PRoject 1 - 5tuple doc

Machine: M=(Q,Σ,δ,q1,F)M=(Q,\Sigma,\delta,q_1,F)M=(Q,Σ,δ,q1,F)

- **States**

$Q = q1, q2, q3, q4, q5, q6, q7, q8, q9, qT$

Start state = $q1$

Trap state = qT

Accepting $F = q8, q9$ *(only if input ends in these states)*

- **Alphabet** $\Sigma = \Psi \cup ., @$, where

$\Psi = a, \ldots, z$

For the table below, we partition letters as:

- $A = \Psi - n, e, t$ (all lower-case letters except **n/e/t**)
- and the single letters **n**, **e**, **t** shown as their own columns.

Transition Table δ (unspecified entries $\rightarrow q_T$)

State	A	n	e	t	.	@
q1	q2	q2	q2	q2	qT	qT
q2	q2	q2	q2	q2	q3	q4
q3	q2	q2	q2	q2	qT	qT
q4	q5	q5	q5	q5	qT	qT
q5	q5	q5	q5	q5	q6	qT
q6	q5	q7	q5	q5	qT	qT
q7	q5	q5	q8	q5	qT	qT
q8	q5	q5	q5	q9	q6	qT
q9	qT	qT	qT	qT	qT	qT
qT	qT	qT	qT	qT	qT	qT

Reading guide (informal intent):

- Local part: `letters` with optional `.` chunks → **q1→q2↔q3**
- Exactly one `@` → **q2 --@→ q4**
- Domain labels of letters+ and dots → **q4→q5↔q6**
- Final TLD: `.ne` (**q6→q7→q8**) *or* `.net` (**q6→q7→q8→q9**).
- Any extra symbols after reaching **q8** or **q9** go to **qT** (reject).