

# DATA COMMUNICATOIN NETWORKING

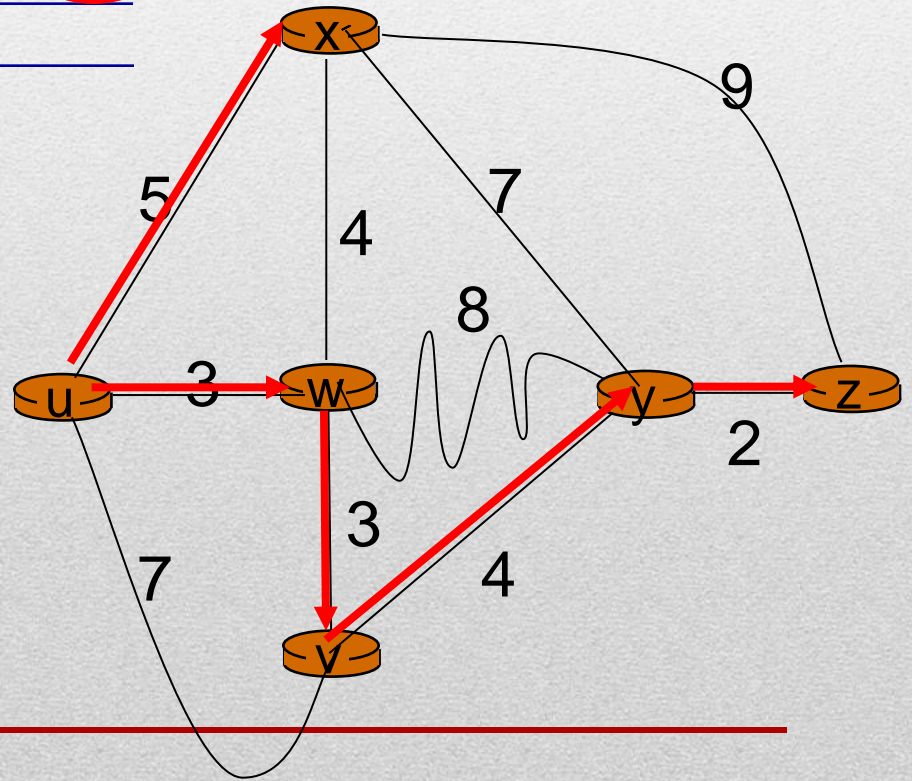
**Instructor:** Ouldooz Baghban Karimi

**Course Book & Slides:**

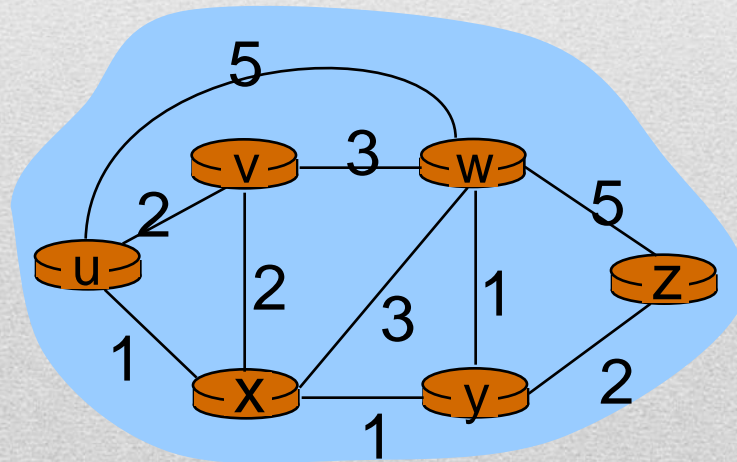
Computer Networking, A Top-Down Approach  
By: Kurose, Ross

