Assignment 2 - Example

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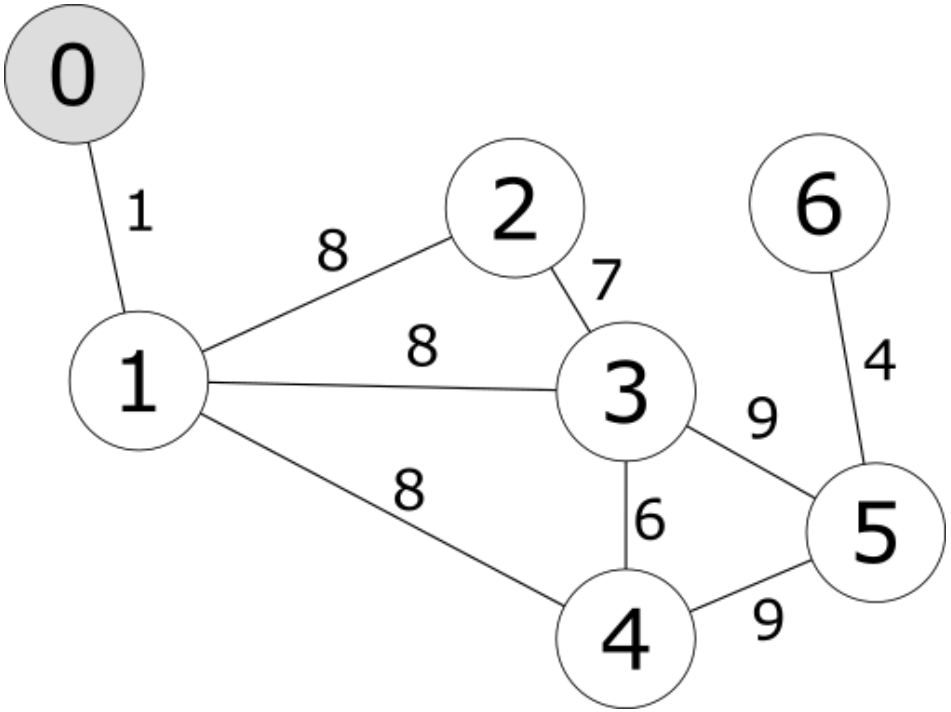
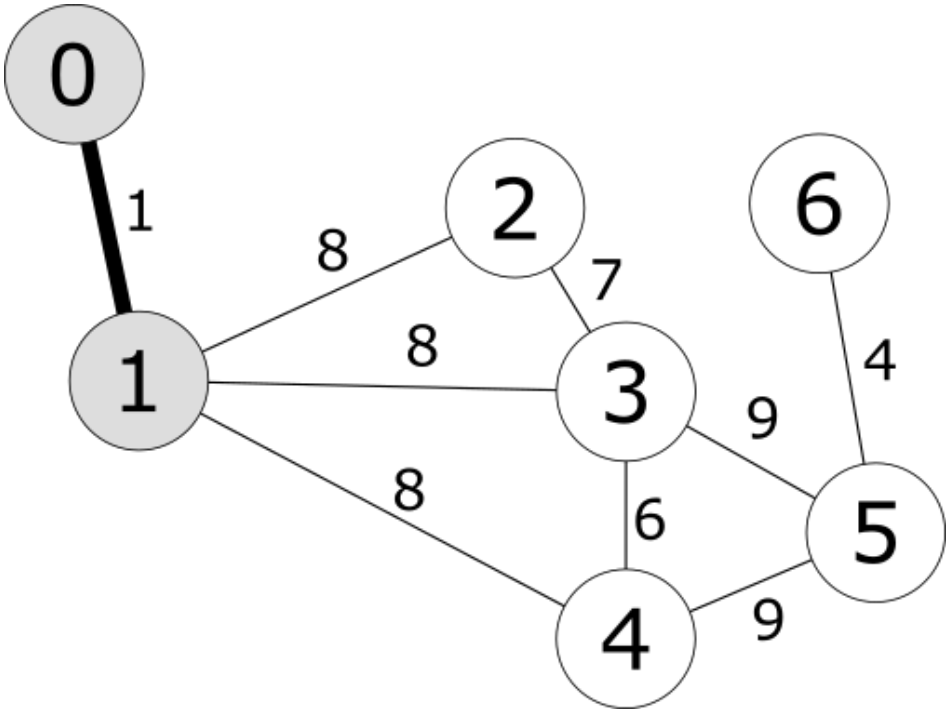
Prim's Algorithm



