Programming

William Henrich Due [1]

[1]Department of Computer Science

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Intended Learning Outcomes

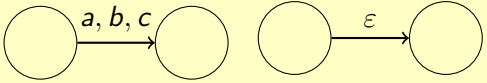
- Write a simple program as a nondetermistic finite-state automaton (NFA).
- Write a simple program as a determistic finite-state automaton (DFA).
- The ability to differentiate between a NFA and a DFA.

Programming Languages

What Programming Languages do you know?

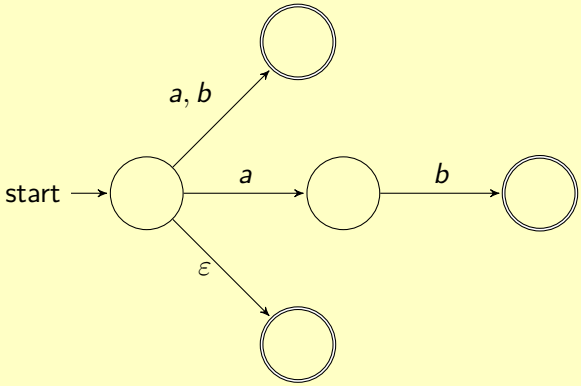
NFA

- An alphabet that is a finite set of symbols e.g.
  - English Alphabet.
  - Hindu–Arabic numerals.
  - Morse code symbols.
- A finite set of states 
- Transitions between states labelled by symbols or ε.



- A single initial state. start 
- Zero or more accepting states. 

NFA Simulation



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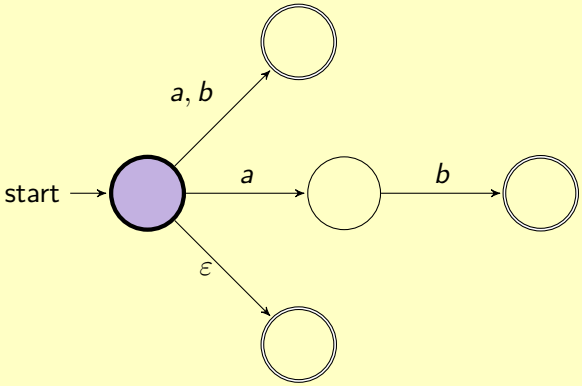

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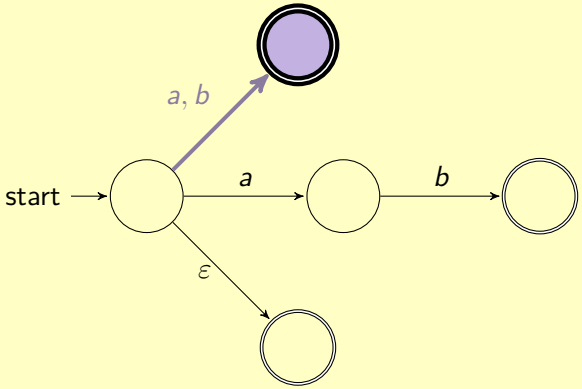

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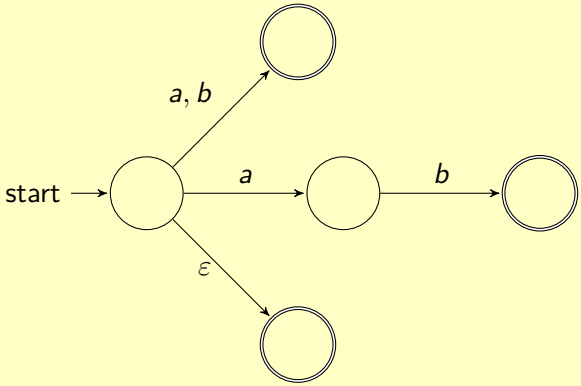

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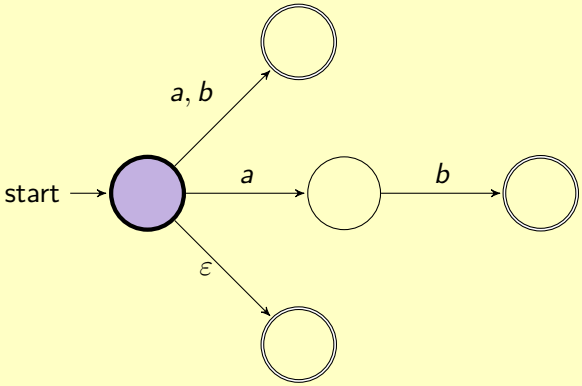

