

**Assignment - III Compiler Design Laboratory (CS3075)**

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1. Design string recognizers using Flex tool for following

(a) Strings of a's and b's

where  $|n(a)-n(b)| \bmod 3 = 0$ .

$n(a)$  and  $n(b)$  are number of a's and

b's, respectively.

**Solution File: lab3\_1a.l**

**Working Screenshot:**

```
[(base) amiyachowdhury@Amiyas
Enter the string
aa
Invalid
aba
Invalid
aaab
Invalid
aaaab
Valid String
abaabaaa
Invalid
abaaaba
Valid String
^C
```

(b) Integer constants in C language.

Example: -125, 125, 125U, 123L, 0x4ABF, 0723.

**Solution File: lab3\_1b.l**

**Working Screenshot:**

```
[(base) amiyachowdhury@Amiya
Enter the string
-125
Valid
088
Invalid
0x23A
Valid
-125U
Invalid
125U
Valid
077
Valid
```

(c) Floating point constant in C language.

Example: 0.25, 0.25f, 2.5E-1

**Solution File: lab3\_1c.c**

**Working Screenshot:**

```
[(base) amiyachowdhury@Amiyas
Enter the string
0.25
Valid
0.25f
Valid
2.5E-1
Valid
2.E1
12
12.
12.3
Valid
^C
(base) amiyachowdhury@Amiyas
```

2. Write a C program to obtain a deterministic finite automata from a given regular expression. First construct the non-deterministic finite automata. Then construct the equivalent deterministic finite automata. Finally, minimize the states of the deterministic finite automata.

*I have failed to construct a working program for this question. Proceeding to construct a NFA from the expression is quite easy, but constructing the DFA requires the implementation of set operations which is not readily available in C language.*