// Implement the front end of a compiler that generates the three address code for a simple language with: one data type integer, arithmetic operators, relational operators, variable declaration statement, one conditional construct, one iterative construct and assignment statement.

```
#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:

Enter the expression:a=b+c-d

The Intermediate code is:

t1=b+c

t2=t1-d

a=t2