Islam Moussa
CS316
Lecturer: Dr. Keitaro Yukawa

PROJECT 1

Finite Automaton to Recognize Tokens

Question:
Draw a **state transition diagram** of a **DFA** to accept the below 22 token categories. The **DFA** should have 22 final states corresponding to the 22 token categories. Note that "||", "&&", "<=", ">=", "==", and "!=" consist of two characters and require two transitions. Make sure that your automaton is deterministic: at most one transition for each (state, input char) pair and no transition on the empty string ε.

Consider the following BNF defining 22 token categories <int> through <comma>:
<letter> → a | b | ... | z | A | B | ... | Z
<digit> → 0 | 1 | ... | 9
<int> → {<digit>}$^{+}$
<id> → <letter> { <letter> | <digit> }
<float> → {<digit>}$^{+}$"." {<digit>} | "." {<digit>}$^{+}$
<floatE> → <float> (E|e) [+|−] {<digit>}$^{+}$
<add> → +
<sub> → −
<mul> → *
 → /
<or> → "||"
<and> → "&&"
<inv> → !
<lt> → "<"
<le> → "<="
<gt> → ">"
<ge> → ">="
<eq> → "=="
<neq> → "!="
<LParen> → "("
<RParen> → ")"
<LBrace> → "{"
<RBrace> → "}"
<comma> → ","