    for(i=0;i<strlen(j);i++)
    {
        for(m=0;m<5;m++)
            if(j[i]==sw[m])
                if(pi<=p[m])
                {
                    pi=p[m];
                    l=1;
                    k=i;
                }
    }
    if(l==1)
        dove(k);
    else
        exit(0);
}

```

source codemain.c

```
1 #include<stdio.h>
2 #include<ctype.h>
3 #include<stdlib.h>
4 #include<string.h>
5
6 void small();
7 void dove(int i);
8 int p[5]={0,1,2,3,4},c=1,i,k,l,m,pi;
9 char sw[5]={'=', '-', '+', '/', '*'},j[20],a[5],b[5],ch[2];
10
11 void main()
12 {
13     printf("Enter the expression:");
14     scanf("%s",j);
15     printf("\tThe Intermediate code is:\n");
16     small();
17 }
18
19 void dove(int i)
20 {
21     a[0]=b[0]='\0';
22     if(!isdigit(j[i+2])&&!isdigit(j[i-2]))
23     {
24         a[0]=j[i-1];
25         b[0]=j[i+1];
26     }
27     if(isdigit(j[i+2]))
28     {
29         a[0]=j[i-1];
30         b[0]='t';
31         b[1]=j[i+2];
32     }
33     if(isdigit(j[i-2]))
34     {
35         b[0]=j[i+1];
36         a[0]='t';
37         a[1]=j[i-2];
38         b[1]='\0';
39     }
```

source codemain.c

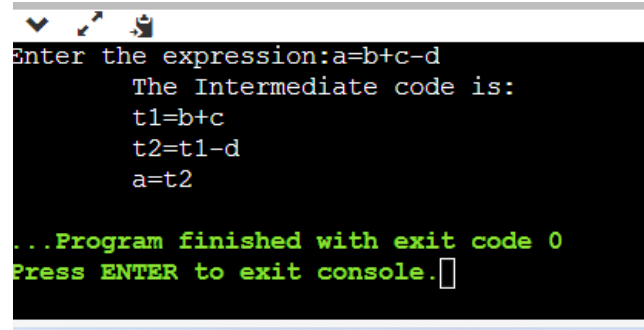
```
40     if(isdigit(j[i+2]) &&!isdigit(j[i-2]))
41     {
42         a[0]='t';
43         b[0]='t';
44         a[1]=j[i-2];
45         b[1]=j[i+2];
46         sprintf(ch,"%d",c);
47         j[i+2]=j[i-2]=ch[0];
48     }
49     if(j[i]=='*')
50         printf("\tt%d=%s*s\n",c,a,b);
51     if(j[i]=='/')
52         printf("\tt%d=%s/%s\n",c,a,b);
53     if(j[i]=='+')
54         printf("\tt%d=%s+%s\n",c,a,b);if(j[i]=='-')
55         printf("\tt%d=%s-%s\n",c,a,b);
56     if(j[i]=='=')
57         printf("\tc=%t",j[i-1],--c);
58         sprintf(ch,"%d",c);
59         j[i]=ch[0];
60         c++;
61         small();
62     }
63
64 void small()
65 {
66     pi=0;l=0;
67     for(i=0;i<strlen(j);i++)
68     {
69         for(m=0;m<5;m++)
70             if(j[i]==sw[m])
71                 if(pi<=p[m])
72                 {
73                     pi=p[m];
74                     l=1;
75                     k=i;
76                 }
77     }
78     if(l==1)
79         dove(k);
80     else
81         exit(0);
82 }
```

## Output:-

When input is:

**a=b+c-d**

as shown in the following output



```
Enter the expression:a=b+c-d
The Intermediate code is:
t1=b+c
t2=t1-d
a=t2

...Program finished with exit code 0
Press ENTER to exit console.
```