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Lexer test cases  
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### Test 1 Input:

```
{}$  
{{{{{}}}}}$  
{{{{{}}} /* comments are ignored */ }}}$  
{ /* comments are still ignored */ int @$}$
```

### Output:

```
INFO LEXER - Lexing program 2  
DEBUG LEXER - Left Curly [ { ] found at line: 1, position: 1  
DEBUG LEXER - Right Curly [ } ] found at line: 1, position: 2  
DEBUG LEXER - EOP [ $ ] found at line: 1, position: 3  
INFO LEXER - Lex Passed with 0 errors!!!  
INFO LEXER - Lexing program 3  
DEBUG LEXER - Left Curly [ { ] found at line: 2, position: 2  
DEBUG LEXER - Left Curly [ { ] found at line: 2, position: 3  
DEBUG LEXER - Left Curly [ { ] found at line: 2, position: 4  
DEBUG LEXER - Left Curly [ { ] found at line: 2, position: 5  
DEBUG LEXER - Left Curly [ { ] found at line: 2, position: 6  
DEBUG LEXER - Left Curly [ { ] found at line: 2, position: 7  
DEBUG LEXER - Right Curly [ } ] found at line: 2, position: 8  
DEBUG LEXER - Right Curly [ } ] found at line: 2, position: 9  
DEBUG LEXER - Right Curly [ } ] found at line: 2, position: 10  
DEBUG LEXER - Right Curly [ } ] found at line: 2, position: 11  
DEBUG LEXER - Right Curly [ } ] found at line: 2, position: 12  
DEBUG LEXER - Right Curly [ } ] found at line: 2, position: 13  
DEBUG LEXER - EOP [ $ ] found at line: 2, position: 14  
INFO LEXER - Lex Passed with 0 errors!!!  
INFO LEXER - Lexing program 4  
DEBUG LEXER - Left Curly [ { ] found at line: 2, position: 2  
DEBUG LEXER - Left Curly [ { ] found at line: 2, position: 3  
DEBUG LEXER - Left Curly [ { ] found at line: 2, position: 4  
DEBUG LEXER - Left Curly [ { ] found at line: 2, position: 5  
DEBUG LEXER - Left Curly [ { ] found at line: 2, position: 6  
DEBUG LEXER - Left Curly [ { ] found at line: 2, position: 7  
DEBUG LEXER - Right Curly [ } ] found at line: 2, position: 8  
DEBUG LEXER - Right Curly [ } ] found at line: 2, position: 9
```

DEBUG LEXER - Right Curly [ ] found at line: 2, position: 10  
DEBUG LEXER - Right Curly [ ] found at line: 2, position: 39  
DEBUG LEXER - Right Curly [ ] found at line: 2, position: 40  
DEBUG LEXER - Right Curly [ ] found at line: 2, position: 41  
DEBUG LEXER - Right Curly [ ] found at line: 2, position: 42  
DEBUG LEXER - EOP [ \$ ] found at line: 2, position: 43  
INFO LEXER - Lex Passed with 0 errors!!!  
INFO LEXER - Lexing program 5  
DEBUG LEXER - Left Curly [ { ] found at line: 2, position: 1  
DEBUG LEXER - Type Int [ int ] found at line: 2, position: 36  
ERROR LEXER - Unexpected character in the Grammar - @  
DEBUG LEXER - Right Curly [ } ] found at line: 2, position: 41  
DEBUG LEXER - EOP [ \$ ] found at line: 2, position: 42  
ERROR LEXER - Lex failed with 1 error(s)  
INFO LEXER - Done lexing every program

### Test 2 Input:

```
{  
int a  
a = 1  
if(1 == 1){  
    print("nums")  
}  
if(a == a){  
    print("ids")  
}  
if("hey" == "hey"){  
    print("strings")  
}  
if(true == true){  
    print("booleans")  
}  
} $
```

### OutPut:

INFO LEXER - Lexing program 1  
DEBUG LEXER - Left Curly [ { ] found at line: 1, position: 1  
DEBUG LEXER - Type Int [ int ] found at line: 2, position: 1  
DEBUG LEXER - ID [ a ] found at line: 2, position: 5  
DEBUG LEXER - ID [ a ] found at line: 3, position: 1  
DEBUG LEXER - Assignment Op [ = ] found at line: 3, position: 3  
DEBUG LEXER - Type Num [ 1 ] found at line: 3, position: 5

