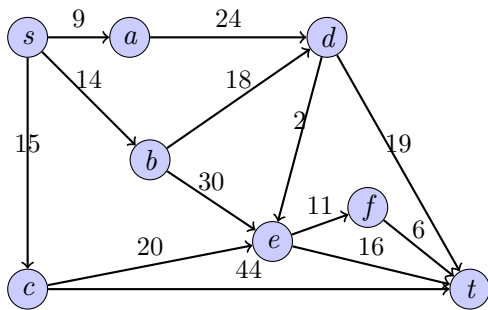
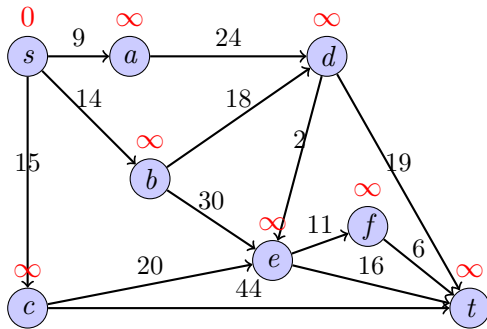


Dijkstra's algorithm: an example



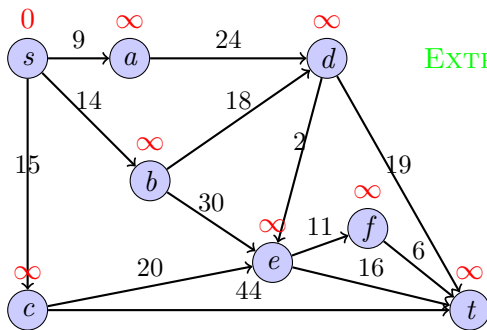
Dijkstra's algorithm: an example

$$S = \{\}$$
$$PQ = \{s(0), a(\infty), b(\infty), c(\infty), d(\infty), e(\infty), f(\infty), t(\infty)\}$$



Dijkstra's algorithm: an example

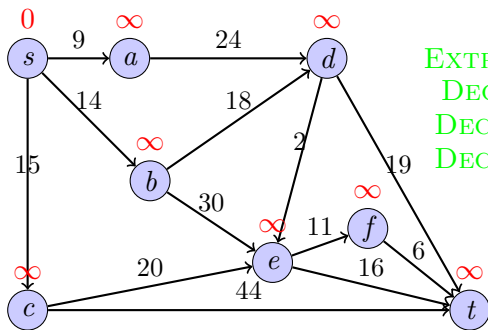
$$S = \{\}$$
$$PQ = \{s(0), a(\infty), b(\infty), c(\infty), d(\infty), e(\infty), f(\infty), t(\infty)\}$$



EXTRACTMIN returns s

Dijkstra's algorithm: an example

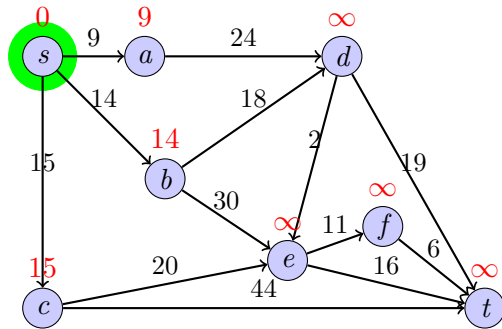
$$S = \{\}$$
$$PQ = \{s(0), a(\infty), b(\infty), c(\infty), d(\infty), e(\infty), f(\infty), t(\infty)\}$$



EXTRACTMIN returns s
DECREASEKEY($a, 9$)
DECREASEKEY($b, 14$)
DECREASEKEY($c, 15$)

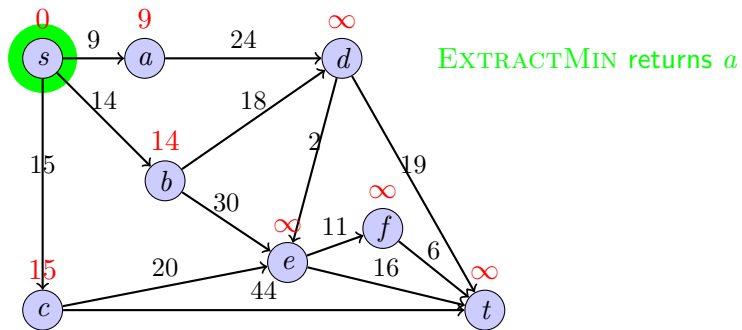
Dijkstra's algorithm: an example

$S = \{s\}$
 $PQ = \{a(9), b(14), c(15), d(\infty), e(\infty), f(\infty), t(\infty)\}$



