SSN COLLEGE OF ENGINEERING, KALAVAKKAM
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
UCS1602 - Compiler Design

EX - 8 : Implementation of code optimization techniques

NAME : Gayathri M
REG NO : 185001050
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Program Code:

optimizer.c

```c
#include <stdio.h>
#include <string.h>
#include <stdlib.h>

int main(int argc, char *argv[]){
    stdin = fopen(argv[1], "r");
    char line[100];

    printf("\n---Optimized Code---\n\n");
    scanf(" %s[^\n]", line);

    while (strcmp(line, "END") != 0){
        //FOR: x=y+0; x=y*1;
        if ((line[3] == '+' && line[4] == '0') || (line[3] == '*' &&
line[4] == '1')){
            if (line[0] == line[2]){
                scanf(" %s[^\n]", line);
                continue;
            }

            printf("%c=%c\n", line[0], line[2]);
        }

        //FOR: x=y-0; x=y/1;
        else if ((line[3] == '-' && line[4] == '0') || (line[3] == '/' &&
```

```c
line[4] == '1')){
        if (line[0] == line[2]){
            scanf(" %s[^\n]", line);
            continue;
        }
        printf("%c=%c\n", line[0], line[2]);
    }

    //FOR: x=0+x; x=1*y
    else if ((line[3] == '+' && line[2] == '0') || (line[3] == '*' &&
line[2] == '1')){
        if (line[0] == line[4]){
            scanf(" %s[^\n]", line);
            continue;
        }
        printf("%c=%c\n", line[0], line[4]);
    }

    //FOR: x=y*2
    else if (line[3] == '*' && line[4] == '2'){
        printf("%c=%c+%c\n", line[0], line[2], line[2]);
    }

    //FOR: x=2*y
    else if (line[3] == '*' && line[2] == '2'){
        printf("%c=%c+%c\n", line[0], line[4], line[4]);
    }

    //FOR: x=pow(y,2);
    else if (line[2] == 'p' && line[3] == 'o' && line[4] == 'w' &&
line[5] == '(' && line[8] == '2'){
        printf("%c=%c*%c\n", line[0], line[6], line[6]);
    }

    else{
        printf("%s\n", line);
    }

    scanf(" %s[^\n]", line);    //next line
    }

    return 0;
}
```

input.txt

```
a=a+0
i=i+1
i=i*4
a=a*1
a=a-0
a=0-a
a=a/1
a=0/a
a=pow(3,2)
END
```

Output Snapshots:

```
[msml@MSMLs-MacBook-Pro ex8 % gcc optimizer.c -o opt
[msml@MSMLs-MacBook-Pro ex8 % ./opt input.txt

---Optimized Code---

i=i+1
i=i*4
a=0-a
a=0/a
a=3*3
msml@MSMLs-MacBook-Pro ex8 %
```