COMPILER DESIGN
Intermediate code generation – Quadruple, Triple, Indirect triple

Name – HUSNA QASIM

RA1911031010138

CSE-IT L2

Aim: Intermediate code generation – Quadruple, Triple, Indirect triple

Algorithm:-

The algorithm takes a sequence of three-address statements as input. For each three address statements of the form a:= b op c perform the various actions. These are as follows: 1. Invoke a

function getreg to find out the location L where the result of computation b op c should be stored.

2. Consult the address description for y to determine y'. If the value of y currently in memory and register both then prefer the register y' . If the value of y is not already in L then generate the instruction MOV y' , L to place a copy of y in L.

3. Generate the instruction OP z' , L where z' is used to show the current location of z. if z is in both then prefer a register to a memory location. Update the address descriptor of x to indicate that x is in location L. If x is in L then update its descriptor and remove x from all other descriptors.
4. If the current value of y or z have no next uses or not live on exit from the block or in register then alter the register descriptor to indicate that after execution of x : = y op z those register will no longer contain y or z.

Program:

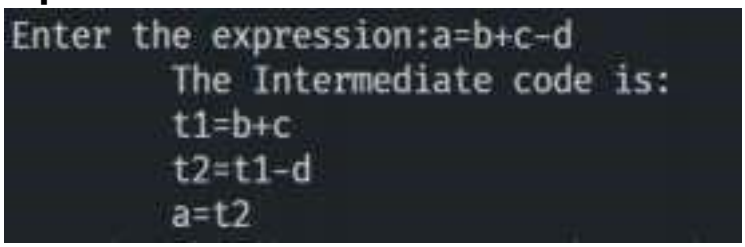
```
#include<stdio.h>

#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("\tThe 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);}
```

Output:-



Result:-

The program was successfully compiled and run.