Ex No:9

Date:

IMPLEMENT CODE OPTIMIZATION TECHNIQUES 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@fedora student]# vi input.txt
[root@fedora student]# vi exp9_271.c
[root@fedora student]# cc exp9_271.c
[root@fedora student]# ./a.out
[root@fedora student]# vi output.txt
```

```
a=8
b=9
c=5
```

RESULT: