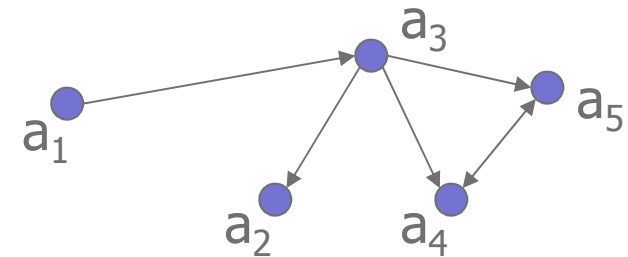




## Data storage

- › Adjacency matrix  $X = \begin{pmatrix} 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 & 0 \end{pmatrix}$
- › Node list



$a_1$	$a_3$
$a_2$	
$a_3$	$a_2, a_4, a_5$
$a_4$	$a_5$
$a_5$	$a_4$

- › Tie/arc/edge list

$a_1$	$a_3$	1
$a_3$	$a_2$	1
$a_3$	$a_4$	1
$a_3$	$a_5$	1
$a_4$	$a_5$	1
$a_5$	$a_4$	1