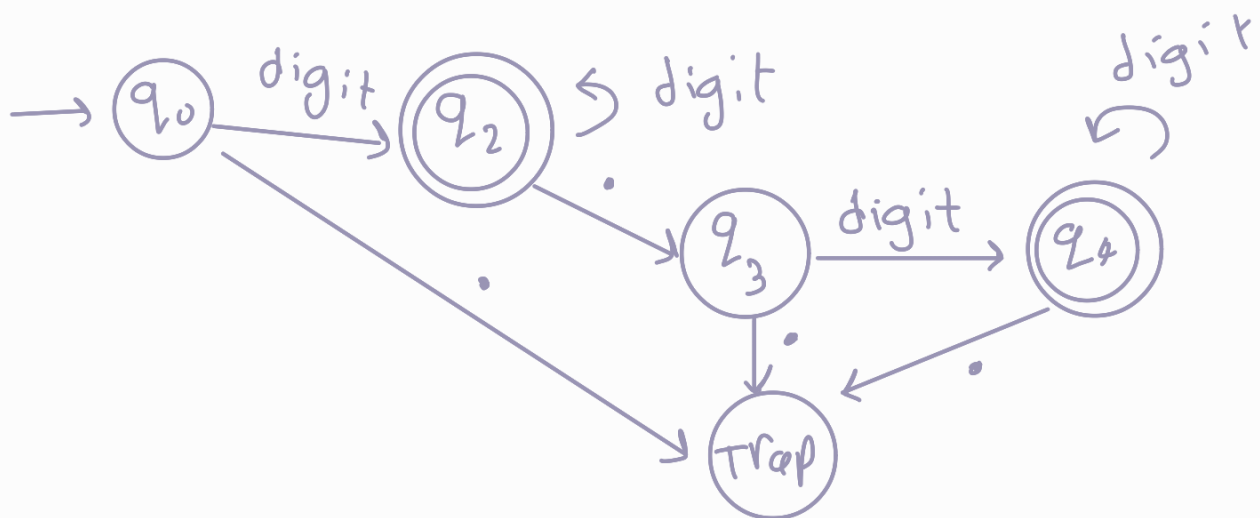## DFA

$\Sigma \curvearrowright$

$Digit := [0-9]$
$Letter := [\_ | a-z | A-Z]$

$\backslash \rightarrow$ Escape operator
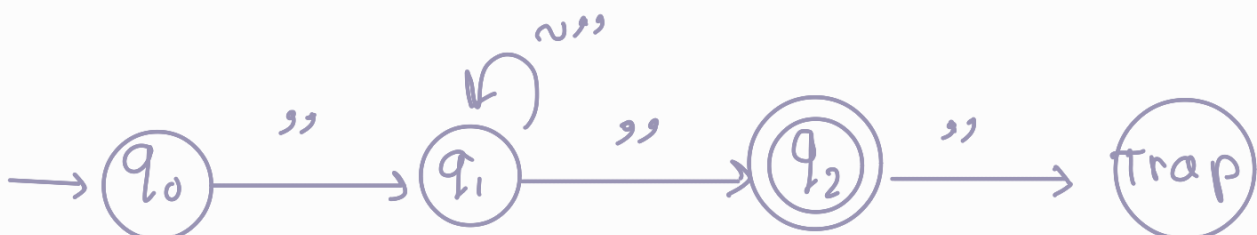$+, *, \sim, ?, (,) \longrightarrow$ RE Rules

