CSE 358 - Assignment 5

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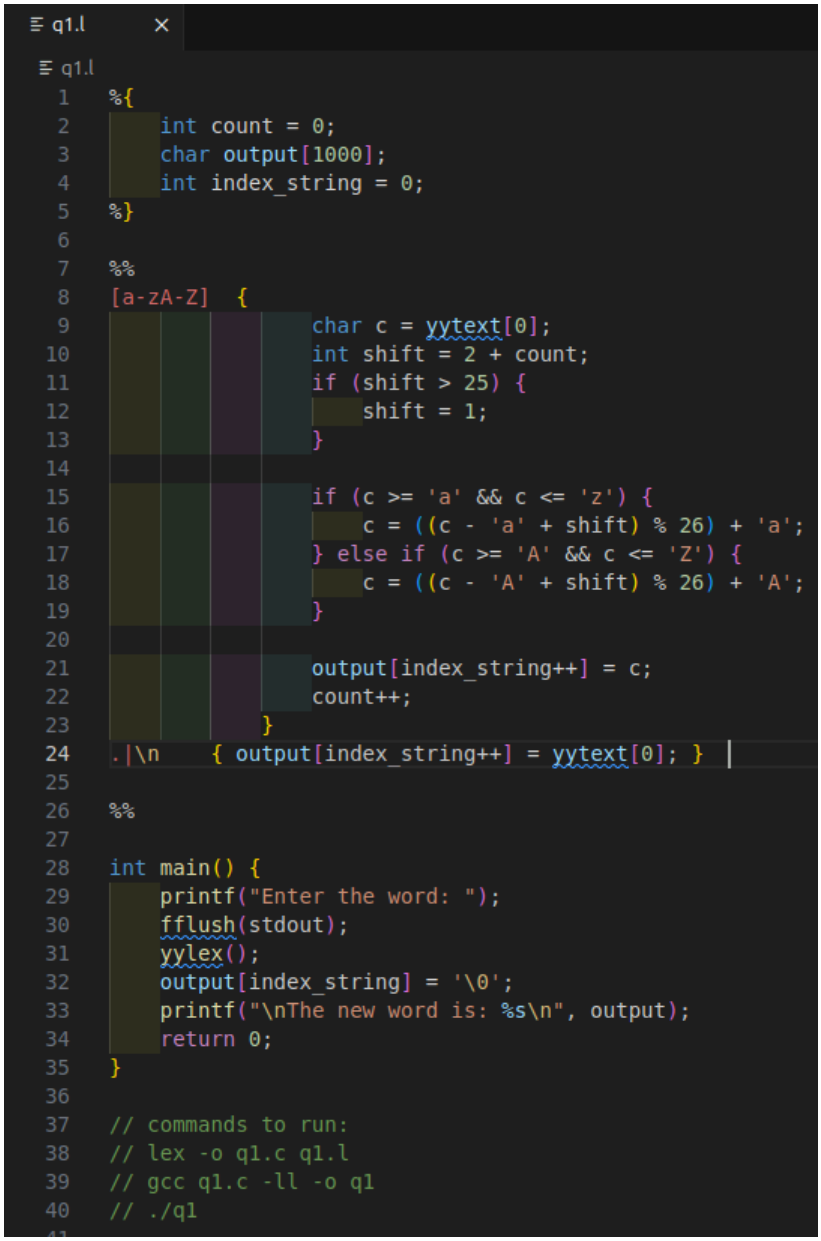
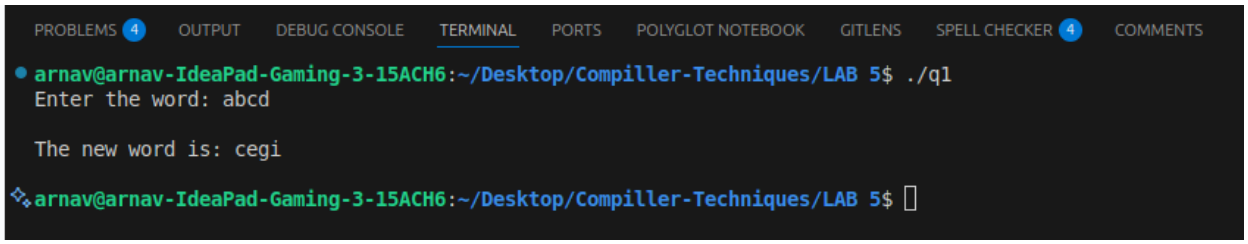
Question 1

