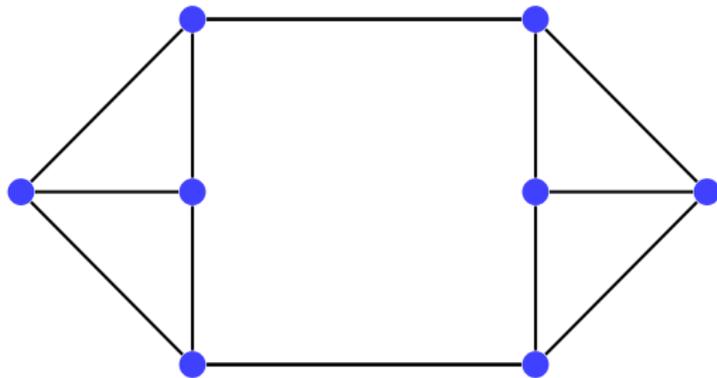
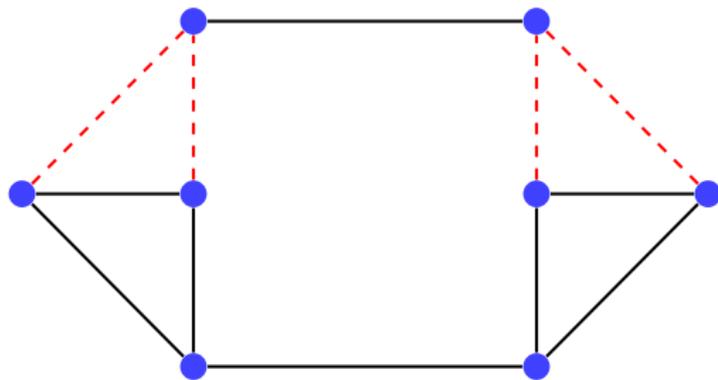