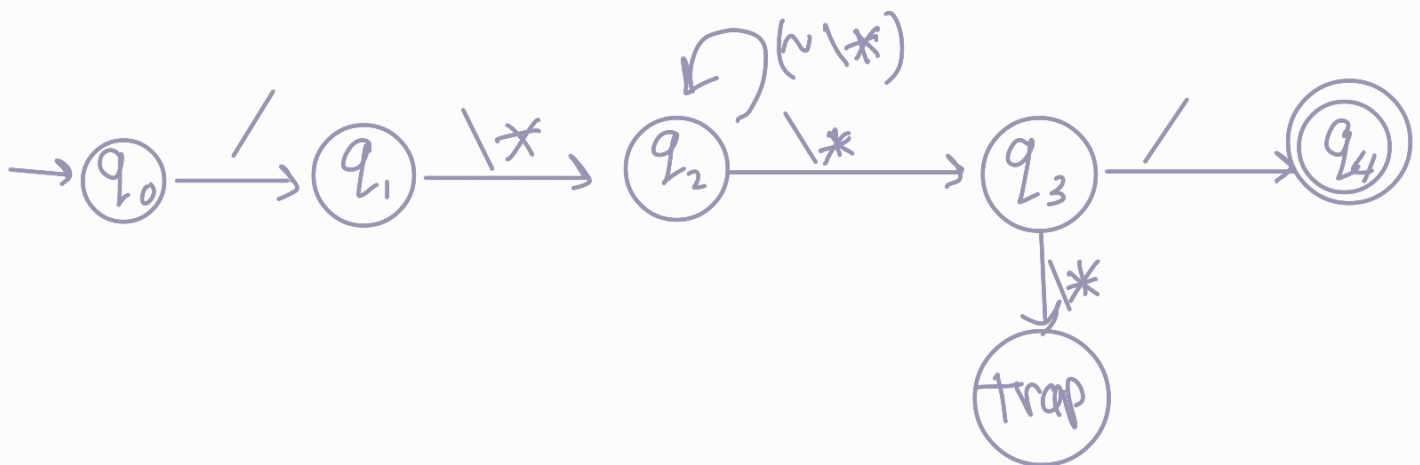1) Number   $Digit^+ (\backslash . \ Digit^*) ?$



2) string   $" (\sim ")^* "$

## 3) Reserved word

int | Float | string | read | write | repeat | until | if | elseif |
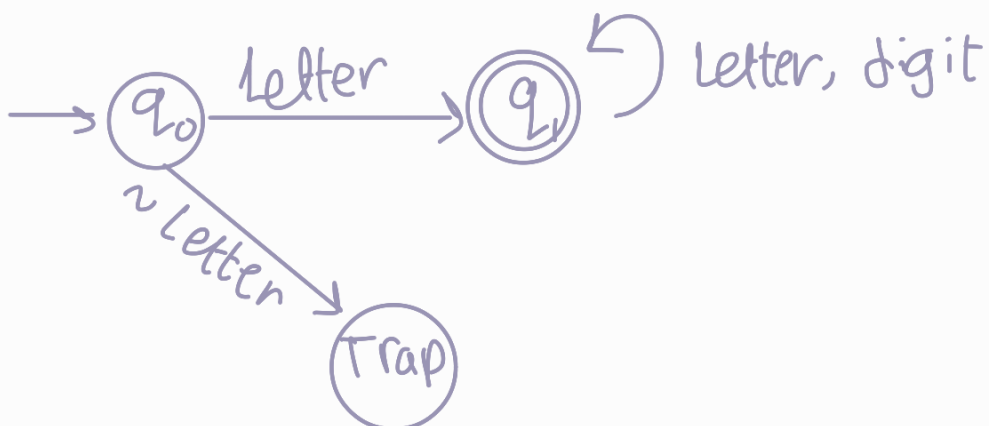else | then | return | endl | end

$$\rightarrow q_0 \xrightarrow{\text{Reserved word}} q_1$$

## 4) Comment statement     /\*  .  *  \*/

$$\rightarrow q_0 \xrightarrow{/} q_1 \xrightarrow{\backslash *} q_2 \xrightarrow{\backslash *} q_3 \xrightarrow{/} q_4$$

$q_2$ has a self-loop labeled $(\sim \backslash *)$

$q_3 \xrightarrow{\backslash *} \text{trap}$

## 5) Identifier     Letter (Letter | digit)*

$$\rightarrow q_0 \xrightarrow{\text{Letter}} q_1 \quad \circlearrowright \text{Letter, digit}$$

$q_0 \xrightarrow{\sim \text{Letter}} \text{Trap}$

6) Data Type      ( int | float | string )

$q_0$ $\xrightarrow{\text{DataType}}$ $q_1$

7) Arithmetic operator)      \+ | − | \* | /

8) Conditional operators      < | > | = | <>

9) Boolean operators      \|\| | && | !

10) Assignment operator      : =

$q_0$ $\xrightarrow{\text{operator}}$ $q_1$

11) Brackets      \{ | \}

12) Braces      \[ | \]

13) parentheses      \( | \)

$q_0$ $\xrightarrow{\text{bracket, brace, parentheses}}$ $q_1$