

MACM 201 Homework 1 (Quiz Sep. 11)

1. List all strings of size 3 over the alphabet $\{A, B\}$.
2. Find all permutations of $\{X, Y, Z\}$.
3. Find all strings of length 4 over the alphabet $\{0, 1, 2\}$ with the property that there are no 10, 21, or 20 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. Draw the directed graph $G = (V, E)$ given by

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

6. Find all 8 graphs with vertex set $V = \{1, 2, 3\}$.
7. Find all graphs with vertex set $V = \{1, 2, 3, 4\}$ that are cycles.
8. Draw a rooted tree with 9 vertices and no vertex of level 3.