Date: 15/09/2025

Experiment No: 08

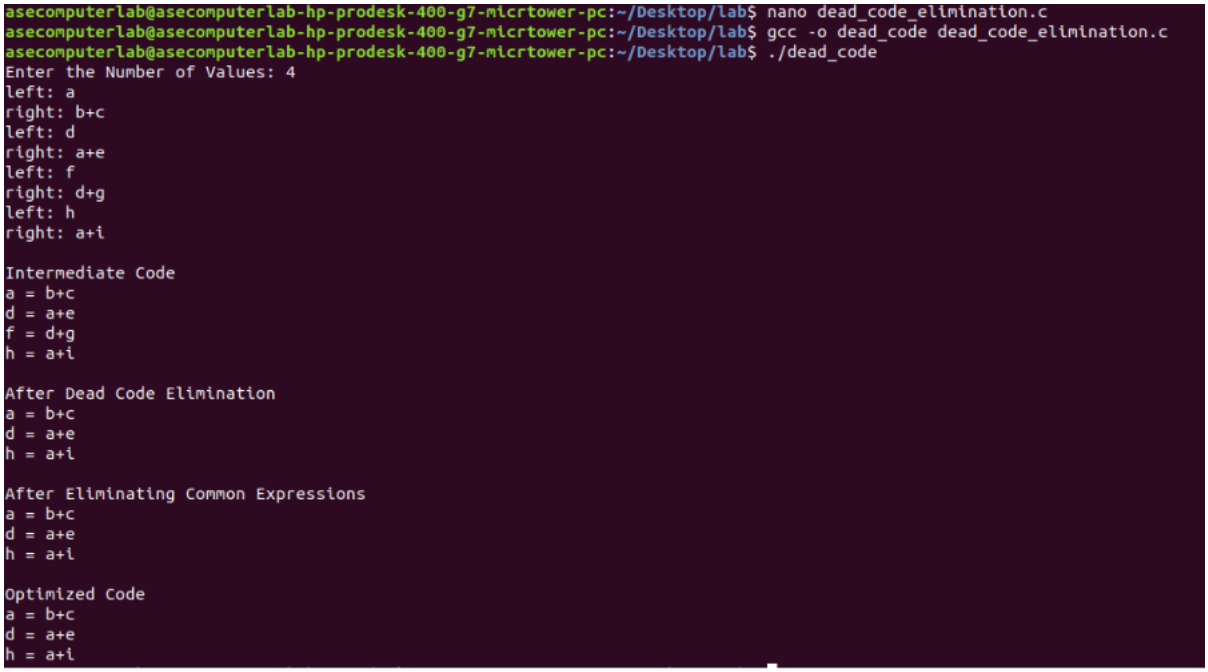
Aim: To write a program that implements the target code generation.

Code:

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

struct op {
    char l;
    char r[20];
} op[10], pr[10];

int main() {
    int a, i, k, j, n, z = 0, m, q;
    char *p, *l;
    char temp, t;
    char *tem;

    printf("Enter the Number of Values: ");
    scanf("%d", &n);

    for (i = 0; i < n; i++) {
        printf("left: ");
        scanf(" %c", &op[i].l);
        printf("right: ");
        scanf(" %s", op[i].r);
    }

    printf("\nIntermediate Code\n");
    for (i = 0; i < n; i++) {
        printf("%c = %s\n", op[i].l, op[i].r);
    }
```

```
    // Dead code elimination part
    for (i = 0; i < n - 1; i++) {
        temp = op[i].l;
        for (j = 0; j < n; j++) {
            p = strchr(op[j].r, temp);
            if (p) {
                pr[z].l = op[i].l;
                strcpy(pr[z].r, op[i].r);
                z++;
                break; // Once found, no need to add duplicates
            }
        }
    }
    // Add last statement as it is
    pr[z].l = op[n - 1].l;
    strcpy(pr[z].r, op[n - 1].r);
    z++;

    printf("\nAfter Dead Code Elimination\n");
    for (k = 0; k < z; k++) {
        printf("%c = %s\n", pr[k].l, pr[k].r);
    }

    // Common subexpression elimination
    for (m = 0; m < z; m++) {
        tem = pr[m].r;
        for (j = m + 1; j < z; j++) {
            p = strstr(tem, pr[j].r);
            if (p) {
                t = pr[j].l;
                pr[j].l = pr[m].l;
                for (i = 0; i < z; i++) {
                    l = strchr(pr[i].r, t);
                    if (l) {
                        a = l - pr[i].r;
                        pr[i].r[a] = pr[m].l;
                    }
                }
            }
        }
    }
```

Output:



Results: The program that implements the target code generation has been executed successfully