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COS 210 Worksheet 2

- This worksheet consists of **4 questions** for a total of **12 marks**.

Question 1 ..... (2 marks)

Show that the language A over $\Sigma = \{0, 1\}$ is regular by constructing (drawing) a deterministic finite automaton M with $L(M) = A$.

$$\text{A} = \{\text{w} : \text{w starts with 1 and ends with 0}\}.$$

Question 2 ..... (2 marks)

Show that the language A over $\Sigma = \{0, 1\}$ is regular by constructing (drawing) a deterministic finite automaton M with $L(M) = A$.

$$\text{A} = \{\text{w} : \text{w starts with 0 and has an odd length or starts with 1 and has an even length}\}.$$

Question 3 ..... (4 marks)

Show that the language A over $\Sigma = \{0, 1\}$ is regular by constructing (drawing) a deterministic finite automaton M with $L(M) = A$.

$$\text{A} = \{\text{w} : \text{w contains an even number of 0's or contains exactly two 1's}\}.$$

Question 4 ..... (4 marks)

Show that the language A over $\Sigma = \{a, b\}$ is regular by constructing (drawing) a deterministic finite automaton M with $L(M) = A$.

$$\text{A} = \{\text{w} : \text{w is a string of length } n > 1 \text{ where the first and the last symbol are different from each other}\}.$$