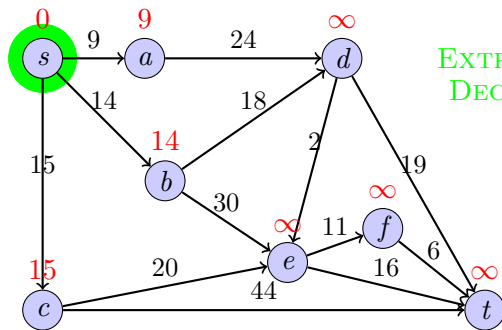
Dijkstra's algorithm: an example

$$S = \{s\}$$
$$PQ = \{a(9), b(14), c(15), d(\infty), e(\infty), f(\infty), t(\infty)\}$$



Dijkstra's algorithm: an example

$S = \{s\}$
 $PQ = \{a(9), b(14), c(15), d(\infty), e(\infty), f(\infty), t(\infty)\}$

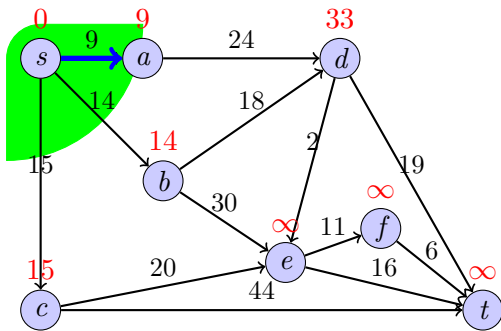


EXTRACTMIN returns a
DECREASEKEY($d, 33$)

Dijkstra's algorithm: an example

$$S = \{s, a\}$$

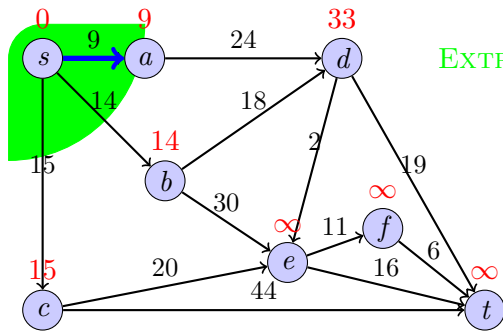
$$PQ = \{b(14), c(15), d(33), e(\infty), f(\infty), t(\infty)\}$$



Dijkstra's algorithm: an example

$$S = \{s, a\}$$

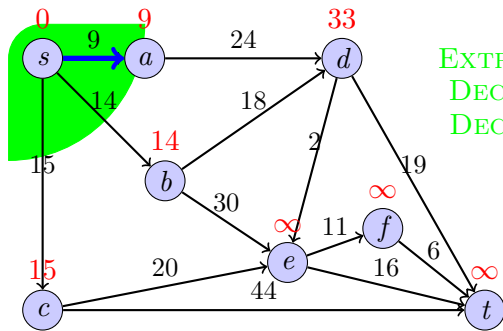
$$PQ = \{b(14), c(15), d(33), e(\infty), f(\infty), t(\infty)\}$$



Dijkstra's algorithm: an example

$$S = \{s, a\}$$

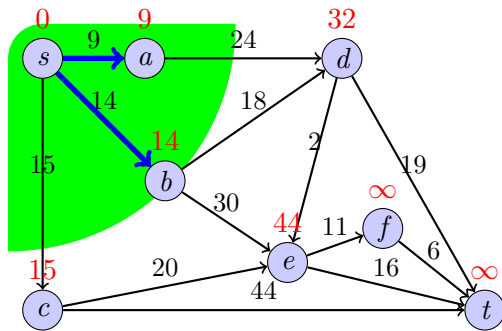
$$PQ = \{b(14), c(15), d(33), e(\infty), f(\infty), t(\infty)\}$$



EXTRACTMIN returns b
DECREASEKEY($d, 32$)
DECREASEKEY($e, 44$)

