

S7ICT. Graphs

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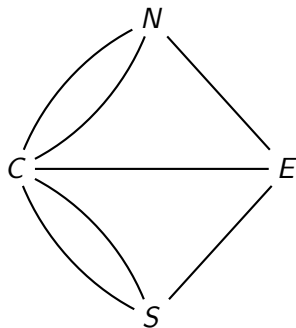
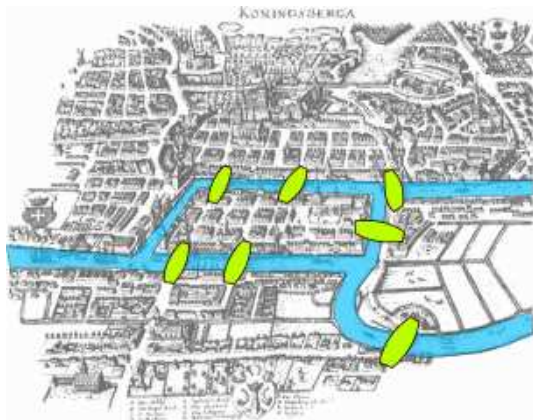
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- Examples of graphs
- (Some) graph theory
- A special type of graphs : trees

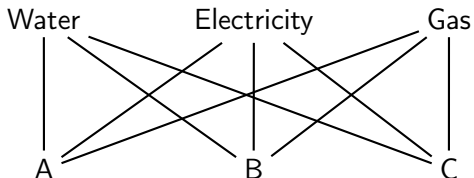
A first example : the Königsberg bridges



Source : Wikimedia Commons.

1736 : Euler wants to travel through the 7 bridges of this city without travelling twice on the same bridge.

Planar graphs : the three utilities problem

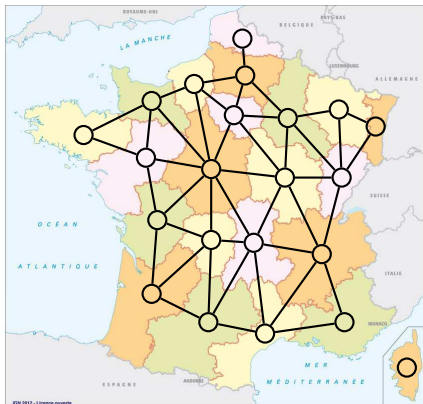


Is it possible to draw the 9 pipes from each utility to each house without making them cross ?

Planar graphs : 4 colors only



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The associated graph.

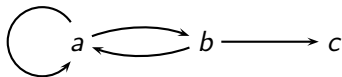
A simple, oriented graph is given by a set V (the vertices) and a set $E \subset V \times V$ (the edges).

Later on, we'll use $n = |V|$ (number of vertices) and $m = |E|$ (number of edges).

Here is an “abstract” example to illustrate :

- $V = \{a; b; c\}$
- $E = \{(a, a); (a, b); (b, a); (b, c)\}$

It's a graph with 3 vertices and 4 edges. Let's draw it!



Extract from Brussels subway map