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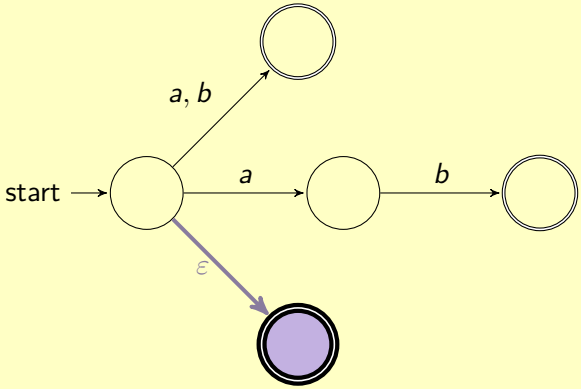

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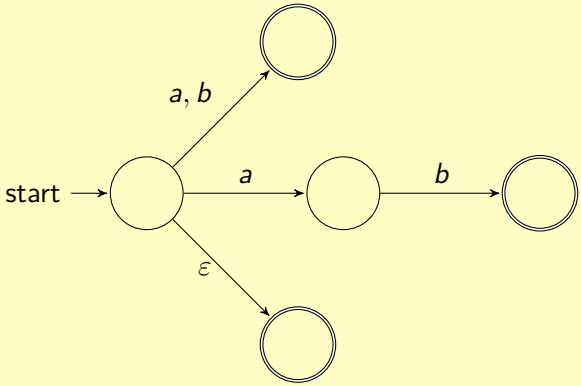

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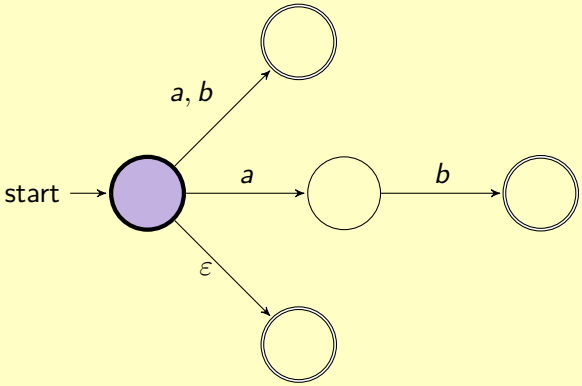

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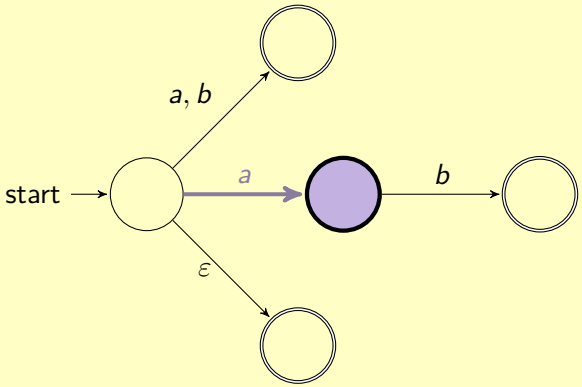

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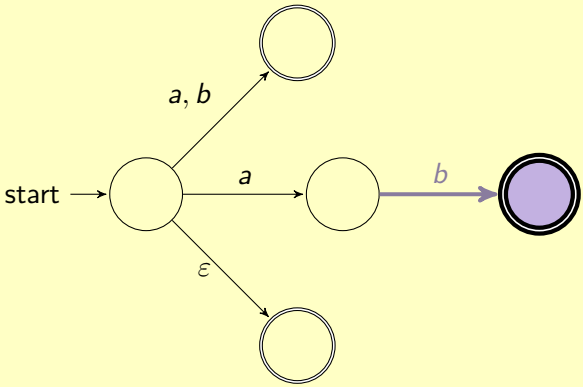

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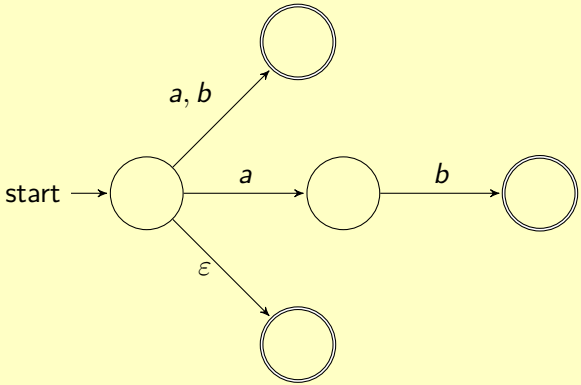


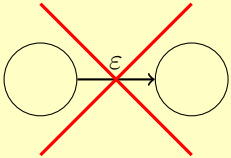
ab **Accepted!**

Your turn

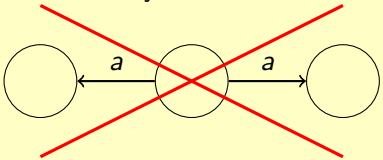
Create a NFA that determines if a non-negative integer is even.

DFA

- Subset of NFAs.
- No ε transitions allowed.



- No state may have more than one outgoing transition per symbol.



- Why do this?

Your turn

Create a DFA that determines if a non-negative integer is even.

We are done

We are done.