1 Sorting Facility

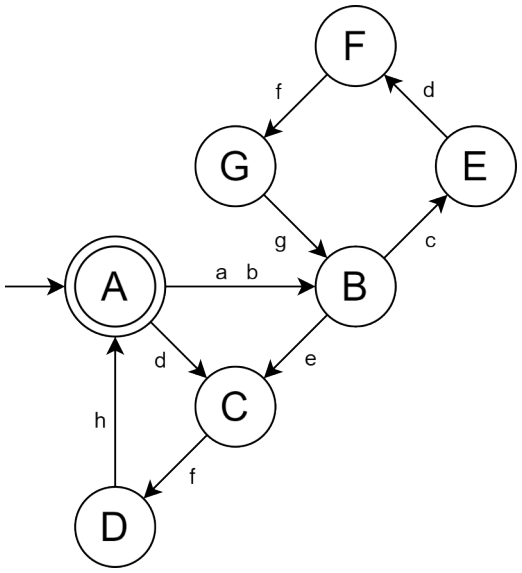

Figure 1: Sorting facility automaton

$$G = (E, S, f, \Gamma, s_0, S_M)$$

- $E = \{a, b, c, d, e, f, g\}$,
  - a – package arrives,
  - b – package overdue,
  - c – wait for available drone,
  - d – drone arrives,
  - e – send drone,
  - f – update drone database,
  - g – update package database.
- $S = \{A, B, C, D, E, F, G\}$
- $f(A, a) = B$, $f(A, b) = B$, $f(A, d) = C$, $f(B, c) = E$, $f(B, e) = C$, $f(C, f) = D$, $f(D, h) = A$, $f(E, d) = F$, $f(F, f) = G$, $f(G, g) = B$,
- $\Gamma(A) = \{a, b, d\}$, $\Gamma(B) = \{c, e\}$, $\Gamma(C) = \{f\}$, $\Gamma(D) = \{h\}$, $\Gamma(E) = \{d\}$, $\Gamma(F) = \{f\}$, $\Gamma(G) = \{g\}$,
- $s_0 = A$
- $S_M = s_0$

2 Drone

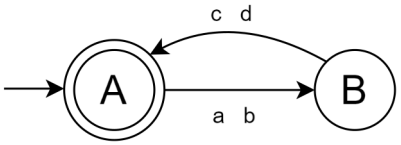

Figure 2: Drone Automaton

$$G = (E, S, f, \Gamma, s_0, S_M)$$

- $E = \{a, b, c, d\}$,
  - a – en route to deliver,
  - b – en route to pick-up,
  - c – return with overdue package,
  - d – return without package.
- $S = \{A, B\}$
- $f(A, a) = B$, $f(A, b) = B$, $f(A, d) = C$, $f(B, c) = A$, $f(B, d) = A$,
- $\Gamma(A) = \{a, b\}$, $\Gamma(B) = \{c, d\}$
- $s_0 = A$
- $S_M = s_0$

3 Package Locker

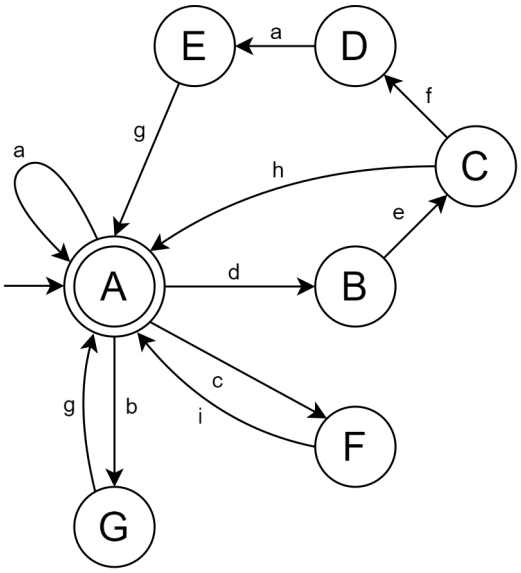

Figure 3: Package locker automaton

$$G = (E, S, f, \Gamma, s_0, S_M)$$

- $E = \{a, b, c, d, e, f, g, h, i\}$,
  - a – drone arrives with package,
  - b – drone arrives without package,
  - c – package picked up by recipient,
  - d – package is overdue,
  - e – check if drone is arriving,
  - f – wait for drone,
  - g – send drone back with package,
  - h – send package overdue signal,
  - i – send package picked up signal.
- $S = \{A, B, C, D, E, F, G\}$
- $f(A, a) = A$, $f(A, b) = G$, $f(A, c) = F$, $f(A, d) = B$, $f(B, e) = C$, $f(C, f) = D$, $f(C, h) = A$, $f(D, a) = E$, $f(E, g) = A$, $f(F, i) = A$, $f(G, g) = A$,
- $\Gamma(A) = \{a, b, c, d\}$, $\Gamma(B) = \{e\}$, $\Gamma(C) = \{f, h\}$, $\Gamma(D) = \{a\}$, $\Gamma(E) = \{g\}$, $\Gamma(F) = \{i\}$, $\Gamma(G) = \{g\}$,
- $s_0 = A$
- $S_M = s_0$