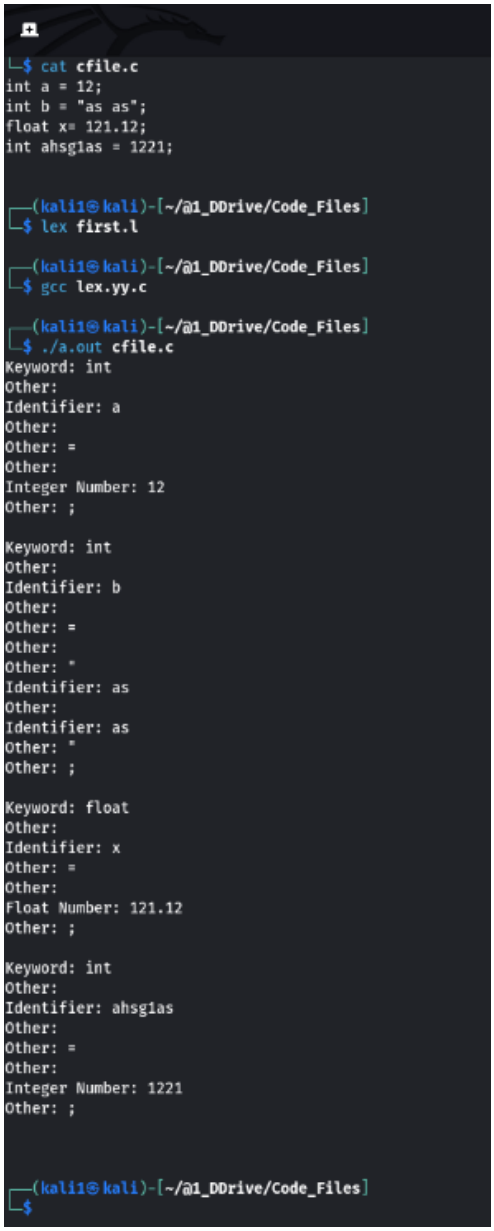
Experiment 4

Lex

Q1

```
%{
#include <stdio.h>
#include <string.h>
#include <stdlib.h>
#include <ctype.h>
%}

%%
"int"|"float"|"char"|"double"|"void" { printf("Keyword: %s\n", yytext); }
[a-zA-Z_][a-zA-Z0-9_]* { printf("Identifier: %s\n", yytext); }
[0-9]+[.][0-9]+ { printf("Float Number: %s\n", yytext); }
[0-9]+ { printf("Integer Number: %s\n", yytext); }
. { printf("Other: %s\n", yytext); }
%%


int yywrap(void) {}

int main(int argc, char *argv[]) {
    if (argc < 2) {
        printf("Usage: %s <filename>\n", argv[0]);
        return 1;
    }

    FILE *file = fopen(argv[1], "r");
    if (file == NULL) {
```

```
        printf("Unable to open the file.\n");
        return 1;
    }

    yyin = file;
    yylex();

    fclose(file);

    return 0;
}
```

