

## Adjacency Matrices - Software Testing

The adjacency matrix of a graph is a useful supplement to the incidence matrix. Because adjacency matrix deals with connections, they are the basic of many later graph theory concepts.

### Definition

The adjacency matrix of a graph  $G = (V, E)$  with  $m$  node is an  $m$  multiply  $m$  matrix. Where the element in row  $i$ , column  $j$  is a 1 if and only if an edge exists between node  $i$  and node  $j$ ; otherwise, the element is 0.

The adjacency matrix is symmetric (element  $i, j$  always equals element  $j, i$ ) and row sum is the degree of the node (as it was in the incidence matrix). The adjacency matrix of the graph in figure is:

	$n_1$	$n_2$	$n_3$	$n_4$	$n_5$	$n_6$	$n_7$
$n_1$	0	1	0	1	0	0	0
$n_2$	1	0	0	0	1	0	0
$n_3$	0	0	0	1	0	0	0
$n_4$	1	0	1	0	0	1	0
$n_5$	0	1	0	0	0	0	0
$n_6$	0	0	0	1	0	0	0
$n_7$	0	0	0	0	0	0	0