$C = \{1, 2, 3, 4, 5, 6\}$
$S = \emptyset$

$c = [0, 0, 0, 0, 0, 0, 0]$
$d = [0, 1, \infty, \infty, \infty, \infty, \infty]$

Prim's Algorithm



$k = 1$

$c[k] = 0$

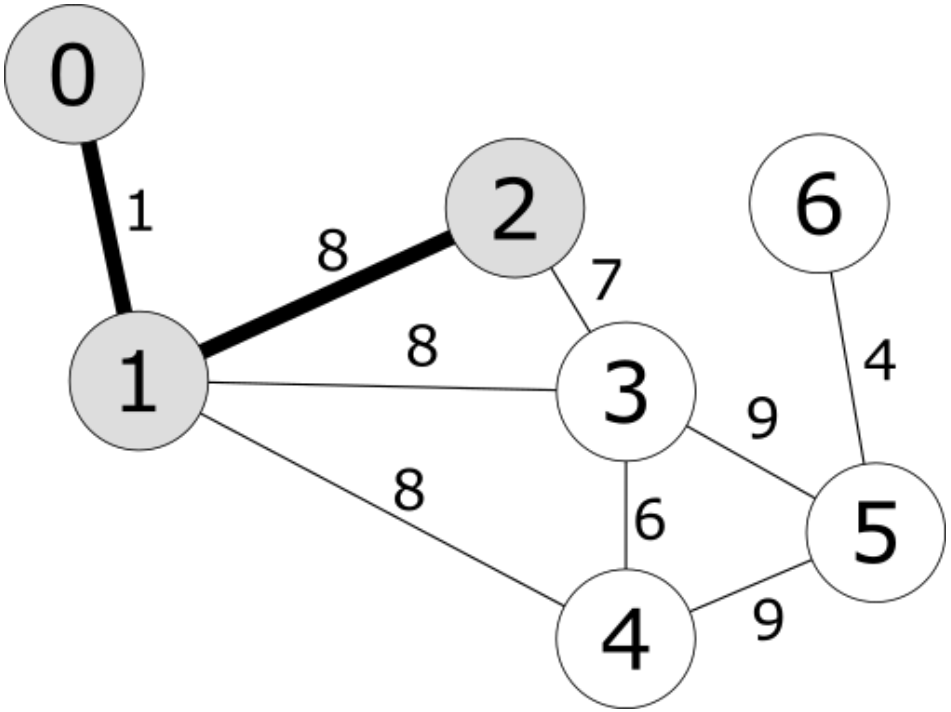
$C = \{2, 3, 4, 5, 6\}$

$S = \{\{0, 1\}\}$

$c = [0, 0, \mathbf{1}, \mathbf{1}, \mathbf{1}, 0, 0]$

$d = [0, 1, \mathbf{8}, \mathbf{8}, \mathbf{8}, \infty, \infty]$

Prim's Algorithm

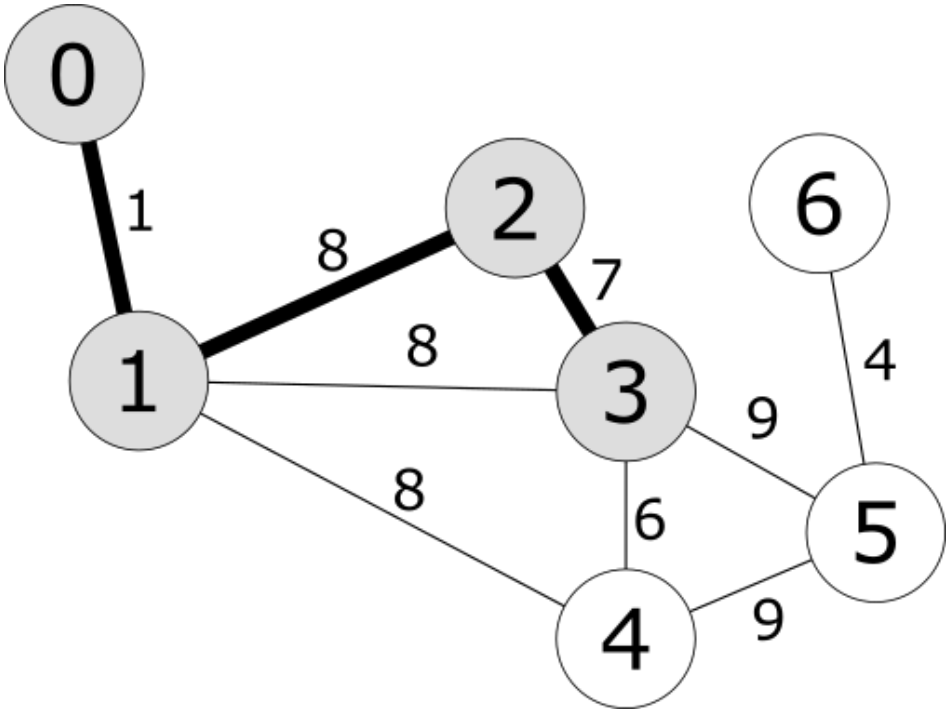


$k = 2$
$c[k] = 1$

$C = \{3, 4, 5, 6\}$
$S = \{\{0, 1\}, \{1, 2\}\}$

$c = [0, 0, 1, \mathbf{2}, 1, 0, 0]$
$d = [0, 1, 8, \mathbf{7}, 8, \infty, \infty]$

