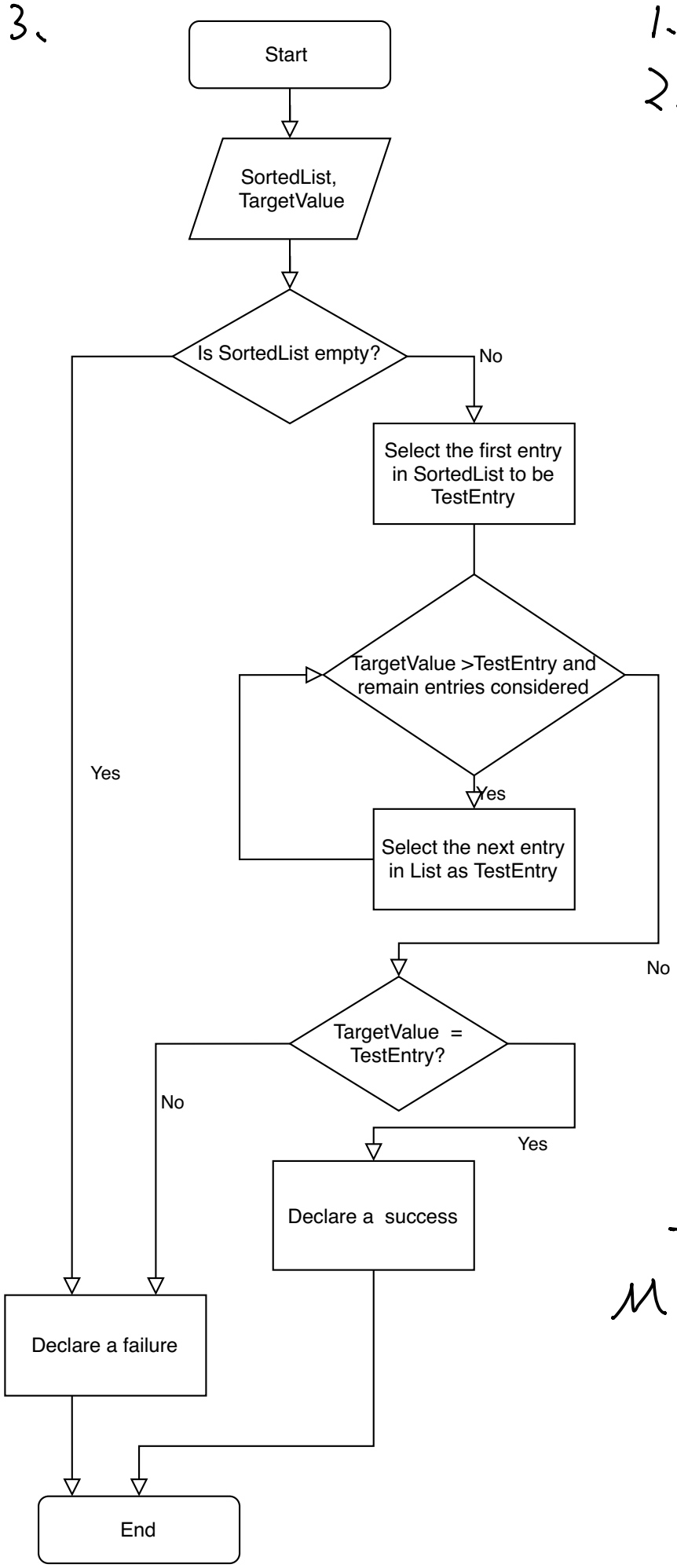
3.



1. ABD

2. (a) increasing

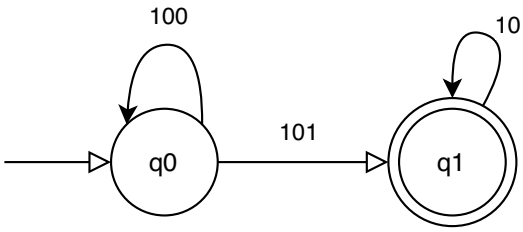
(b) 2020

(c) [2, 3, 1, 4, 5]

[2, 1, 3, 4, 5]

[1, 2, 3, 4, 5]

4.



1. $Q = \{q_0, q_1\}$

2. $\Sigma = \{100, 101, 10\}$

3. δ: $\delta(q_0, 100) = q_0$

$\delta(q_0, 101) = q_1$

$\delta(q_1, 10) = q_1$

4. q_0 = start state

5. $Q > F = \{q_1\}$

the finite-state automaton

$M = (Q, \Sigma, \delta, q_0, F)$

$= (\{q_0, q_1\}, \{100, 101, 10\}, \delta, q_0, \{q_1\})$