DEBUG LEXER - If Statement [ if ] found at line: 4, position: 1  
DEBUG LEXER - Left Paren [ ( ] found at line: 4, position: 3  
DEBUG LEXER - Type Num [ 1 ] found at line: 4, position: 4  
DEBUG LEXER - Equals to [ == ] found at line: 4, character: 6  
DEBUG LEXER - Type Num [ 1 ] found at line: 4, position: 9  
DEBUG LEXER - Right Paren [ ) ] found at line: 4, position: 10  
DEBUG LEXER - Left Curly [ { ] found at line: 4, position: 11  
DEBUG LEXER - Print Statement [ print ] found at line: 5, position: 1  
DEBUG LEXER - Left Paren [ ( ] found at line: 5, position: 6  
DEBUG LEXER - String [ nums ] found at line: 5, position: 8  
DEBUG LEXER - Right Paren [ ) ] found at line: 5, position: 13  
DEBUG LEXER - Right Curly [ } ] found at line: 6, position: 1  
DEBUG LEXER - If Statement [ if ] found at line: 7, position: 1  
DEBUG LEXER - Left Paren [ ( ] found at line: 7, position: 3  
DEBUG LEXER - ID [ a ] found at line: 7, position: 4  
DEBUG LEXER - Equals to [ == ] found at line: 7, character: 6  
DEBUG LEXER - ID [ a ] found at line: 7, position: 9  
DEBUG LEXER - Right Paren [ ) ] found at line: 7, position: 10  
DEBUG LEXER - Left Curly [ { ] found at line: 7, position: 11  
DEBUG LEXER - Print Statement [ print ] found at line: 8, position: 1  
DEBUG LEXER - Left Paren [ ( ] found at line: 8, position: 6  
DEBUG LEXER - String [ ids ] found at line: 8, position: 8  
DEBUG LEXER - Right Paren [ ) ] found at line: 8, position: 12  
DEBUG LEXER - Right Curly [ } ] found at line: 9, position: 1  
DEBUG LEXER - If Statement [ if ] found at line: 10, position: 1  
DEBUG LEXER - Left Paren [ ( ] found at line: 10, position: 3  
DEBUG LEXER - String [ hey ] found at line: 10, position: 5  
DEBUG LEXER - Equals to [ == ] found at line: 10, character: 10  
DEBUG LEXER - String [ hey ] found at line: 10, position: 14  
DEBUG LEXER - Right Paren [ ) ] found at line: 10, position: 18  
DEBUG LEXER - Left Curly [ { ] found at line: 10, position: 19  
DEBUG LEXER - Print Statement [ print ] found at line: 11, position: 1  
DEBUG LEXER - Left Paren [ ( ] found at line: 11, position: 6  
DEBUG LEXER - String [ strings ] found at line: 11, position: 8  
DEBUG LEXER - Right Paren [ ) ] found at line: 11, position: 16  
DEBUG LEXER - Right Curly [ } ] found at line: 12, position: 1  
DEBUG LEXER - If Statement [ if ] found at line: 13, position: 1  
DEBUG LEXER - Left Paren [ ( ] found at line: 13, position: 3  
DEBUG LEXER - Bool Type [ true ] found at line: 13, position: 4  
DEBUG LEXER - Equals to [ == ] found at line: 13, character: 9  
DEBUG LEXER - Bool Type [ true ] found at line: 13, position: 12  
DEBUG LEXER - Right Paren [ ) ] found at line: 13, position: 16  
DEBUG LEXER - Left Curly [ { ] found at line: 13, position: 17  
DEBUG LEXER - Print Statement [ print ] found at line: 14, position: 1

DEBUG LEXER - Left Paren [ ( ] found at line: 14, position: 6  
DEBUG LEXER - String [ booleans ] found at line: 14, position: 8  
DEBUG LEXER - Right Paren [ ) ] found at line: 14, position: 17  
DEBUG LEXER - Right Curly [ } ] found at line: 15, position: 1  
DEBUG LEXER - Right Curly [ } ] found at line: 16, position: 1  
DEBUG LEXER - EOP [ \$ ] found at line: 16, position: 3  
INFO LEXER - Lex Passed with 0 errors!!!  
INFO LEXER - Done lexing every program

