Quiz 2 Solution
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).

Even number 0s \( 1^*(01^*01^*)^* \)

Odd number of 1s \( 0^*(10^*10^*)^*10^* \)

Even number of 0s or odd number of 1s \( (1^*(01^*01^*)^*) \mid (0^*(10^*10^*)^*10^*) \)
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.
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