Code:



```
q1.l
%{
    int count = 0;
    char output[1000];
    int index_string = 0;
%}

%%
[a-zA-Z]  {
                char c = yytext[0];
                int shift = 2 + count;
                if (shift > 25) {
                    shift = 1;
                }

                if (c >= 'a' && c <= 'z') {
                    c = ((c - 'a' + shift) % 26) + 'a';
                } else if (c >= 'A' && c <= 'Z') {
                    c = ((c - 'A' + shift) % 26) + 'A';
                }

                output[index_string++] = c;
                count++;
            }
.|\n    { output[index_string++] = yytext[0]; }

%%

int main() {
    printf("Enter the word: ");
    fflush(stdout);
    yylex();
    output[index_string] = '\0';
    printf("\nThe new word is: %s\n", output);
    return 0;
}

// commands to run:
// lex -o q1.c q1.l
// gcc q1.c -ll -o q1
// ./q1
```

Result:


PROBLEMS 4
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
POLYGLOT NOTEBOOK
GITLENS
SPELL CHECKER 4
COMMENTS
arnav@arnav-IdeaPad-Gaming-3-15ACH6:~/Desktop/Compiller-Techniques/LAB 5$ ./q1
Enter the word: abcd
The new word is: cegi
arnav@arnav-IdeaPad-Gaming-3-15ACH6:~/Desktop/Compiller-Techniques/LAB 5$

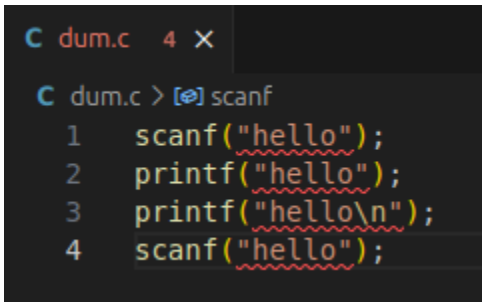
Question 2

Code:

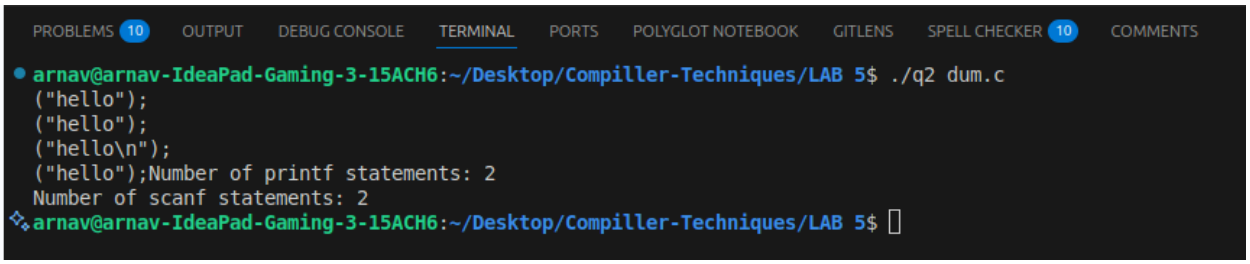
q2.l

```
%{
    int printf_count = 0;
    int scanf_count = 0;
    FILE *input_file;
%}

%%
"printf"  { printf_count++; }
"scanf"   { scanf_count++; }

%%
int main(int argc, char *argv[]) {
    if (argc < 2) {
        printf("Usage: %s <input_file>\n", argv[0]);
        return 1;
    }
    input_file = fopen(argv[1], "r");
    if (input_file == NULL) {
        perror("Error opening file");
        return 1;
    }
    yyin = input_file;
    yylex();
    printf("Number of printf statements: %d\n", printf_count);
    printf("Number of scanf statements: %d\n", scanf_count);
    fclose(input_file);
    return 0;
}

// commands:
// lex -o q2.c q2.l
// gcc q2.c -ll -o q2
// ./q2 dum.c
```