### Test 3 Input:

```
{int a;int b;a=0;b=0;while(a!=3){print(a);while(b!=3){print(b);b=1+b;if(b==2){print("there is no spoon");}}b=0;a=1+a;}}$
```

### Output:

INFO LEXER - Lexing program 0  
DEBUG LEXER - Left Curly [ { ] found at line: 1, position: 1  
DEBUG LEXER - Type Int [ int ] found at line: 1, position: 2  
DEBUG LEXER - ID [ a ] found at line: 1, position: 5  
DEBUG LEXER - Type Int [ int ] found at line: 1, position: 6  
DEBUG LEXER - ID [ b ] found at line: 1, position: 9  
DEBUG LEXER - ID [ a ] found at line: 1, position: 10  
DEBUG LEXER - Assignment Op [ = ] found at line: 1, position: 11  
DEBUG LEXER - Type Num [ 0 ] found at line: 1, position: 12  
DEBUG LEXER - ID [ b ] found at line: 1, position: 13  
DEBUG LEXER - Assignment Op [ = ] found at line: 1, position: 14  
DEBUG LEXER - Type Num [ 0 ] found at line: 1, position: 15  
DEBUG LEXER - While statement [ while ] found at line: 1, position: 16  
DEBUG LEXER - Left Paren [ ( ] found at line: 1, position: 21  
DEBUG LEXER - ID [ a ] found at line: 1, position: 22  
DEBUG LEXER - Not Equals [ != ] found at line: 1, character: 23  
DEBUG LEXER - Type Num [ 3 ] found at line: 1, position: 25  
DEBUG LEXER - Right Paren [ ) ] found at line: 1, position: 26  
DEBUG LEXER - Left Curly [ { ] found at line: 1, position: 27  
DEBUG LEXER - Print Statement [ print ] found at line: 1, position: 28  
DEBUG LEXER - Left Paren [ ( ] found at line: 1, position: 33  
DEBUG LEXER - ID [ a ] found at line: 1, position: 34  
DEBUG LEXER - Right Paren [ ) ] found at line: 1, position: 35  
DEBUG LEXER - While statement [ while ] found at line: 1, position: 36  
DEBUG LEXER - Left Paren [ ( ] found at line: 1, position: 41  
DEBUG LEXER - ID [ b ] found at line: 1, position: 42  
DEBUG LEXER - Not Equals [ != ] found at line: 1, character: 43  
DEBUG LEXER - Type Num [ 3 ] found at line: 1, position: 45  
DEBUG LEXER - Right Paren [ ) ] found at line: 1, position: 46  
DEBUG LEXER - Left Curly [ { ] found at line: 1, position: 47

