

Course: SE312 Theory of Computing
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Lab 01

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1. An *alphabet* is a finite not empty set of symbols. Conventionally, we use the symbol Σ for an alphabet. Common alphabets include: $\Sigma = \{0,1\}$, the *binary* alphabet. A *string* (or sometimes *word*) is a finite sequence of symbols chosen from some alphabet. For example, *01101* is a string from the binary alphabet $\Sigma = \{0,1\}$. The string *111* is another string chosen from this alphabet.
 - a. Generate five strings from the alphabet $\Sigma = \{0,1\}$.
 - b. Print the length of the generated strings.
 - c. You will be given a string w , identify whether or not w is from the alphabet.
 - d. You will be given two string x and y from this alphabet. Print the concatenated string $z = xy$.
 2. If Σ is an alphabet, we can express the set of all strings of a certain length from that alphabet by using an exponential notation. We define Σ^k to be the set of strings of length k each of whose symbols is in Σ . For example, if $\Sigma = \{0,1\}$, then $\Sigma^0 = \{\epsilon\}$, $\Sigma^1 = \{0,1\}$, $\Sigma^2 = \{00,01,10,11\}$.
 - a. You will be given the value of k . Print the output of Σ^k .
 - b. You will be given a string w from this alphabet. Identify whether or not w is a palindrome.