GENERATE THREE ADDRESS CODES

AIM:

To generate three address code using C program.

ALGORITHM:

- Get address code sequence.
- Determine current location of 3 using address (for 1st operand).
- If the current location does not already exist, generate move (B, O).
- Update address of A (for 2nd operand).
- If the current value of B and () is null, exist.
- If they generate operator () A, 3 ADPR.
- Store the move instruction in memory.

PROGRAM:

```
#include<stdio.h>
#include<string.h>
#include<stdlib.h>
void    pm();    void
plus(); void divi();
int
i,ch,j,l,addr=100;
char ex[10], exp0[10] ,exp1[10],exp22[10],id1[5],op[5],id2[5];
char *strrev(char *str){ char *p1, *p2;
    if (! str || ! *str)
        return str;
    for (p1 = str, p2 = str + strlen(str) - 1; p2 > p1; ++p1, --p2){
        *p1 ^= *p2;
        *p2 ^= *p1;
        *p1 ^= *p2;
    } return
    str;
} void
main(){
while(1){
printf("\n1.assignment\n2.arithmetic\n3.relational\n4.Exit\nEnter the choice:");
scanf("%d",&ch); switch(ch){ case 1:
printf("\nEnter the expression with assignment
operator:"); scanf("%s",exp0); l=strlen(exp0);
exp22[0]='\0';
i=0;
while(exp0[i]!='=')
    i++;
```

```c
    strncat(exp22,exp0,i);
    strrev(exp0);
    exp1[0]='\0';
    strncat(exp1,exp0,l-
    (i+1)); strrev(exp1);
    printf("Three address
    code:\ntemp=%s\n%s=temp\n",exp1,exp22); break; case 2:
    printf("\nEnter the expression with arithmetic operator:");
    scanf("%s",ex); strcpy(exp0,ex); l=strlen(exp0); exp1[0]='\0';
    for(i=0;i<l;i++){ if(exp0[i]=='+'||exp0[i]=='-'){
    if(exp0[i+2]=='/'||exp0[i+2]=='*'){ pm(); break;} else{ plus();
    break;} }
    else if(exp0[i]=='/'||exp0[i]=='*'){ divi(); break;} }
    break; case 3: printf("Enter the expression with
    relational operator");
    scanf("%s%s%s",id1,op,id2);
    if(((strcmp(op,"<")==0)||(strcmp(op,"&gt;")==0)||(strcmp(op,"<=")==0)||(strcmp(op,"&gt;="
    )
    ==0)||(
    strcmp(op,"==")==0)||(strcmp(op,"!=")==0))==0)
    printf("Expression is error");
    else{
    printf("\n%d\tif %s%s%s goto %d",addr,id1,op,id2,addr+3);
    addr++;
    printf("\n%d\t T:=0",addr);
    addr++;
    printf("\n%d\t goto %d",addr,addr+2);
    addr++;
    printf("\n%d\t T:=1",addr);
    }
    break;
    case 4:
    exit(0);
    }
    }
    } void pm(){
    strrev(exp0); j=l-i-
    1;
    strncat(exp1,exp0,j)
    ; strrev(exp1);
    printf("Three address code:\ntemp=%s\ntemp1=%c%ctemp\n",exp1,exp0[j+1],exp0[j]);
    } void divi(){
    strncat(exp1,exp0,i+2)
    ;
    printf("Three address code:\ntemp=%s\ntemp1=temp%c%c\n",exp1,exp0[i+2],exp0[i+3]);
    } void plus(){
    strncat(exp1,exp0,i+2)
    ;
    printf("Three address code:\ntemp=%s\ntemp1=temp%c%c\n",exp1,exp0[i+2],exp0[i+3]);
```
NAME ; KRISHNAKUMAR R
ROLL NUMBER : 210701126

}

OUTPUT:

```
┌──(kali㉿kali)-[~/Documents/cdlab]
└─$ vi exp8.c

┌──(kali㉿kali)-[~/Documents/cdlab]
└─$ gcc exp8.c

┌──(kali㉿kali)-[~/Documents/cdlab]
└─$ ./a.out

1.assignment
2.arithmetic
3.relational
4.Exit
Enter the choice:1

Enter the expression with assignment operator:a=b+c
Three address code:
temp=b+c
a=temp

1.assignment
2.arithmetic
3.relational
4.Exit
Enter the choice:4
```

RESULT:

      Thus, three address code is generated using C program.

NAME ; KRISHNAKUMAR R
ROLL NUMBER : 210701126