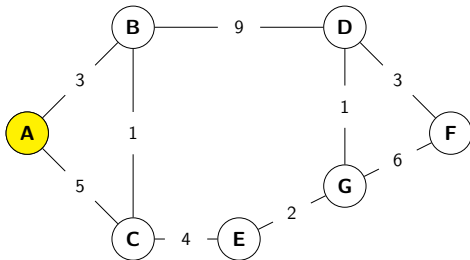


# Dijkstra's Algorithm

Lab 12

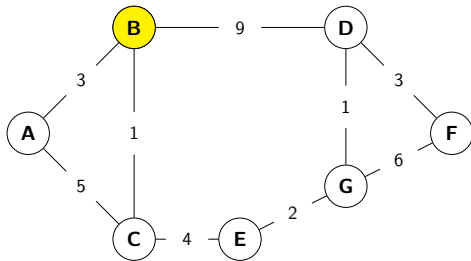
Fall 2025

## Dijkstra's Algorithm (Single Source Shortest Path)



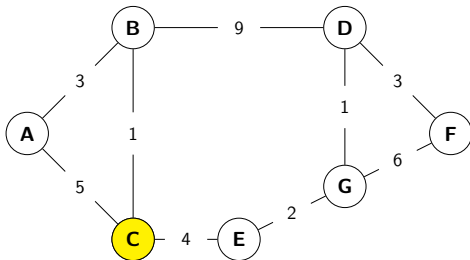
Step	A	B	C	D	E	F	G
A	0	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$

## Dijkstra's Algorithm (Single Source Shortest Path)



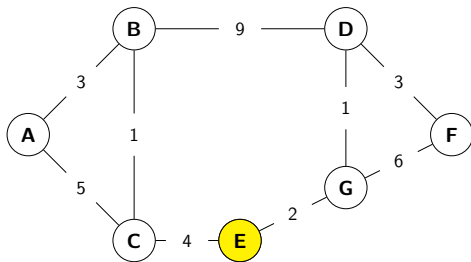
Step	A	B	C	D	E	F	G
A	0	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$
B	-	3	5	$\infty$	$\infty$	$\infty$	$\infty$

# Dijkstra's Algorithm (Single Source Shortest Path)



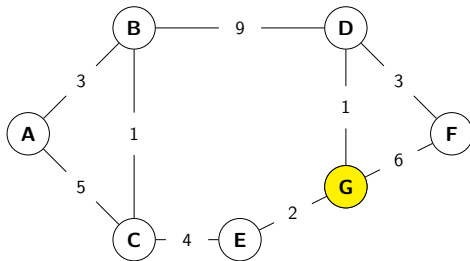
Step	A	B	C	D	E	F	G
A	0	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$
B	-	3	5	$\infty$	$\infty$	$\infty$	$\infty$
C	-	-	4	12	$\infty$	$\infty$	$\infty$

## Dijkstra's Algorithm (Single Source Shortest Path)



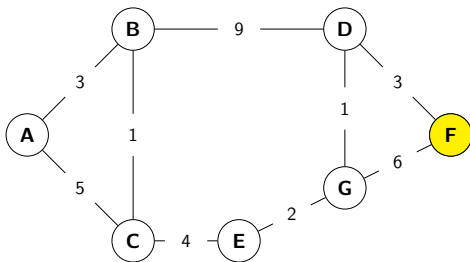
Step	A	B	C	D	E	F	G
A	0	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$
B	-	3	5	$\infty$	$\infty$	$\infty$	$\infty$
C	-	-	4	12	$\infty$	$\infty$	$\infty$
E	-	-	-	12	8	$\infty$	$\infty$

## Dijkstra's Algorithm (Single Source Shortest Path)



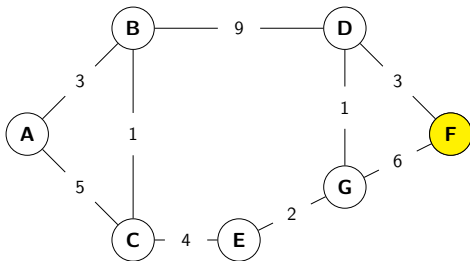
Step	A	B	C	D	E	F	G
A	0	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$
B	-	3	5	$\infty$	$\infty$	$\infty$	$\infty$
C	-	-	4	12	$\infty$	$\infty$	$\infty$
E	-	-	-	12	8	$\infty$	$\infty$
G	-	-	-	12	-	$\infty$	10

## Dijkstra's Algorithm (Single Source Shortest Path)



Step	A	B	C	D	E	F	G
A	0	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$
B	-	3	5	$\infty$	$\infty$	$\infty$	$\infty$
C	-	-	4	12	$\infty$	$\infty$	$\infty$
E	-	-	-	12	8	$\infty$	$\infty$
G	-	-	-	12	-	$\infty$	10
D	-	-	-	11	-	16	-

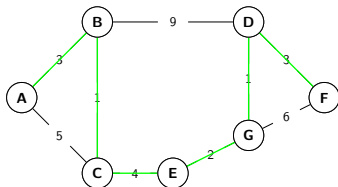
## Dijkstra's Algorithm (Single Source Shortest Path)



Step	A	B	C	D	E	F	G
A	0	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$
B	-	3	5	$\infty$	$\infty$	$\infty$	$\infty$
C	-	-	4	12	$\infty$	$\infty$	$\infty$
E	-	-	-	12	8	$\infty$	$\infty$
G	-	-	-	12	-	$\infty$	10
D	-	-	-	11	-	16	-
F	-	-	-	-	-	14	-



## Path Tracing from Source A to F



Step	A	B	C	D	E	F	G
Init	0	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$
A	-	$\infty$	5	$\infty$	$\infty$	$\infty$	$\infty$
B	-	3	5	12	$\infty$	$\infty$	$\infty$
C	-	-	4	12	$\infty$	$\infty$	$\infty$
E	-	-	-	12	8	$\infty$	$\infty$
G	-	-	-	12	-	16	10
D	-	-	-	11	-	16	-
F	-	-	-	-	-	14	-

**Path: A  $\rightarrow$  B  $\rightarrow$  C  $\rightarrow$  E  $\rightarrow$  G  $\rightarrow$  D  $\rightarrow$  F (Cost 14)**

## Shortest Paths From Source A to All Nodes

Node	Cost	Path
A	0	A
B	3	A → B
C	4	A → B → C
E	8	A → B → C → E
G	10	A → B → C → E → G
D	11	A → B → C → E → G → D
F	14	A → B → C → E → G → D → F