DEBUG LEXER - Print Statement [ print ] found at line: 1, position: 48  
DEBUG LEXER - Left Paren [ ( ] found at line: 1, position: 53  
DEBUG LEXER - ID [ b ] found at line: 1, position: 54  
DEBUG LEXER - Right Paren [ ) ] found at line: 1, position: 55  
DEBUG LEXER - ID [ b ] found at line: 1, position: 56  
DEBUG LEXER - Assignment Op [ = ] found at line: 1, position: 57  
DEBUG LEXER - Type Num [ 1 ] found at line: 1, position: 58  
DEBUG LEXER - Addition Op [ + ] found at line: 1, position: 59  
DEBUG LEXER - ID [ b ] found at line: 1, position: 60  
DEBUG LEXER - If Statement [ if ] found at line: 1, position: 61  
DEBUG LEXER - Left Paren [ ( ] found at line: 1, position: 63  
DEBUG LEXER - ID [ b ] found at line: 1, position: 64  
DEBUG LEXER - Equals to [ == ] found at line: 1, character: 65  
DEBUG LEXER - Type Num [ 2 ] found at line: 1, position: 67  
DEBUG LEXER - Right Paren [ ) ] found at line: 1, position: 68  
DEBUG LEXER - Left Curly [ { ] found at line: 1, position: 69  
DEBUG LEXER - Print Statement [ print ] found at line: 1, position: 70  
DEBUG LEXER - Left Paren [ ( ] found at line: 1, position: 75  
DEBUG LEXER - String [ there is no spoon ] found at line: 1, position: 77  
DEBUG LEXER - Right Paren [ ) ] found at line: 1, position: 94  
DEBUG LEXER - Right Curly [ } ] found at line: 1, position: 95  
DEBUG LEXER - Right Curly [ } ] found at line: 1, position: 96  
DEBUG LEXER - ID [ b ] found at line: 1, position: 97  
DEBUG LEXER - Assignment Op [ = ] found at line: 1, position: 98  
DEBUG LEXER - Type Num [ 0 ] found at line: 1, position: 99  
DEBUG LEXER - ID [ a ] found at line: 1, position: 100  
DEBUG LEXER - Assignment Op [ = ] found at line: 1, position: 101  
DEBUG LEXER - Type Num [ 1 ] found at line: 1, position: 102  
DEBUG LEXER - Addition Op [ + ] found at line: 1, position: 103  
DEBUG LEXER - ID [ a ] found at line: 1, position: 104  
DEBUG LEXER - Right Curly [ } ] found at line: 1, position: 105  
DEBUG LEXER - Right Curly [ } ] found at line: 1, position: 106  
DEBUG LEXER - EOP [ \$ ] found at line: 1, position: 107  
INFO LEXER - Lex Passed with 0 errors!!!  
INFO LEXER - Done lexing every program

#### **Test 4 Input:**

\*Its blank\*

#### **Output:**

INFO LEXER - Lexing program 0  
INFO LEXER - No \$ at the end of the program. Adding One.

DEBUG LEXER - EOP [ \$ ] found at line: 1, position: 1  
INFO LEXER - Lex Passed with 0 errors!!!  
INFO LEXER - Done lexing every program

**Test 5 input:**

{int a = 3}\$

**Output:**

INFO LEXER - Lexing program 0  
DEBUG LEXER - Left Curly [ { ] found at line: 1, position: 1  
DEBUG LEXER - Type Int [ int ] found at line: 1, position: 2  
DEBUG LEXER - ID [ a ] found at line: 1, position: 6  
DEBUG LEXER - Assignment Op [ = ] found at line: 1, position: 8  
DEBUG LEXER - Type Num [ 3 ] found at line: 1, position: 10  
DEBUG LEXER - Right Curly [ } ] found at line: 1, position: 11  
DEBUG LEXER - EOP [ \$ ] found at line: 1, position: 12  
INFO LEXER - Lex Passed with 0 errors!!!  
INFO LEXER - Done lexing every program

**Test 6 input:**

{boolean b = false}\$

**Output:**

INFO LEXER - Lexing program 0  
DEBUG LEXER - Left Curly [ { ] found at line: 1, position: 1  
DEBUG LEXER - Type Bool [ boolean ] found at line: 1, position: 2  
DEBUG LEXER - ID [ b ] found at line: 1, position: 10  
DEBUG LEXER - Assignment Op [ = ] found at line: 1, position: 12  
DEBUG LEXER - Bool Type [ false ] found at line: 1, position: 14  
DEBUG LEXER - Right Curly [ } ] found at line: 1, position: 19  
DEBUG LEXER - EOP [ \$ ] found at line: 1, position: 20  
INFO LEXER - Lex Passed with 0 errors!!!  
INFO LEXER - Done lexing every program

**Test 7 input:**

{string f = "hello world"}\$

**Output:**

INFO LEXER - Lexing program 0  
DEBUG LEXER - Left Curly [ { ] found at line: 1, position: 1  
DEBUG LEXER - Type String [ string ] found at line: 1, position: 2  
DEBUG LEXER - ID [ f ] found at line: 1, position: 9  
DEBUG LEXER - Assignment Op [ = ] found at line: 1, position: 11  
DEBUG LEXER - String [ hello world ] found at line: 1, position: 14  
DEBUG LEXER - Right Curly [ } ] found at line: 1, position: 26  
DEBUG LEXER - EOP [ \$ ] found at line: 1, position: 27  
INFO LEXER - Lex Passed with 0 errors!!!  
INFO LEXER - Done lexing every program