Prim's Algorithm



$k = 3$

$c[k] = 2$

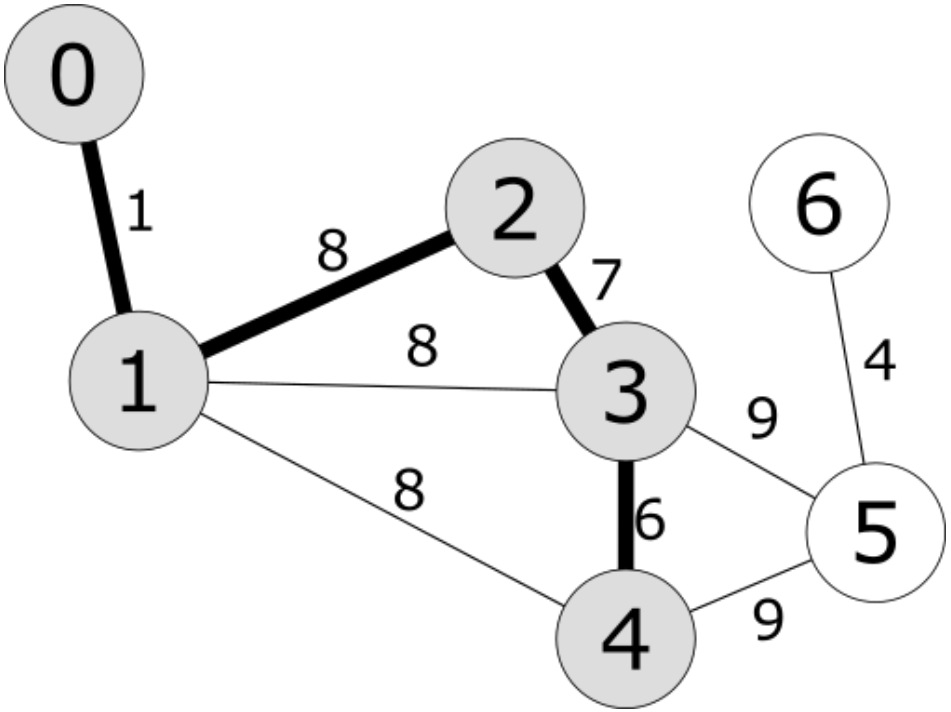
$C = \{4, 5, 6\}$

$S = \{\{0, 1\}, \{1, 2\}, \{2, 3\}\}$

$c = [0, 0, 1, 2, \mathbf{3}, \mathbf{3}, 0]$

$d = [0, 1, 8, 7, \mathbf{6}, \mathbf{9}, \infty]$

Prim's Algorithm



$k = 4$

$c[k] = 3$

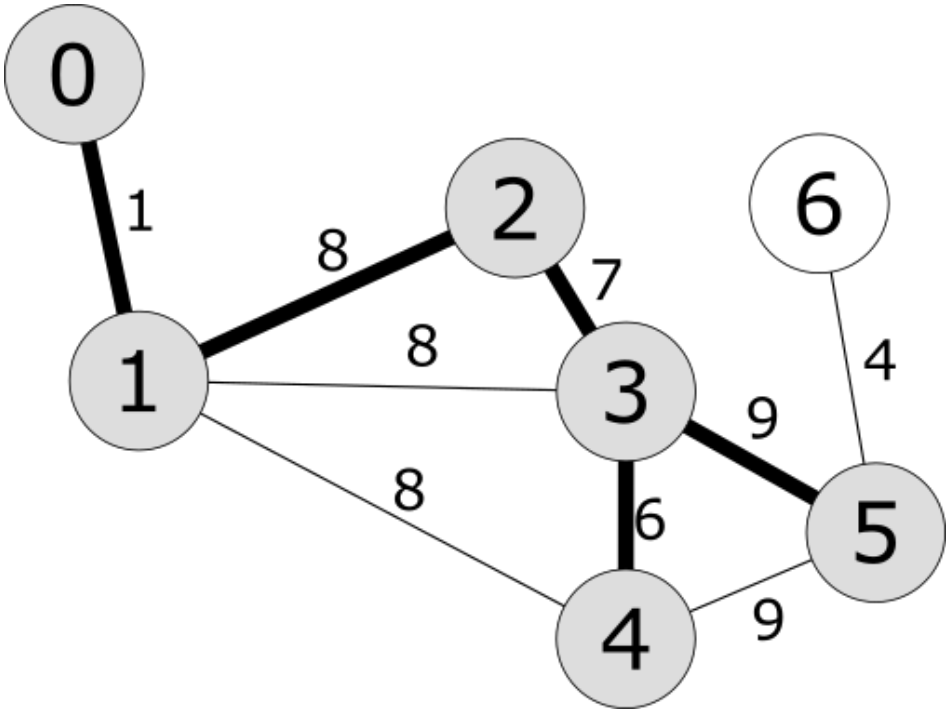
$C = \{5, 6\}$

$S = \{\{0, 1\}, \{1, 2\}, \{2, 3\}, \{3,4\}\}$

$c = [0, 0, 1, 2, 3, 3, 0]$

