

1. Write a regular expression that specifies the language $\{x \mid x \text{ is a string of 0s and 1s that either contains an odd number of 1s or an even number of 0s}\}$. Some examples strings in the language are 1, 00, 010101, 1010, 11001. The empty string is in the language (i.e. treat the empty string as a string with an even number of 0s).

2.. Use the RE to NFA algorithm to create an NFA that accepts the language specified by the regular expression $(100)^* \mid (011)^*$. Follow the algorithm. Do not simplify the NFA.