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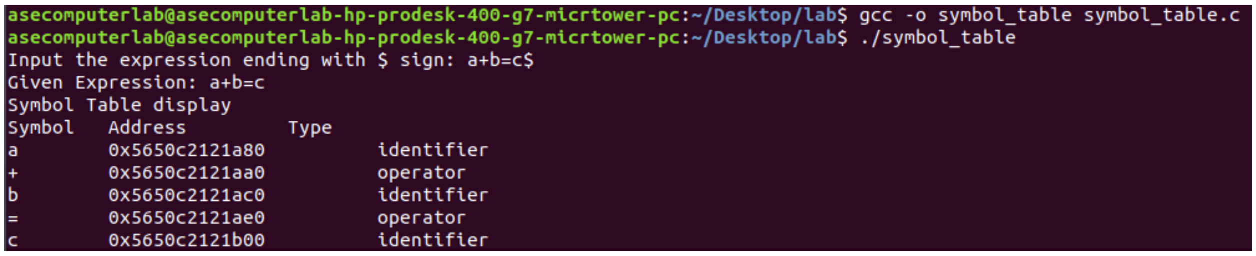
Lab-6

Title: To implement Symbol Table.

Code:

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

int main() {
    int x = 0, n, i = 0, j = 0;
    void *mypointer, *T4Tutorials_address[15];
    char ch, c;
    char T4Tutorials_Array2[15], T4Tutorials_Array3[15];

    printf("Input the expression ending with $ sign: ");
    while ((c = getchar()) != '$' && i < 15) {
        T4Tutorials_Array2[i++] = c;
    }
    n = i - 1;

    printf("Given Expression: ");
    for (i = 0; i <= n; i++) {
        printf("%c", T4Tutorials_Array2[i]);
    }
    printf("\nSymbol Table display\n");
    printf("Symbol \t Address \t Type\n");

    for (j = 0; j <= n; j++) {
        c = T4Tutorials_Array2[j];
        if (isalpha(c)) {
            mypointer = malloc(sizeof(char));  // allocate 1 byte just as a placeholder
            if (mypointer == NULL) {
                printf("Memory allocation failed\n");
                exit(1);
            }
            T4Tutorials_address[x] = mypointer;
            T4Tutorials_Array3[x] = c;
            printf("%c \t %p \t identifier\n", c, mypointer);
            x++;
        } else if (c == '+' || c == '-' || c == '*' || c == '=') {
            mypointer = malloc(sizeof(char));
            if (mypointer == NULL) {
                printf("Memory allocation failed\n");
                exit(1);
            }
            T4Tutorials_address[x] = mypointer;
            T4Tutorials_Array3[x] = c;
            printf("%c \t %p \t operator\n", c, mypointer);
            x++;
        }
        // You can handle other types if needed
    }

    // Free allocated memory
    for (i = 0; i < x; i++) {
        free(T4Tutorials_address[i]);
    }

    return 0;
}
```

Output:



```
asecomputerlab@asecomputerlab-hp-prodesk-400-g7-micrtower-pc:~/Desktop/lab$ gcc -o symbol_table symbol_table.c
asecomputerlab@asecomputerlab-hp-prodesk-400-g7-micrtower-pc:~/Desktop/lab$ ./symbol_table
Input the expression ending with $ sign: a+b=c$
Given Expression: a+b=c
Symbol Table display
Symbol   Address         Type
a        0x5650c2121a80          identifier
+        0x5650c2121aa0          operator
b        0x5650c2121ac0          identifier
=        0x5650c2121ae0          operator
c        0x5650c2121b00          identifier
```