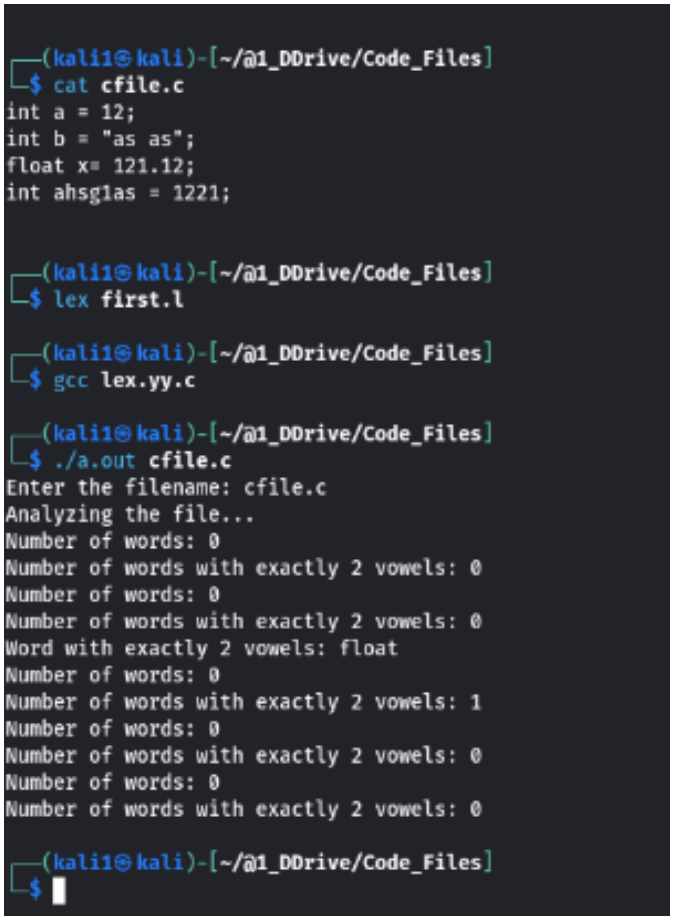


Q2

```
%{
#include <stdio.h>
#include <string.h>
#include <ctype.h>
int i = 0;
int vowelCount = 0;
```

```
int wordCount = 0;
%}

%%

[a-zA-Z]+ {
   vowelCount = 0;
   for (int j = 0; j < yyleng; j++) {
      char c = tolower(yytext[j]);
      if (c == 'a' || c == 'e' || c == 'i' || c == 'o' || c == 'u') {
         vowelCount++;
      }
   }
   if (vowelCount == 2) {
      printf("Word with exactly 2 vowels: %s\n", yytext);
      wordCount++;
   }
}

"\n" {
   printf("Number of words: %d\n", i);
   printf("Number of words with exactly 2 vowels: %d\n", wordCount);
   i = 0;
   wordCount = 0;
}

. { }

%%

int yywrap(void) {}
```

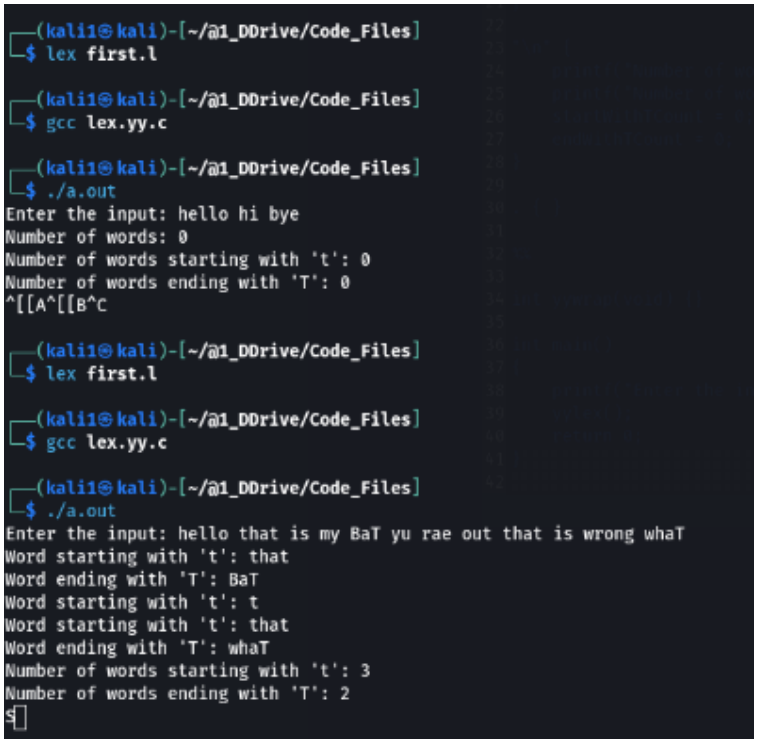
```
int main()
{
    printf("Enter the filename: ");
    char filename[100];
    scanf("%s", filename);

    FILE* file = fopen(filename, "r");
    if (file == NULL) {
        printf("Unable to open the file.\n");
        return 1;
    }

    yyset_in(file);

    printf("Analyzing the file...\n");
    yylex();

    fclose(file);
    return 0;
}
```