$d = [0, 1, 8, 7, 6, 9, \infty]$

Prim's Algorithm



$k = 5$

$c[k] = 3$

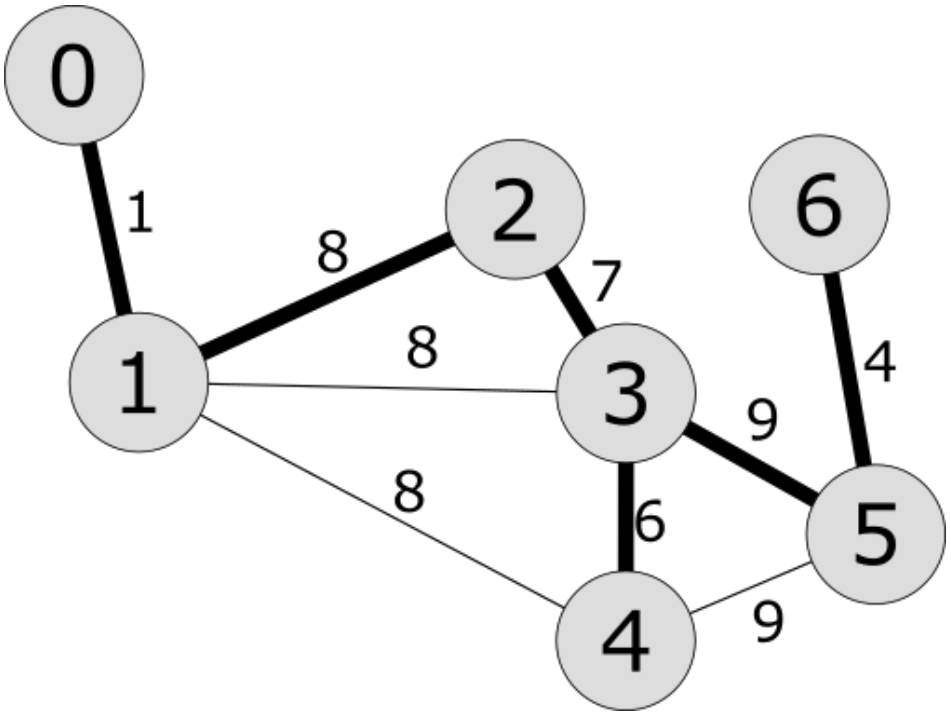
$C = \{6\}$

$S = \{\{0,1\},\{1,2\},\{2,3\},$
$\{3,4\},\{3,5\}\}$

$c = [0, 0, 1, 2, 3, 3, \mathbf{5}]$

$d = [0, 1, 8, 7, 6, 9, \mathbf{4}]$

Prim's Algorithm



$k = 6$
$c[k] = 5$

$C = \emptyset$
$S = \{\{0,1\},\{1,2\},\{2,3\},$
$\{3,4\},\{3,5\},\{5,9\}\}$

$c = [0,0,1,2,3,3,5]$
$d = [0,1,8,7,6,9,4]$

D=35