

**Quiz Date:** Wednesday September 13, 2023

**Exercises:**

1. List all strings of size 3 over the alphabet  $\{X, Y\}$ .
2. Find all permutations of  $\{A, B, C\}$ .
3. Find all strings of size 4 over the alphabet  $\{0, 1, 2\}$  with the property that there are no 01, 20, or 21 substrings.
4. Draw the graph  $G = (V, E)$  given by

$$V = \{1, 2, 3, 4, 5, 6\} \quad \text{and} \quad E = \{\{1, 2\}, \{1, 3\}, \{1, 4\}, \{2, 5\}, \{3, 4\}, \{5, 6\}\}.$$

5. Find all 8 graphs with vertex set  $V = \{1, 2, 3\}$ .
6. In this question we consider graphs with vertex set  $V = \{1, 2, 3, 4\}$ .
  - (a) Find all graphs on  $V$  that are cycles.
  - (b) Find all graphs on  $V$  that are paths.
  - (c) How many graphs have vertex set  $V$ ?
7. Draw all unlabelled graphs with 4 vertices.
8. Draw all unlabelled trees with 6 vertices.