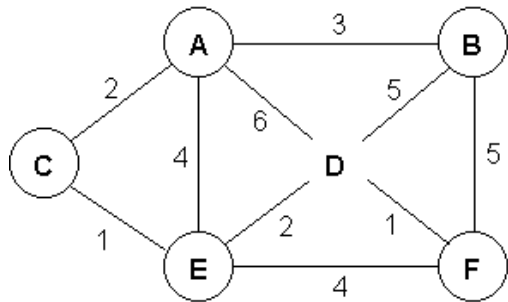# Routing Algorithms: Examples

Hui Chen
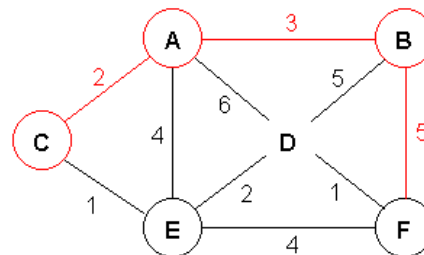
Computer & Information Science

Brooklyn College
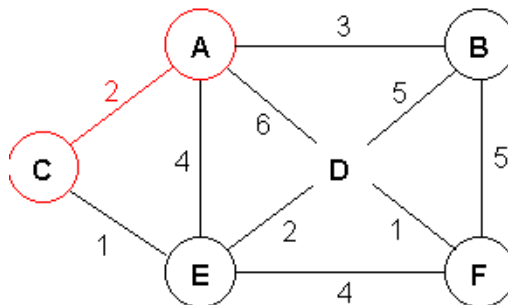
# Dijkstra's shortest path algorithm: Compute A's sink tree
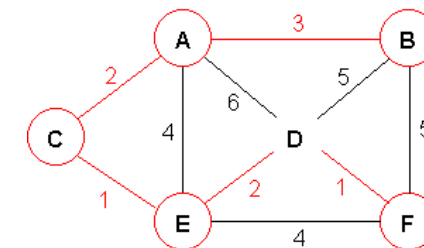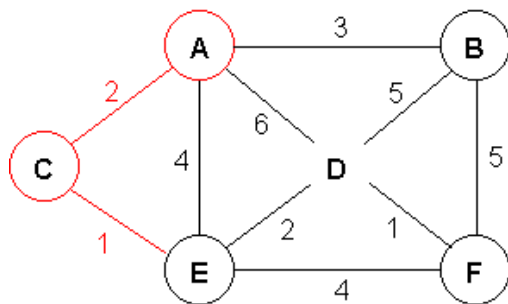


| Step | Costs B C D E F | visited? |
|------|-----------------|----------|
|      |                 |          |

| Step | Costs B | C | D | E | F | visited? |
|------|---------|---|---|---|---|----------|
| Init | 3 | 2 | 6 | 4 | - | C |
| 1 | 3 | 2 | 6 | 3 | - | B |
| 2 | 3 | 2 | 6 | 3 | 8 | |

| Step | Costs B | C | D | E | F | visited? |
|------|---------|---|---|---|---|----------|
| Init | 3 | 2 | 6 | 4 | - | C |

| Step | Costs B | C | D | E | F | visited? |
|------|---------|---|---|---|---|----------|
| Init | 3 | 2 | 6 | 4 | - | C |
| 1 | 3 | 2 | 6 | 3 | - | B |
| 2 | 3 | 2 | 6 | 3 | 8 | E |
| 3 | 3 | 2 | 5 | 3 | 7 | D |
| 4 | 3 | 2 | 5 | 3 | 6 | F |

| Step | Costs B | C | D | E | F | visited? |
|------|---------|---|---|---|---|----------|
| Init | 3 | 2 | 6 | 4 | - | C |
| 1 | 3 | 2 | 6 | 3 | - | |

• • • • • •

2

# Exercise 1

- Following the example illustrated and using the Dijkstra's shortest path algorithm, find the shortest path to all the other nodes from node D and show steps
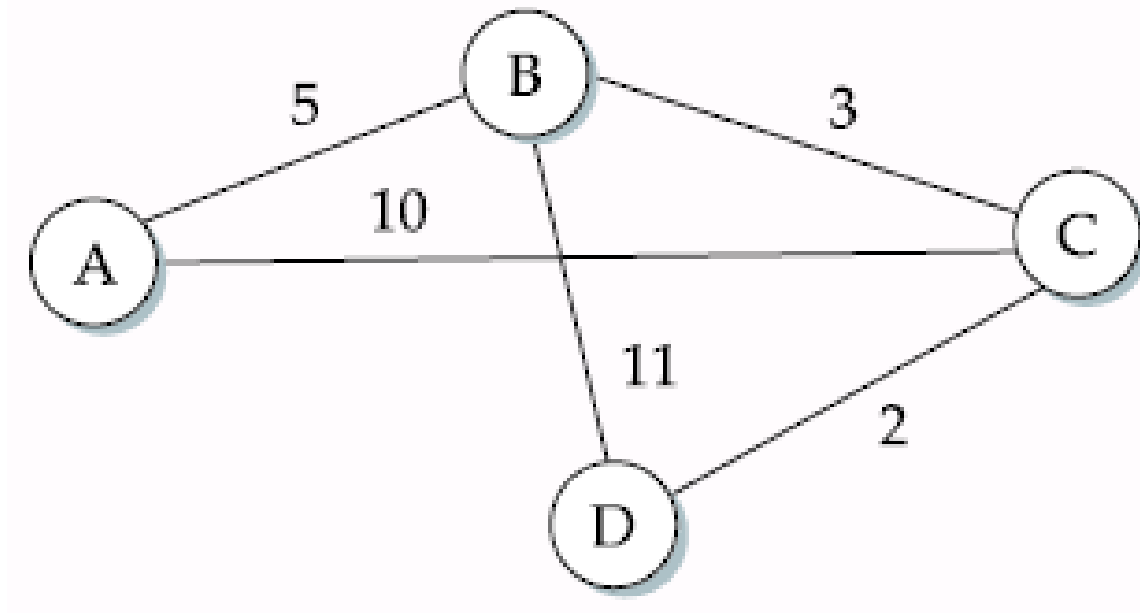
# Exercise 2

- Distance vector routing is used, and the following vectors have just come in to router *C*: from *B*: (5, 0, 8, 12, 6, 2); from *D*: (16, 12, 6, 0, 9, 10); and from *E*: (7, 6, 3, 9, 0, 4). The cost of the links from *C* to *B*, *D*, and *E*, are 6, 3, and 5, respectively. What is *C*'s new routing table? Give both the outgoing line to use and the cost.