

Assignment #1 (*Theory of Computation*)
February 02, 2018

1. Consider the binary language $A = \{w \in \{0, 1\}^* \mid \text{either } w \text{ begins with } 01/00 \text{ or } w = 1x1y1z \text{ where } x, y \in \{0\}^* \text{ and } z \in \{0, 1\}^*\}$. Provide below a construction (diagrammatic) of a DFA D such that $\mathcal{L}(D) = A$. [5]

2. Write a program to implement the above DFA. Input/Output to your program must satisfy the following [10]

- **Input:**
 - A string $w \in \{0, 1\}^*$
- **Output:**
 - “Yes” if $w \in A$; “No” otherwise.

Important: Your program must not use any regular expression based string search function/libraries.