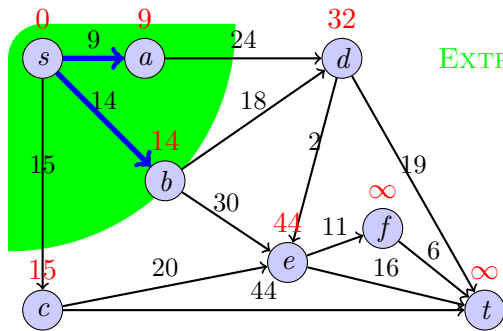
Dijkstra's algorithm: an example

$$S = \{s, a, b\}$$
$$PQ = \{c(15), d(32), e(44), f(\infty), t(\infty)\}$$



Dijkstra's algorithm: an example

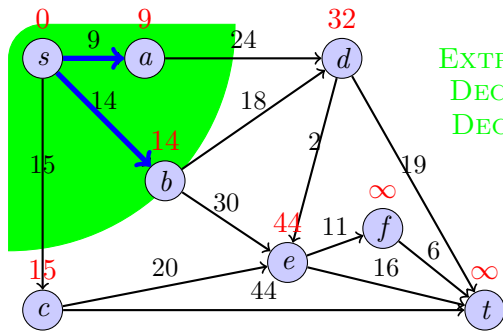
$$S = \{s, a, b\}$$
$$PQ = \{c(15), d(32), e(44), f(\infty), t(\infty)\}$$



EXTRACTMIN returns c

Dijkstra's algorithm: an example

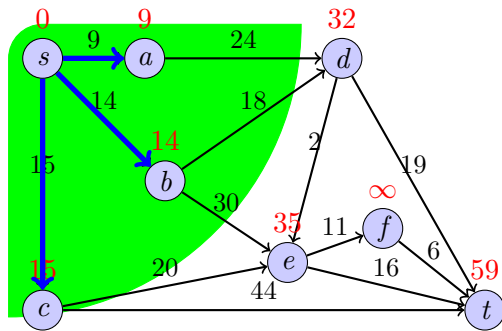
$$S = \{s, a, b\}$$
$$PQ = \{c(15), d(32), e(44), f(\infty), t(\infty)\}$$



EXTRACTMIN returns c
DECREASEKEY($e, 35$)
DECREASEKEY($t, 59$)

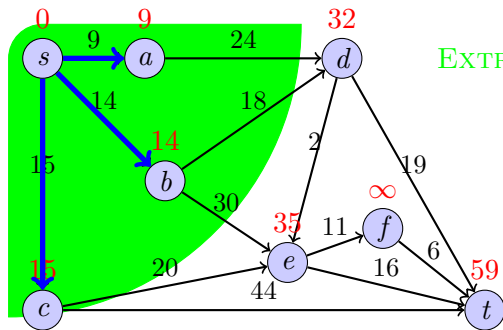
Dijkstra's algorithm: an example

$$S = \{s, a, b, c\}$$
$$PQ = \{d(32), e(35), t(59), f(\infty)\}$$



Dijkstra's algorithm: an example

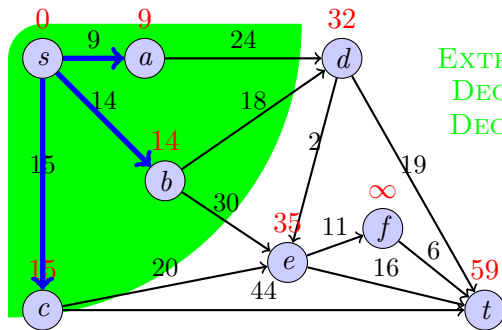
$$S = \{s, a, b, c\}$$
$$PQ = \{d(32), e(35), t(59), f(\infty)\}$$



EXTRACTMIN returns d

Dijkstra's algorithm: an example

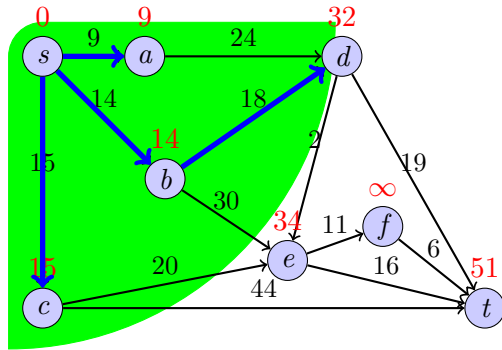
$S = \{s, a, b, c\}$
 $PQ = \{d(32), e(35), t(59), f(\infty)\}$



EXTRACTMIN returns d
DECREASEKEY(t , 51)
DECREASEKEY(e , 34)

