1. Give a regular expression that will accept all valid names. A name consists of a first name, an optional middle name or initial, and a last name, separated by spaces. First, middle and last names start with a capital letter and are followed by zero or more lowercase letters. If the name has a middle initial, instead of a middle name, it must be a capital letter followed by a period. Examples of valid names include:

   - Joe Public
   - Joe Q. Public
   - Joe Quincy Public

Examples of invalid names include:

   - Joe P. (no last name)
   - Joe Q Public (middle initial missing a period)
   - Joe Qu. Public (middle initial more than one letter)
   - Joe Quincy Reginald Public (two middle names)
   - Joe Quincy Public, the Third (more than just three names)

Assume that \( \Sigma \) (the alphabet) for the strings you are accepting is all capital letters, all lowercase letters, and '·'.

2. Give a DFA for that regular expression.

3. Give a non-deterministic FSA for the following regular expression:

\[(ab^*c)(a^+bc^*)\]

4. Produce the deterministic equivalent of the NFA you built in question 3. Show both the graphical representation and the tabular representation.

5. Minimize the deterministic FSA.

6. Can the language \((i^i g)^i, i \geq 0\) be recognized by an FSA? Why or why not?

7. Can the language \((k^k g)^k\) for one particular \(k\) be recognized by an FSA? Why or why not?