Ex No: 8

Date:

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<ctype.h>  typedef
struct
{  char var[10]; int
alive;
} regist; regist preg[10];
void substring(char exp[],int st,int end)
{  int i,j=0;
char
dup[10]="";  for(i=st;i<end;i++)
dup[j++]=exp[i];
dup[j]='0';

strcpy(exp,dup);
}
```

```
int getregister(char var[])
{  int i;
for(i=0;i<10;i++)
{  if(preg[i].alive==0)
{  strcpy(preg[i].var,var);
break;
} }  return(i);
}  void getvar(char exp[],char
v[])
{ int i,j=0; char
var[10]="";
for(i=0;exp[i]!='\0';i++)
if(isalpha(exp[i]))
var[j++]=exp[i];   else
break;  strcpy(v,var);
}
void main()
{
char basic[10][10],var[10][10],fstr[10],op;  int
i,j,k,reg,vc,flag=0;  printf("\nEnter the Three
Address Code:\n");


for(i=0;;i++)
{
gets(basic[i]);
if(strcmp(basic[i],"exit")==0)  break;
}


printf("\nThe Equivalent Assembly Code is:\n");
for(j=0;j<i;j++)  { getvar(basic[j],var[vc++]);
strcpy(fstr,var[vc-1]);
substring(basic[j],strlen(var[vc-1])+1,strlen(basic[j]));
```

```
getvar(basic[j],var[vc++]); reg=getregister(var[vc-1]);
if(preg[reg].alive==0)
{
printf("\nMov R%d,%s",reg,var[vc-1]);
preg[reg].alive=1;
}  op=basic[j][strlen(var[vc-1])];
substring(basic[j],strlen(var[vc-
1])+1,strlen(basic[j]));        getvar(basic[j],var[vc++]);
switch(op) { case '+':   printf("\nAdd");  break; case '-
': printf("\nSub");  break;  case '*':   printf("\nMul");
break;   case '/':    printf("\nDiv");   break; } flag=1;
for(k=0;k<=reg;k++)
{
if(strcmp(preg[k].var,var[vc-1])==0)
{
printf("R%d, R%d",k,reg);
flag=0;
break; }
}
If(flag)
{
,reg);
Printf("/n,vaishnavi")
}
}
```

OUTPUT:

```
210701299
Enter the Three Address Code:
a = b + c
exit
The Equivalent Assembly Code is:
Mov RO, b
Mov R1,c
Add RO, R1
Mov a, RO
```

RESULT: