Homework 4

David Trinh

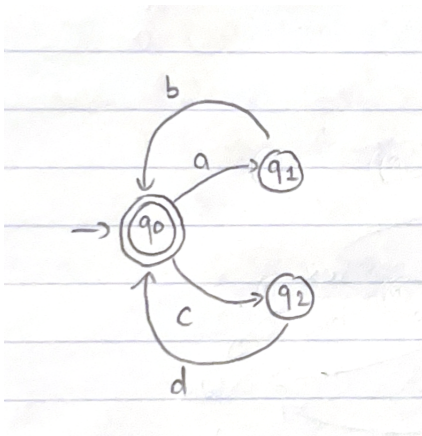## October 7, 2024

- **Question 1**
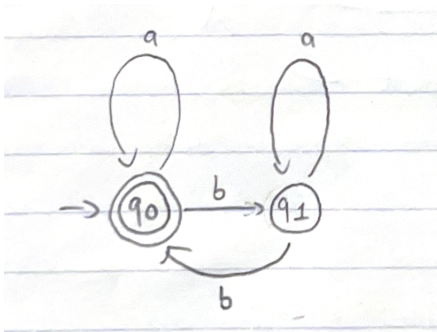
    1. $b * ab * ab*$
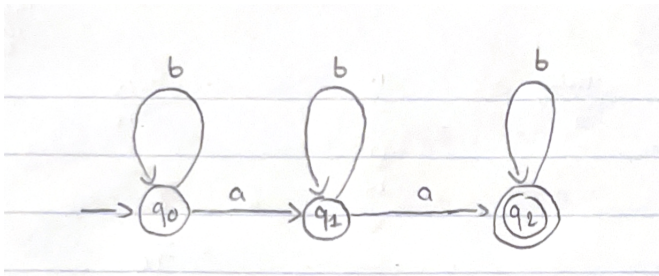
    2. $(ab|cd)*$

    3. $(a * ba * ba*)*$

- **Question 2**

    start state: q_0

1

end state: q_0, q_5

accept: abb, bbaaab

rejected: aba, bbabab

- **Question 3**

  $(aab|bba)*$

- **Question 4**

  - \b: Search for standalone strings (not joined to a word)
  - (?:\d{1,2})[-/](?:\d{1,2})[-/](?:\d{2,4}):
    This matches the formats MM/DD/YY, MM/DD/YYYY, M/D/YYYY, etc.
    * \d{1,2} matches a 1- or 2-digit month and day.
    * [-/] matches either a dash (-) or a slash (/) as separators.
    * \d{2,4} matches either a 2-digit or 4-digit year.
  - (?:\d{4})[-/](?:\d{1,2})[-/](?:\d{1,2}):
    This matches the formats YYYY/MM/DD, YYYY/M/D, etc.
    * \d{4} ensures we are looking for a 4-digit year at the beginning.
  - (?:[A-Z][a-z]+) (?:\d{1,2}), (?:\d{4}):
    This matches dates like May 14, 2020.
    * [A-Z][a-z]+ matches the month, which starts with an uppercase letter and is followed by lowercase letters.
    * \d{1,2} matches a 1- or 2-digit day.
    * , (?:\d{4}) matches a comma followed by a 4-digit year.
  - (?:\d{1,2}) (?:[A-Z][a-z]+), (?:\d{4}):
    This matches dates like 14 May, 2020. Similar to above just swapped the month and day around
  - All terms above are in an OR statement.