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17/SCI01/007  
COMPUTER SCIENCE  
CSC304

### ASSIGNMENT

1. Design regular expressions for the following languages:

- Language whose length is at most 3.
- Language whose of even length
- Language starting and ending with different letters.

### ANSWERS

**1a.**  $L = \{\epsilon, a, b, aa, ab, bb, aaa, aab, aba, abb, baa, bab, bba, bbb\}$

$R.E = (\epsilon + a + b)(\epsilon + a + b)(\epsilon + a + b)$

**b.**  $L_1 = \{0, 2, 4, 6, \dots\}$  (string length)

$L = \{\epsilon, aa, ab, ba, bb, aaaa, aaab, aaba, \dots\}$

$R.E = ((a+b)(a+b))^*$

**c.**  $L = \{ab, ba, aab, abb, baa, bba, \dots\}$

$R.E = a(a+b)^*b + b(a+b)^*a$