

## Compiler Design (Midterm Lab 2)

### Task 1:

Write a C++ program that takes a full line as input and prints all operators found in order, then prints the total count. Consider common operators such as + - \* / = % < > ! & | (treat each character operator separately for this lab).

#### Sample Input:

2+3=5

#### Expected Output:

operator1 : +  
operator2 : =  
number of operators = 2

### Task 2:

Write a C++ program that takes a full line as input and determines whether it is

1. a single line comment,
2. a multi line comment, or
3. not a comment.

Rules:

- Single line comment starts with //
- Multi line comment starts with /\* and ends with \*/

Constraint: do not use more than **two** if statements in your solution.

#### Sample Input:

/\*abc\*/

#### Expected Output:

This is a multi line comment.

### Task 3:

Write a C++ program that takes a single token (no spaces) and prints:

- Keyword if it matches one of these keywords: int, float, double, char, if, else, while, return

- Identifier if it is a valid identifier (starts with letter or underscore, then letters, digits, underscores only)
- Invalid otherwise

**Sample Input:**

while

**Expected Output:**

Keyword

**Task 4:**

Write a C++ program that takes a single token and prints:

- Integer literal if it contains only digits, optionally preceded by + or -
- Floating literal if it contains digits with exactly one decimal point, optionally preceded by + or -, and at least one digit on both sides of the decimal point
- Invalid number otherwise

**Sample Input:**

-12.50

**Expected Output:**

Floating literal

**Task 5:**

Write a C++ program that takes a full line as input, prints each delimiter in order, then prints the total count. Use these delimiters:

(){}[],;:

**Sample Input:**

int f(int a, int b){ return a+b; }

**Expected Output:**

delimiter1 : (   
 delimiter2 : (   
 delimiter3 : ,   
 delimiter4 : )   
 delimiter5 : )   
 delimiter6 : {   
 delimiter7 : ;

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delimiter8 :}  
number of delimiters = 8
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