Code tested on file dum.c:



Result:



Question 3

Code:

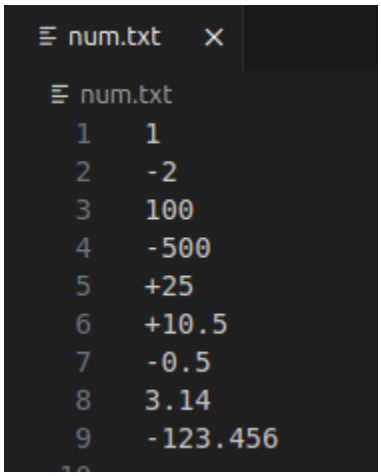
q3.l

```
%{
    int pos_int = 0;
    int neg_int = 0;
    int pos_frac = 0;
    int neg_frac = 0;
%}

%%
[+-]?[0-9]+  {
    if (yytext[0] == '-') {
        neg_int++;
    } else {
        pos_int++;
    }
}

[+-]?[0-9]+\.[0-9]+  {
    if (yytext[0] == '-') {
        neg_frac++;
    } else {
        pos_frac++;
    }
}

%%
```

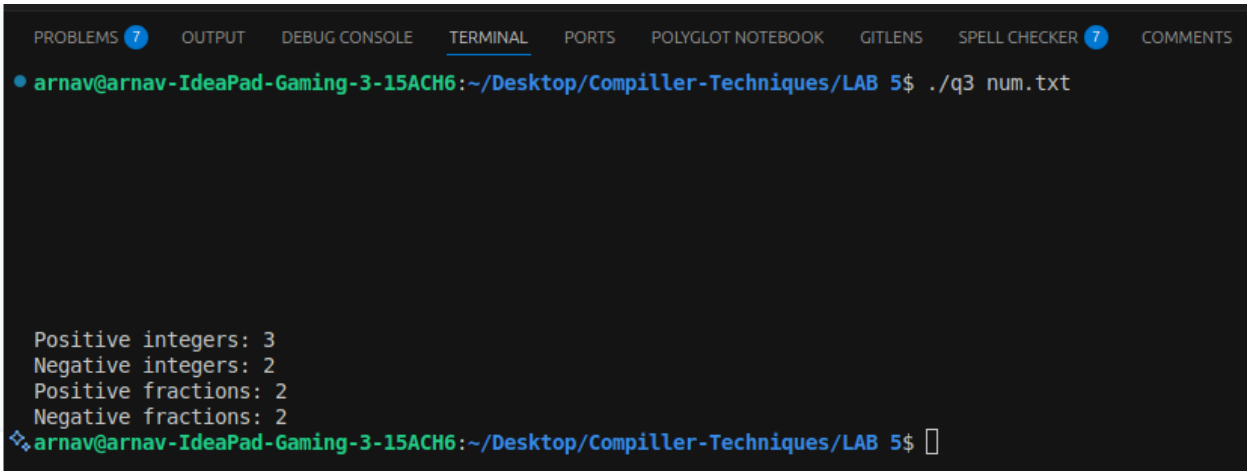
q3.l

```
%%

int main(int argc, char *argv[]) {
    if (argc < 2) {
        printf("Usage: %s <input_file>\n", argv[0]);
        return 1;
    }
    FILE *input_file = fopen(argv[1], "r");
    if (input_file == NULL) {
        perror("Error opening file");
        return 1;
    }
    yyin = input_file;
    yylex();
    printf("Positive integers: %d\n", pos_int);
    printf("Negative integers: %d\n", neg_int);
    printf("Positive fractions: %d\n", pos_frac);
    printf("Negative fractions: %d\n", neg_frac);
    fclose(input_file);
    return 0;
}

// commands:
// lex -o q3.c q3.l
// gcc q3.c -ll -o q3
// ./q3 num.txt
```

File on which it was tested:



Result:



For code , refer GitHub

https://github.com/arnavjain2710/Compiller-Techniques/tree/main/LAB%205