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| Step | N'     | D(v)<br>p(v) | D(w)<br>p(w) | D(x)<br>p(x) | D(y)<br>p(y) | D(z)<br>p(z) |
|------|--------|--------------|--------------|--------------|--------------|--------------|
| 0    | u      | 7,u          | 3,u          | 5,u          | $\infty$     | $\infty$     |
| 1    | uw     | 6,w          |              | 5,u          | 11,w         | $\infty$     |
| 2    | uwx    | 6,w          |              |              | 11,w         | 14,x         |
| 3    | uwxv   |              |              |              | 10,v         | 14,x         |
| 4    | uwxvy  |              |              |              |              | 12,y         |
| 5    | uwxvyz |              |              |              |              |              |



| Step | N'     | D(v),p(v) | D(w),p(w) | D(x),p(x) | D(y),p(y) | D(z),p(z) |
|------|--------|-----------|-----------|-----------|-----------|-----------|
| 0    | u      | 2,u       | 5,u       | 1,u       | $\infty$  | $\infty$  |
| 1    | ux     | 2,u       | 4,x       |           | 2,x       | $\infty$  |
| 2    | uxy    | 2,u       | 3,y       |           |           | 4,y       |
| 3    | uxyv   |           | 3,y       |           |           | 4,y       |
| 4    | uxyvw  |           |           |           |           | 4,y       |
| 5    | uxyvwz |           |           |           |           | 4,y       |



$$D_x(y) = \min\{c(x,y) + D_y(y), c(x,z) + D_z(y)\}$$

$$= \min\{2+0, 7+1\} = 2$$

$$D_x(z) = \min\{c(x,y) + D_y(z), c(x,z) + D_z(z)\}$$

$$= \min\{2+1, 7+0\} = 3$$

**node x table**

|      |   | cost to  |          |          |
|------|---|----------|----------|----------|
|      |   | x        | y        | z        |
| from | x | 0        | 2        | 7        |
|      | y | $\infty$ | $\infty$ | $\infty$ |
|      | z | $\infty$ | $\infty$ | $\infty$ |

**node y table**

|      |   | cost to  |          |          |
|------|---|----------|----------|----------|
|      |   | x        | y        | z        |
| from | x | $\infty$ | $\infty$ | $\infty$ |
|      | y | 2        | 0        | 1        |
|      | z | $\infty$ | $\infty$ | $\infty$ |

**node z table**

|      |   | cost to  |          |          |
|------|---|----------|----------|----------|
|      |   | x        | y        | z        |
| from | x | $\infty$ | $\infty$ | $\infty$ |
|      | y | $\infty$ | $\infty$ | $\infty$ |
|      | z | 7        | 1        | 0        |

|      |   | cost to |   |   |
|------|---|---------|---|---|
|      |   | x       | y | z |
| from | x | 0       | 2 | 3 |
|      | y | 2       | 0 | 1 |
|      | z | 7       | 1 | 0 |

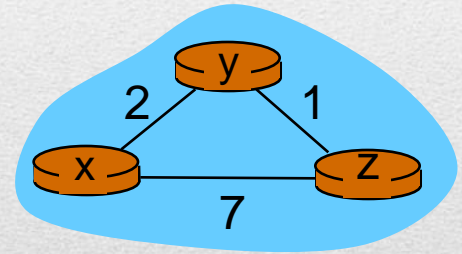
|      |   | cost to |   |   |
|------|---|---------|---|---|
|      |   | x       | y | z |
| from | x | 0       | 2 | 7 |
|      | y | 2       | 0 | 1 |
|      | z | 7       | 1 | 0 |

|      |   | cost to |   |   |
|------|---|---------|---|---|
|      |   | x       | y | z |
| from | x | 0       | 2 | 7 |
|      | y | 2       | 0 | 1 |
|      | z | 3       | 1 | 0 |

|      |   | cost to |   |   |
|------|---|---------|---|---|
|      |   | x       | y | z |
| from | x | 0       | 2 | 3 |
|      | y | 2       | 0 | 1 |
|      | z | 3       | 1 | 0 |

|      |   | cost to |   |   |
|------|---|---------|---|---|
|      |   | x       | y | z |
| from | x | 0       | 2 | 3 |
|      | y | 2       | 0 | 1 |
|      | z | 3       | 1 | 0 |

|      |   | cost to |   |   |
|------|---|---------|---|---|
|      |   | x       | y | z |
| from | x | 0       | 2 | 3 |
|      | y | 2       | 0 | 1 |
|      | z | 3       | 1 | 0 |



time