# Karger's Min-Cut Algorithm

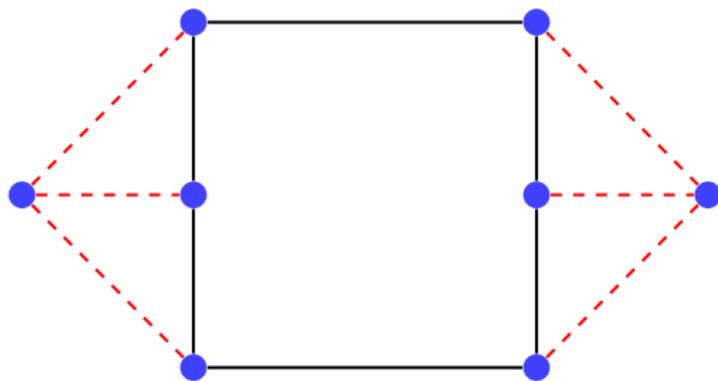
# Cuts in graphs



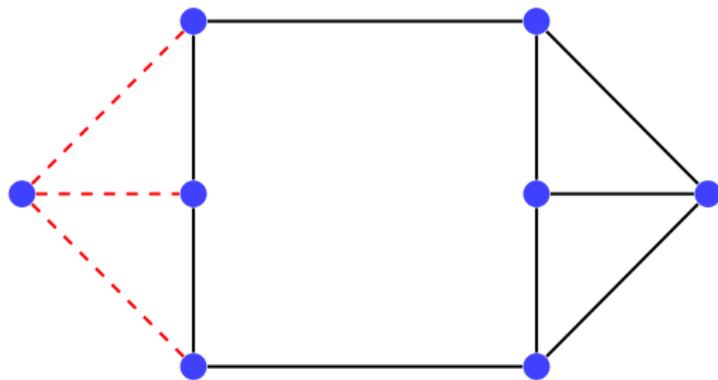
## Cuts in graphs: Example 1



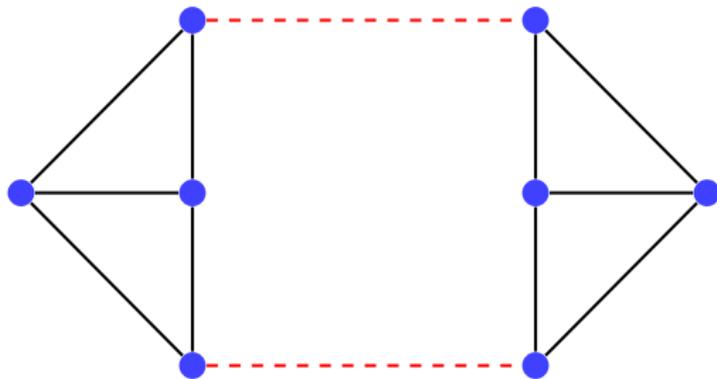
## Cuts in graphs: Example 2



## Cuts in graphs: Example 3



# Minimum Cut



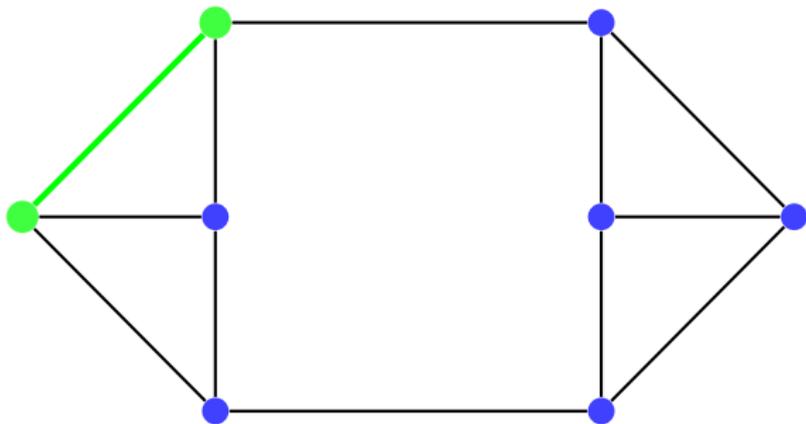
## Facts about minimum cut

- Minimum cut  $\leq$  Minimum degree
- Computed by max-flow algorithm
- Polynomial time
- Karger: Simple randomized algorithm

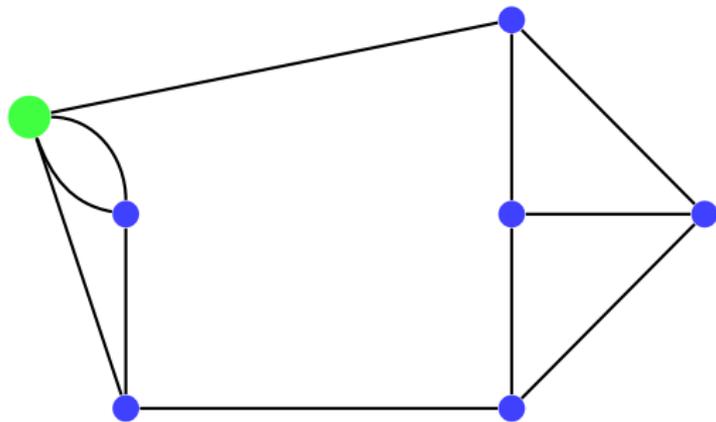
# The Algorithm

- 1 Pick a random edge  $uv$
- 2 Merge  $u$  and  $v$  into a single vertex.
- 3 Repeat until 2 vertices.