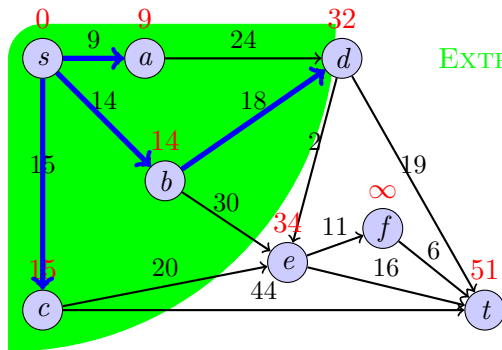
Dijkstra's algorithm: an example

$$S = \{s, a, b, c, d\}$$
$$PQ = \{e(34), t(51), f(\infty)\}$$



Dijkstra's algorithm: an example

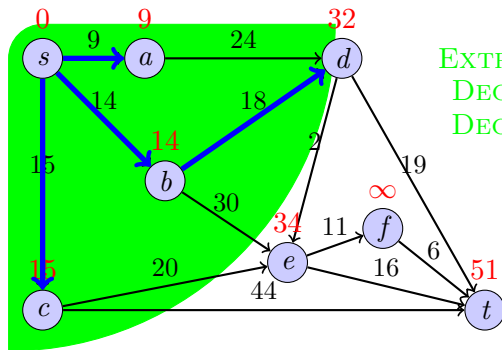
$$S = \{s, a, b, c, d\}$$
$$PQ = \{e(34), t(51), f(\infty)\}$$



EXTRACTMIN returns e

Dijkstra's algorithm: an example

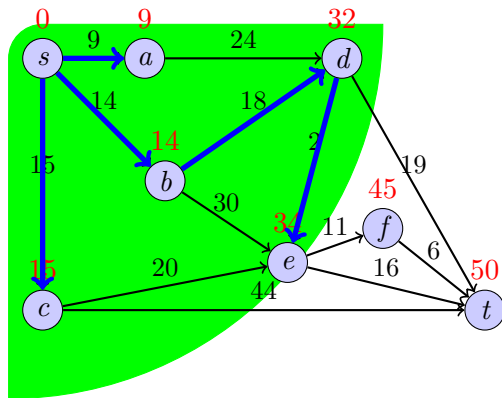
$S = \{s, a, b, c, d\}$
 $PQ = \{e(34), t(51), f(\infty)\}$



EXTRACTMIN returns e
DECREASEKEY(f , 45)
DECREASEKEY(t , 50)

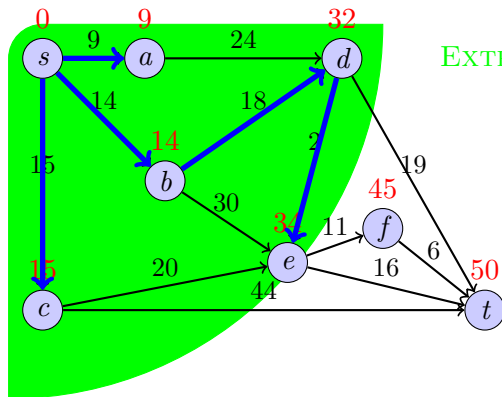
Dijkstra's algorithm: an example

$S = \{s, a, b, c, d, e\}$
 $PQ = \{f(45), t(50)\}$



Dijkstra's algorithm: an example

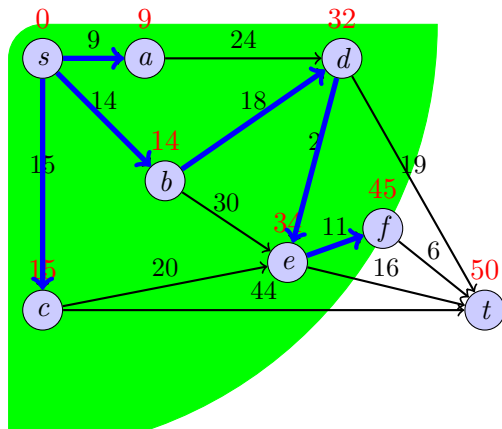
$S = \{s, a, b, c, d, e\}$
 $PQ = \{f(45), t(50)\}$



EXTRACTMIN returns f

Dijkstra's algorithm: an example

$$S = \{s, a, b, c, d, e, f\}$$
$$PQ = \{t(50)\}$$



Dijkstra's algorithm: an example

4

