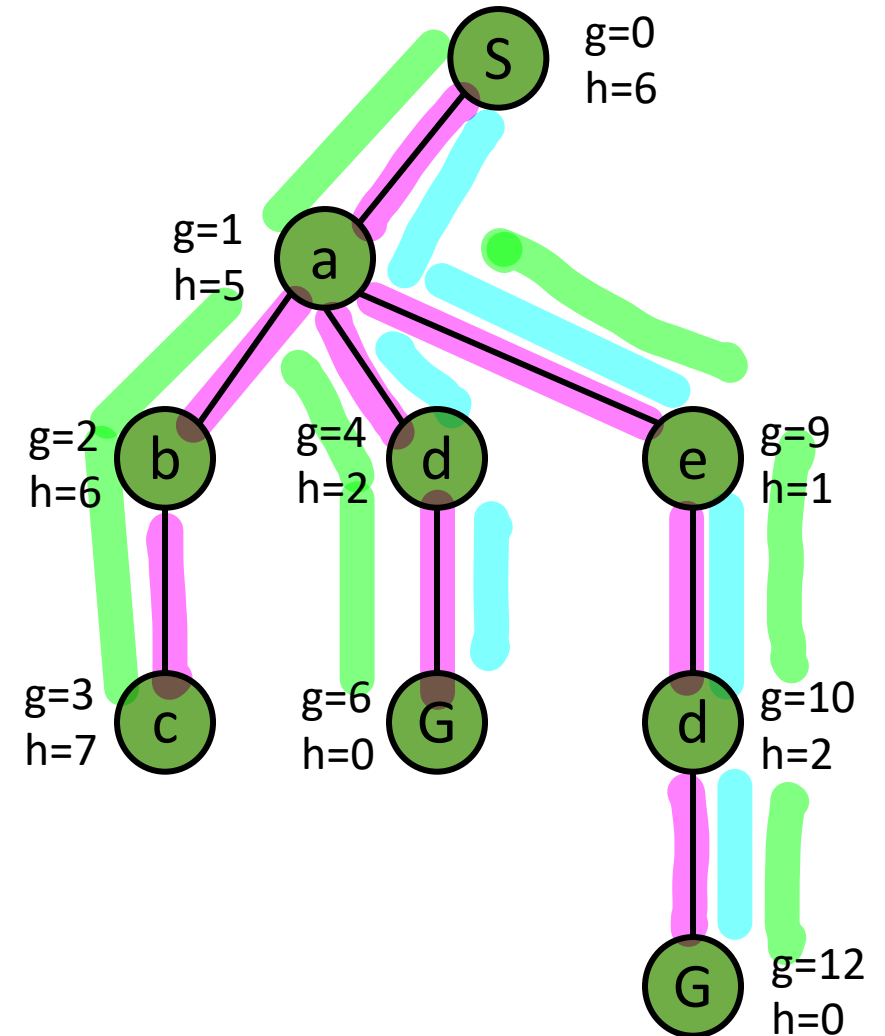
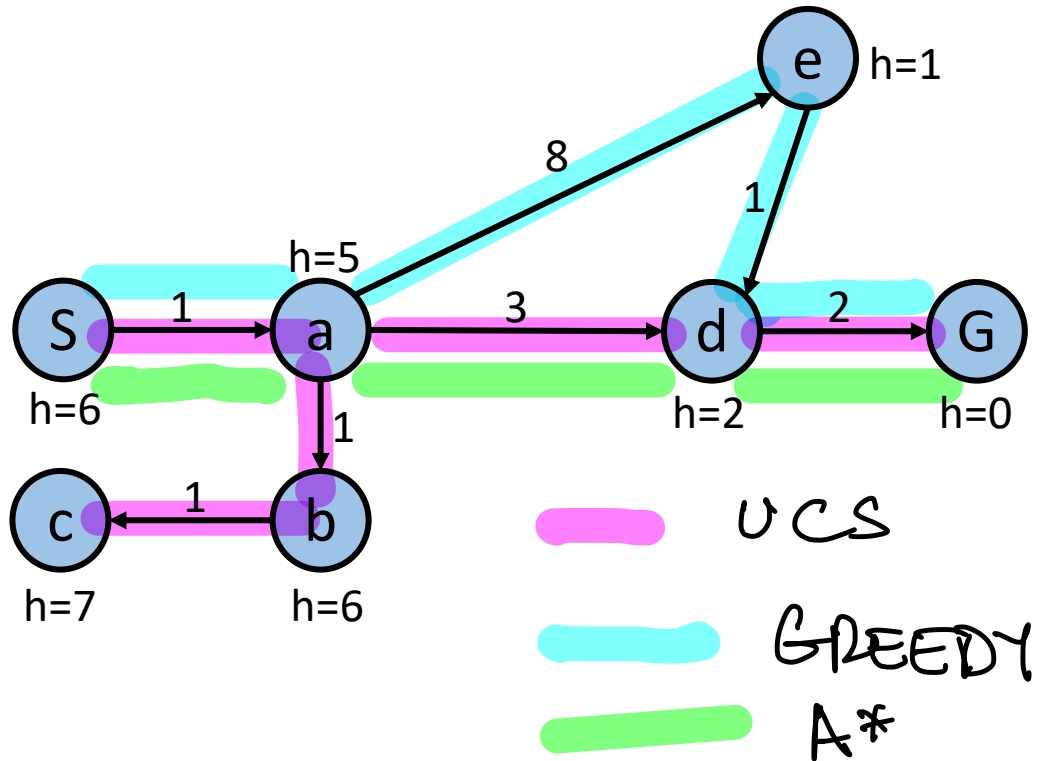


# A\* Search

**Example:** Compare Uniform Cost, Greedy Search, and A\* on the graph below. S→G



# LCS

	<u>F</u>	<u>R</u>	<u>ACTION</u>
$\phi$	S, 0	S	$S \rightarrow a(1)$
1.	a, 1	S, a	$a \rightarrow b(1+1), d(1+3), e(1+8)$
2.	b(2) d(4) e(9)	S, a, b	$b \rightarrow c(1+1+1)$
3.	c(3) d(4) e(9)	S, a, b, c	$c \rightarrow \phi$
4.	d(4) e(9)	S, a, b, c, d	$d \rightarrow g(1+3+2)$
5.	g(6) e(9)	S, a, b, c, g	$g \rightarrow \text{Popped.}$
			$\boxed{g \leftarrow d \leftarrow a \leftarrow S} = 6$

# GREEDY

F

R

ACTION

0. S

$s \rightarrow a(5),$

1. a

$a \rightarrow e(1), d(2), b(6)$

2. e

$e \rightarrow d(2)$

3. d

$d \rightarrow g(0)$

4. g

Path:  $g \leftarrow d \leftarrow e \leftarrow a \leftarrow s$

$s \rightarrow a \rightarrow e \rightarrow d \rightarrow g.$

A\*

<u>F</u>	<u>R</u>	<u>ACTION</u>
$\emptyset$ $s(6)$	$s$	$s \rightarrow a(1+5)$
1. $a(6)$	$s, a$	$a \rightarrow b(1+6), d(3+2),$ $e(8+1)$
2. $d(5)$ $b(7)$ $e(9)$	$s, a, d$	$d \rightarrow g(1+3+2)$
3. $g(6)$ $b(7)$ $e(9)$	$s, a, d, g$	$g \rightarrow \text{popped} \therefore \text{Done}$

Path  $g \leftarrow d \leftarrow a \leftarrow s$

$s \rightarrow a \rightarrow d \rightarrow g$     Path = 6