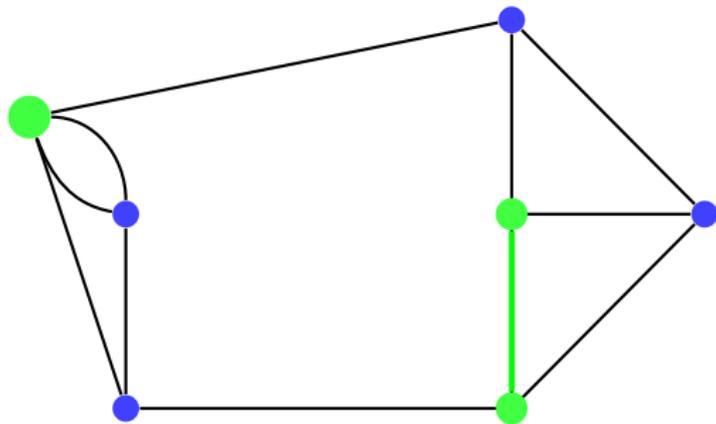
# The Algorithm



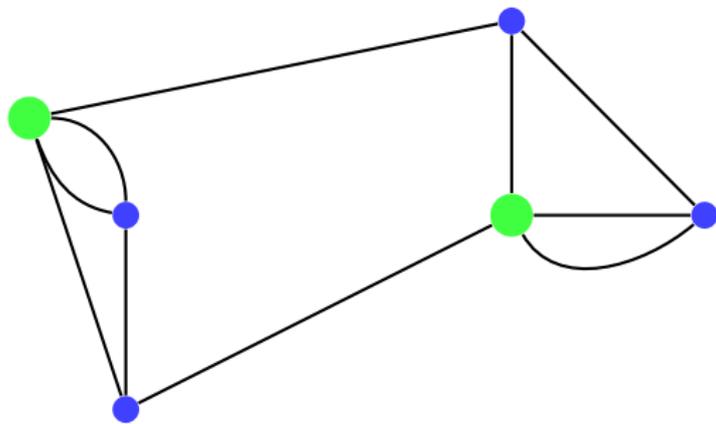
# The Algorithm



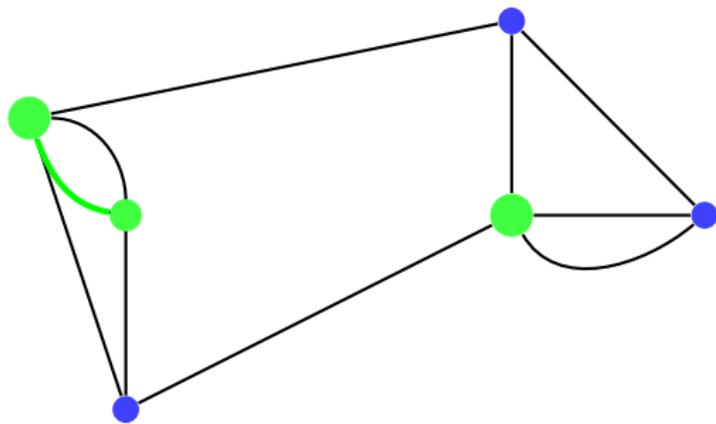
# The Algorithm



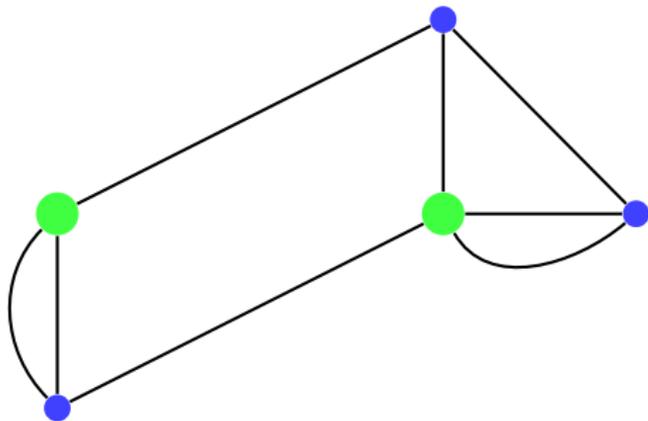
# The Algorithm



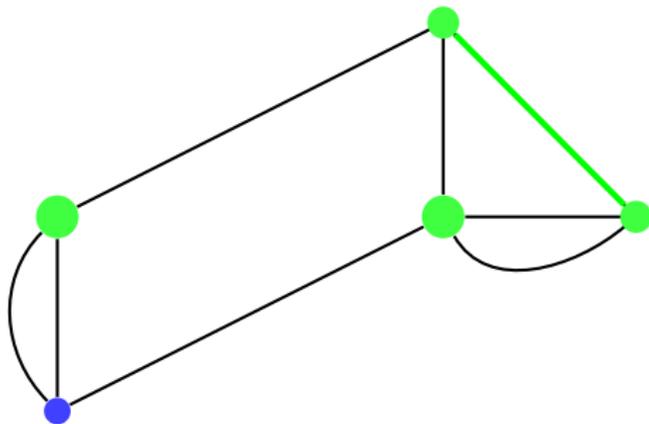
# The Algorithm



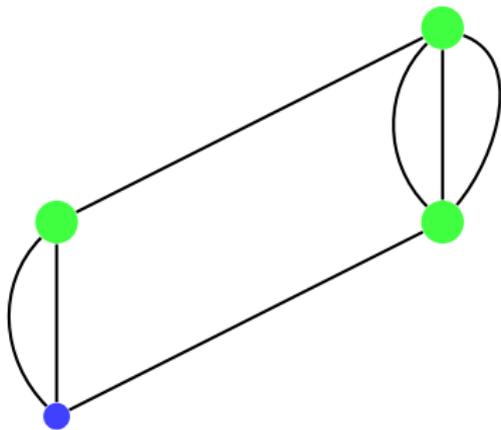
# The Algorithm



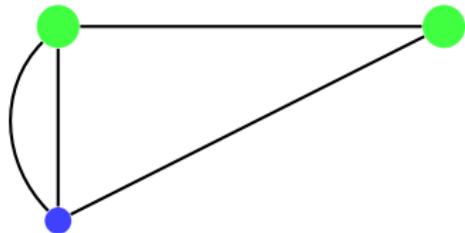
# The Algorithm



# The Algorithm



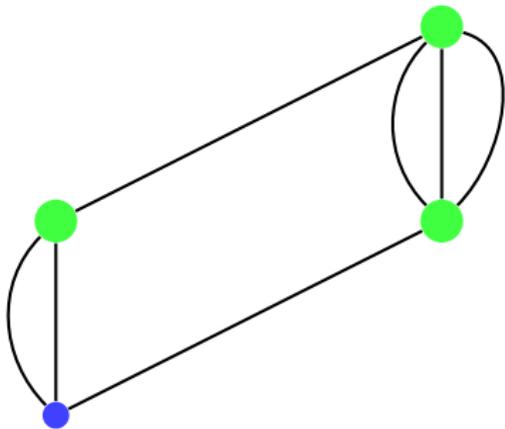
# The Algorithm



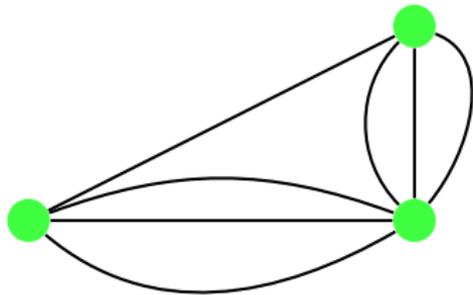
# The Algorithm



# The Algorithm



# The Algorithm



# The Algorithm