Q3

```
%{
#include <stdio.h>
#include <string.h>
#include <ctype.h>
int i = 0;
int startWithTCount = 0;
int endWithTCount = 0;
%}

/* Rules Section */
%%
```

```
[t][a-zA-Z]* {
    printf("Word starting with 't': %s\n", yytext);
    startWithTCount++;
}

[a-zA-Z]*[T] {
    printf("Word ending with 'T': %s\n", yytext);
    endWithTCount++;
}

"\n" {
    printf("Number of words starting with 't': %d\n", startWithTCount);
    printf("Number of words ending with 'T': %d\n", endWithTCount);
    startWithTCount = 0;
    endWithTCount = 0;
}

. { }

%%

int yywrap(void) {}

int main()
{
    printf("Enter the input: ");
    yylex();
    return 0;
}
```

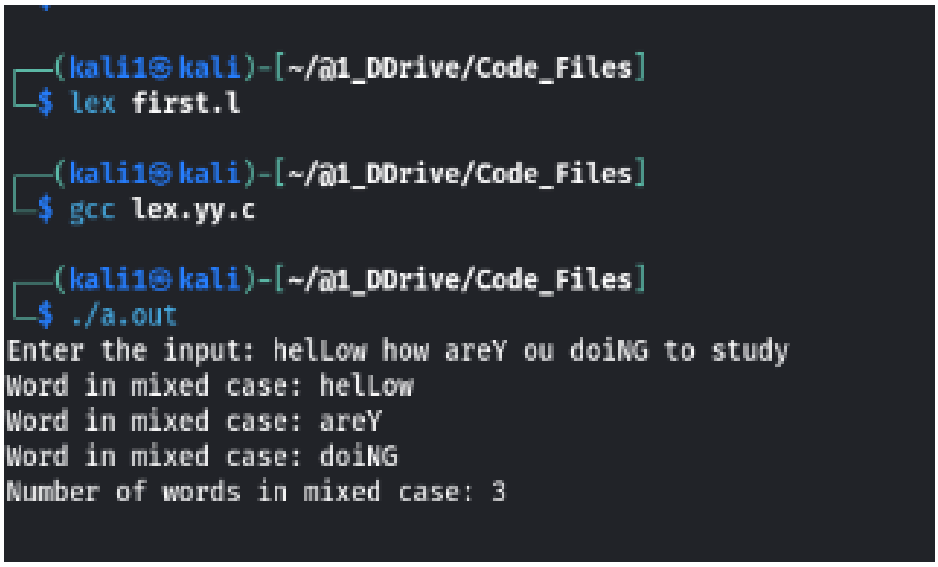


Q4

```
%{
#include <stdio.h>
#include <string.h>
#include <ctype.h>
int i = 0;
int mixedCaseCount = 0;
%}

/* Rules Section */
%%

[a-zA-Z]+ {
    int hasLower = 0;
    int hasUpper = 0;
```

```
    for (int j = 0; j < yyleng; j++) {
        if (islower(yytext[j])) {
            hasLower = 1;
        } else if (isupper(yytext[j])) {
            hasUpper = 1;
        }
    }
    if (hasLower && hasUpper) {
        printf("Word in mixed case: %s\n", yytext);
        mixedCaseCount++;
    }
}

"\n" {
    printf("Number of words: %d\n", i);
    printf("Number of words in mixed case: %d\n", mixedCaseCount);
    i = 0;
    mixedCaseCount = 0;
}

. { }

%%

int yywrap(void) {}

int main()
{
    printf("Enter the input: ");
    yylex();
    return 0;
```

}


┌──(kali1㉿kali)-[~/@1_DDrive/Code_Files]
└─$ lex first.l
┌──(kali1㉿kali)-[~/@1_DDrive/Code_Files]
└─$ gcc lex.yy.c
┌──(kali1㉿kali)-[~/@1_DDrive/Code_Files]
└─$ ./a.out
Enter the input: helLow how areY ou doiNG to study
Word in mixed case: helLow
Word in mixed case: areY
Word in mixed case: doiNG
Number of words in mixed case: 3