Homework 1

This homework is due at **11 PM on Feb 04**. *It will not be accepted late*.
Make sure to follow the submission instructions.

1. Draw a **deterministic finite state machine** that accepts the language of file paths.

   A file path consists of optional directory names and one file name, separated by "/".

   1. The path must start with "/"

   2. A directory name can include letters and digits

   3. A file name can include letters, digits and dots

   4. A file name cannot have two dots in a row

   5. A file name cannot end with a dot

   6. **CLARIFICATION: Both file name and directory name should contain at least one character**

   Label the edges of your FSM with words `slash`, `dot`, `letter` and `digit`.

   Valid samples:
   /P1.java
   /This/is/a/very/long/directory/.file
   /foo/I.have.many.dots
   /bar/NoDot

2. Write a **regular expression** for a UsernameTag. A UsernameTag is of the following format : UserName#Number

   1. UserName and number are separated by "#"

   2. UserName can include letters, digits and "-"

   3. UserName must start with a letter, and cannot end with "-"

   4. UserName cannot have two hyphens in a row

   5. Number can only include digits, and should contain at least one digit

   Valid samples:
   ainur-ainabekova#35
   life4compiler#0102

   Please use words `hyphen` to represent "-", `digit` to represent any digit and `letter` to represent any letter in your regular expression.