Lab Session 8

30.09.2024

BT3051 - DSA Biology Lab

1. Given a survey form that is being circulated, the first question asked to be input is the reader's email address. Check if the email address entered by a user is valid. You can use a Finite State Automata based-approach to do the above.
   A typical email address is of the format username@email_domain.com.
   The username can include alphabets and numbers.
   Include test cases.
2. You are given two strings a and b. Your task is to determine the minimum number of times string a must be repeated such that string b becomes a substring of the repeated version of a. If it is impossible for b to become a substring of the repeated a, return -1.You are required to implement the solution using the Knuth-Morris-Pratt (KMP) Algorithm to check if b is a substring of the repeated string a.

   Input Format:

- String a: A non-empty string of lowercase English letters.
- String b: A non-empty string of lowercase English letters.

  Output Format:

- An integer representing the minimum number of times a needs to be repeated for b to be a substring. Return -1 if it is impossible.

  Input: a = "ATGC" b = "GCATGCAT"
  Output: 3
  Explanation: String `a` repeated 3 times is "AT**GCATGCAT**GC", which contains `b` as a substring.