

**Theory of Computation, CSCI 438 spring 2022**  
**Nondeterminism, pg. 47-54, Jan. 21**

**Exercise 1.7 b, c, e & 1.11**

1.7 Give state diagrams of NFAs with the specified number of states recognizing each of the following languages. In all parts, the alphabet is  $\{0, 1\}$ .

b.  $\{w \mid w \text{ contains the substring } 0101\}$  with 5 states.

c.  $\{w \mid w \text{ contains an even number of } 0\text{s, or contains exactly two } 1\text{s}\}$  with 6 states.

e. The language  $0^*1^*0^+$  with three states.

1.11 Prove that every NFA can be converted to an equivalent one that has a single accept state.