Ex No: 9

Date:

IMPLEMENTCODEOPTIMIZATIONTECHNIQUES CONSTANT FOLDING

AIM:

To write a C program to implement Constant Folding (Code optimization Technique).

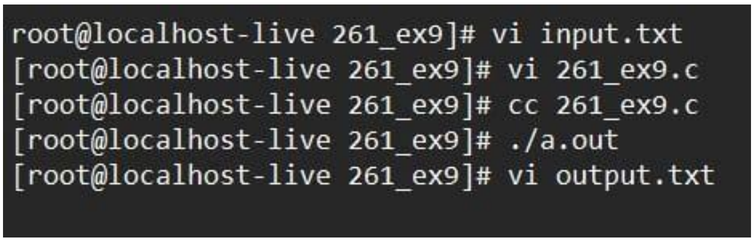
ALGORITHM:

- The desired header files are declared.
- The two file pointers are initialized one for reading the C program from the file and one for writing the converted program with constant folding.
- The file is read and checked if there are any digits or operands present.
- If there is, then the evaluations are to be computed in switch case and stored.
- Copy the stored data to another file. ● Print the copied data file.

PROGRAM:

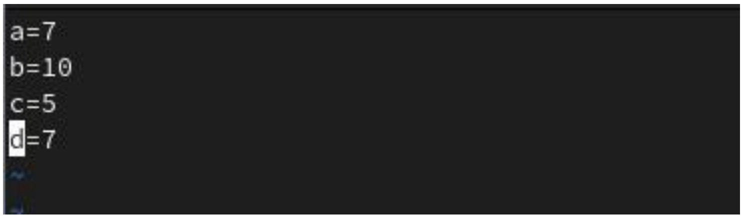
```
#include<stdio.h>
#include<string.h> void main() {
char s[20]; char
flag[20]="//Constant"; char
result,equal,operator; double
op1,op2,interrslt; int a,flag2=0;
FILE *fp1,*fp2; fp1 =
fopen("input.txt","r"); fp2 =
fopen("output.txt","w");
    fscanf(fp1,"%s",s);
    while(!feof(fp1)) {
    if(strcmp(s,flag)==0) { flag2 = 1;
        } if(flag2==1) {
        fscanf(fp1,"%s",s);
        result=s[0]; equal=s[1];
            if(isdigit(s[2])&& isdigit(s[4])) { if(s[3]=='+'||'-
                '||'*'||'/') {
                    operator=s[3];
                    switch(operator) {
                    case '+':
                            interrslt=(s[2]-48)+(s[4]-48);
                            break;
                        case '-':
                            interrslt=(s[2]-48)-(s[4]-48);
                            break;
                        case '*':
                            interrslt=(s[2]-48)*(s[4]-48);
                            break;
                        case '/':
                            interrslt=(s[2]-48)/(s[4]-48);
                            break;
                        default: interrslt =
                            0; break; }
                    fprintf(fp2,"/*Constant Folding*/\n");
                    fprintf(fp2,"%c = %lf\n",result,interrslt);
                    flag2 = 0;
                }
            } else { fprintf(fp2,"Not
                Optimized\n");
                fprintf(fp2,"%s\n",s);
            }
        } else {
            fprintf(fp2,"%s\n",s);
        }
        fscanf(fp1,"%s",s);
    }
    fclose(fp1);
    fclose(fp2);
}
```

OUTPUT:



```
root@localhost-live 261_ex9]# vi input.txt
[root@localhost-live 261_ex9]# vi 261_ex9.c
[root@localhost-live 261_ex9]# cc 261_ex9.c
[root@localhost-live 261_ex9]# ./a.out
[root@localhost-live 261_ex9]# vi output.txt
```

//output.txt



```
a=7
b=10
c=5
d=7
~
~
```

RESULT: