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This document describes the DFA and grammar used to generate the lexical and syntactical analyzer.

# 1 DFA

THE DFA recognizes the following lexical elements:

**INTEGER.** At least one digit followed by zero or more digits. **Recognized by** $q_{101}$

**REGISTER.** The symbol # followed by any one letter. **Recognized by** $q_{102}$

**RESERVED WORD.** One possible reserved word (to be validated in the implementation that is in MOV, ADD, SUB, MUL or DIV) **Recognized by** $q_{103}$

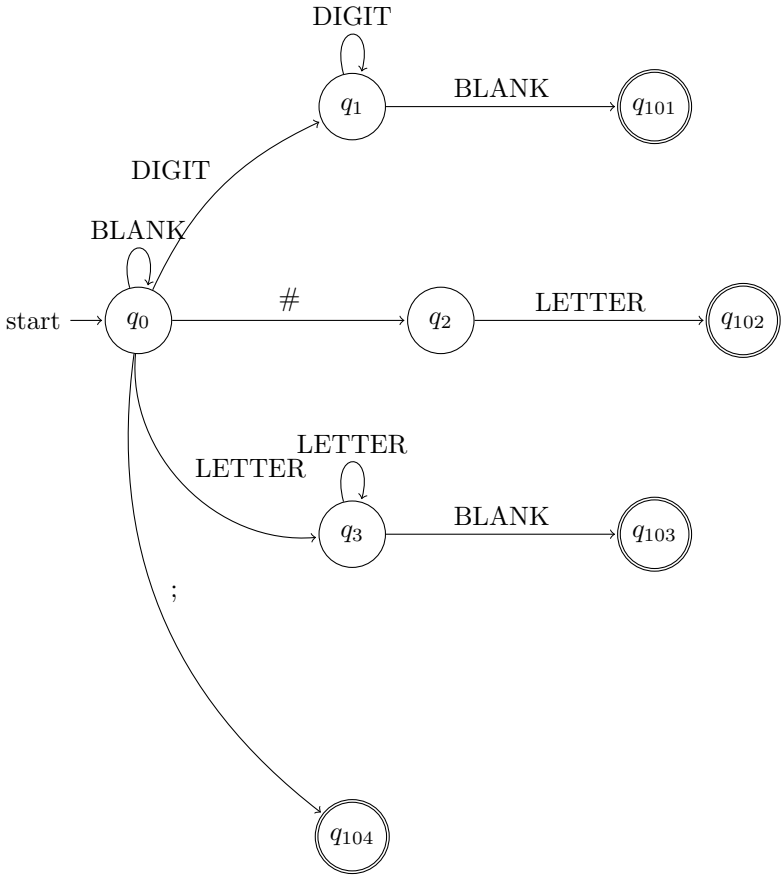
**EOF.** End of file, specified by the character ';'. **Recognized by** $q_{104}$

And uses the following definitions:

**LETTER.** Any **uppercase** letter.

**DIGIT.** Any digit between 0-9.

**BLANK.** Any whitespace character.




# 2 Grammar

Using the terminals definitions:

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`REGISTER` Stands for any register validated by the DFA

`INTEGER` Stands for any integer validated by the DFA

`MOV` The reserved word for movement

`OPERATOR` Any reserved word for operators (ADD, SUB, MUL, DIV)

The following grammar was designed to match the syntactical rules of the language.

*Notes*:
$O$ is short for Operation, $A$ short for Assignment.

$$S \rightarrow O \mid A \mid ;$$
$$O \rightarrow \texttt{OPERATOR REGISTER REGISTER}$$
$$A \rightarrow \texttt{MOV } A' \texttt{ REGISTER}$$
$$A' \rightarrow \texttt{REGISTER} \mid \texttt{INTEGER}$$