#### **Test 8 Input:**

/\* hello world

#### **Output:**

INFO LEXER - Lexing program 0  
INFO LEXER - No \$ at the end of the program. Adding One.  
ERROR LEXER - The Comment was never terminated or '\$' was in the comment at line 1, position: 15  
ERROR LEXER - Lex failed with 1 error(s)

#### **Test 9 Input:**

"

#### **Output:**

INFO LEXER - Lexing program 1  
INFO LEXER - No \$ at the end of the program. Adding One.  
DEBUG LEXER - EOP [ \$ ] found at line: 1, position: 2  
INFO LEXER - Lex Passed with 0 errors!!!  
INFO LEXER - Done lexing every program

#### **Test 10 input:**

" THIS IS ALL UPPERCASE WHICH IS INVALID. ALSO its unterminated

#### **Output:**

INFO LEXER - Lexing program 0  
INFO LEXER - No \$ at the end of the program. Adding One.  
ERROR LEXER - Unexpected character in the String - T at line: 1, position:3

ERROR LEXER - Unexpected character in the String - H at line: 1, position:4  
ERROR LEXER - Unexpected character in the String - I at line: 1, position:5  
ERROR LEXER - Unexpected character in the String - S at line: 1, position:6  
ERROR LEXER - Unexpected character in the String - I at line: 1, position:8  
ERROR LEXER - Unexpected character in the String - S at line: 1, position:9  
ERROR LEXER - Unexpected character in the String - A at line: 1, position:11  
ERROR LEXER - Unexpected character in the String - L at line: 1, position:12  
ERROR LEXER - Unexpected character in the String - L at line: 1, position:13  
ERROR LEXER - Unexpected character in the String - U at line: 1, position:15  
ERROR LEXER - Unexpected character in the String - P at line: 1, position:16  
ERROR LEXER - Unexpected character in the String - P at line: 1, position:17  
ERROR LEXER - Unexpected character in the String - E at line: 1, position:18  
ERROR LEXER - Unexpected character in the String - R at line: 1, position:19  
ERROR LEXER - Unexpected character in the String - C at line: 1, position:20  
ERROR LEXER - Unexpected character in the String - A at line: 1, position:21  
ERROR LEXER - Unexpected character in the String - S at line: 1, position:22  
ERROR LEXER - Unexpected character in the String - E at line: 1, position:23  
ERROR LEXER - Unexpected character in the String - W at line: 1, position:25  
ERROR LEXER - Unexpected character in the String - H at line: 1, position:26  
ERROR LEXER - Unexpected character in the String - I at line: 1, position:27  
ERROR LEXER - Unexpected character in the String - C at line: 1, position:28  
ERROR LEXER - Unexpected character in the String - H at line: 1, position:29  
ERROR LEXER - Unexpected character in the String - I at line: 1, position:31  
ERROR LEXER - Unexpected character in the String - S at line: 1, position:32  
ERROR LEXER - Unexpected character in the String - I at line: 1, position:34  
ERROR LEXER - Unexpected character in the String - N at line: 1, position:35  
ERROR LEXER - Unexpected character in the String - V at line: 1, position:36  
ERROR LEXER - Unexpected character in the String - A at line: 1, position:37  
ERROR LEXER - Unexpected character in the String - L at line: 1, position:38  
ERROR LEXER - Unexpected character in the String - I at line: 1, position:39  
ERROR LEXER - Unexpected character in the String - D at line: 1, position:40  
ERROR LEXER - Unexpected character in the String - . at line: 1, position:41  
ERROR LEXER - Unexpected character in the String - A at line: 1, position:43  
ERROR LEXER - Unexpected character in the String - L at line: 1, position:44  
ERROR LEXER - Unexpected character in the String - S at line: 1, position:45  
ERROR LEXER - Unexpected character in the String - O at line: 1, position:46  
DEBUG LEXER - EOP [ \$ ] found at line: 1, position: 64  
ERROR LEXER - Unterminated String or '\$' in String at line: 1, position: 64  
ERROR LEXER - Lex failed with 38 error(s)  
INFO LEXER - Done lexing every program



