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: