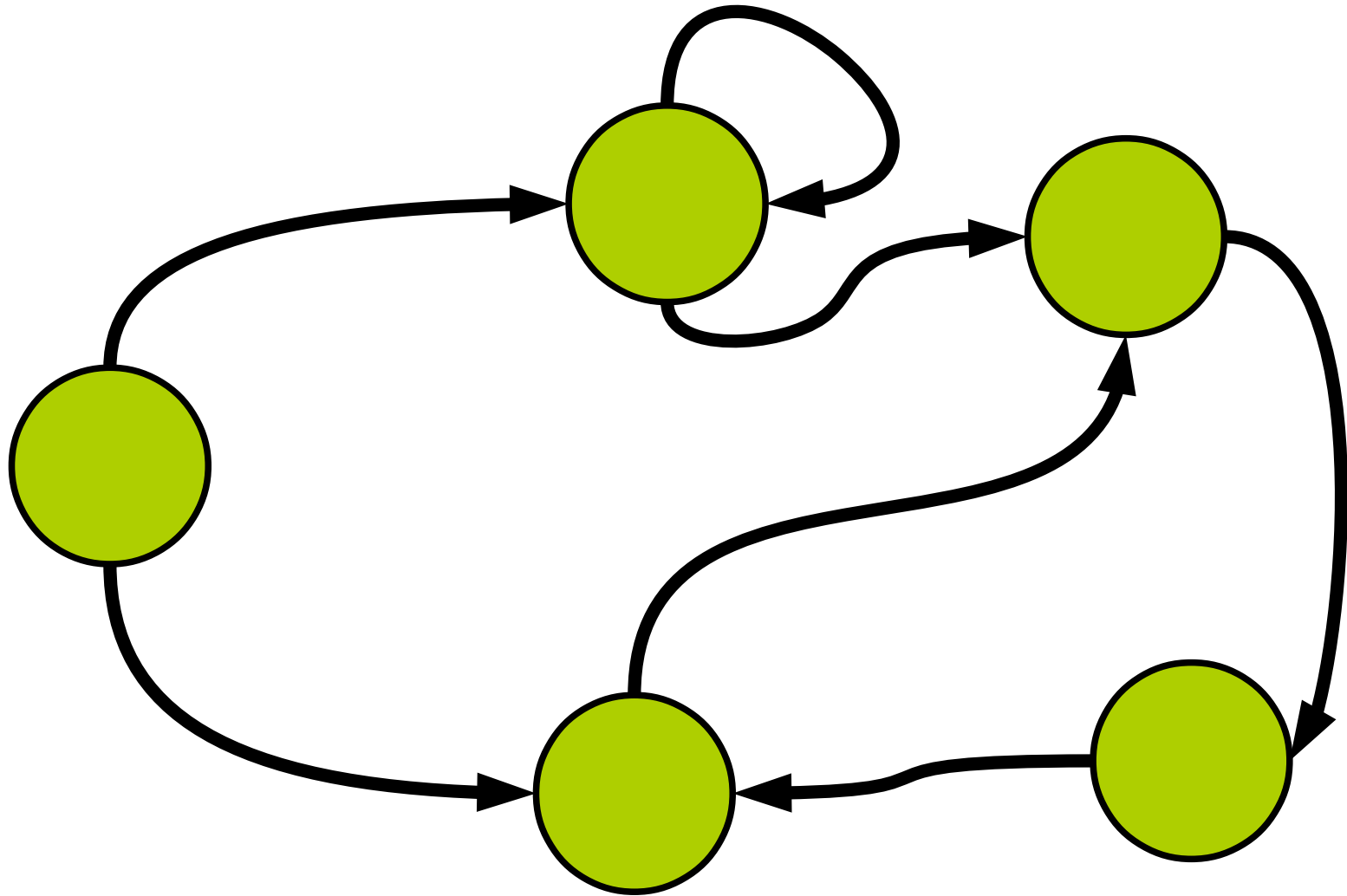


# Graphes et parcours de graphe

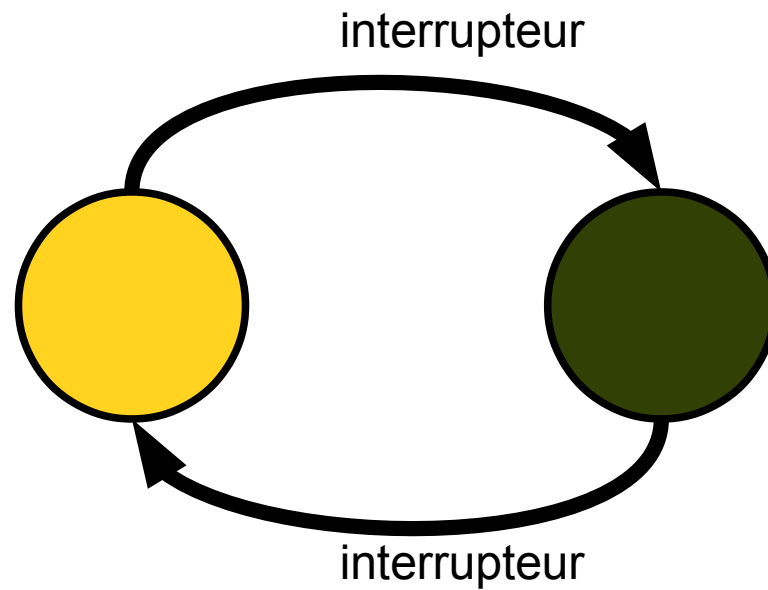
# Exemple



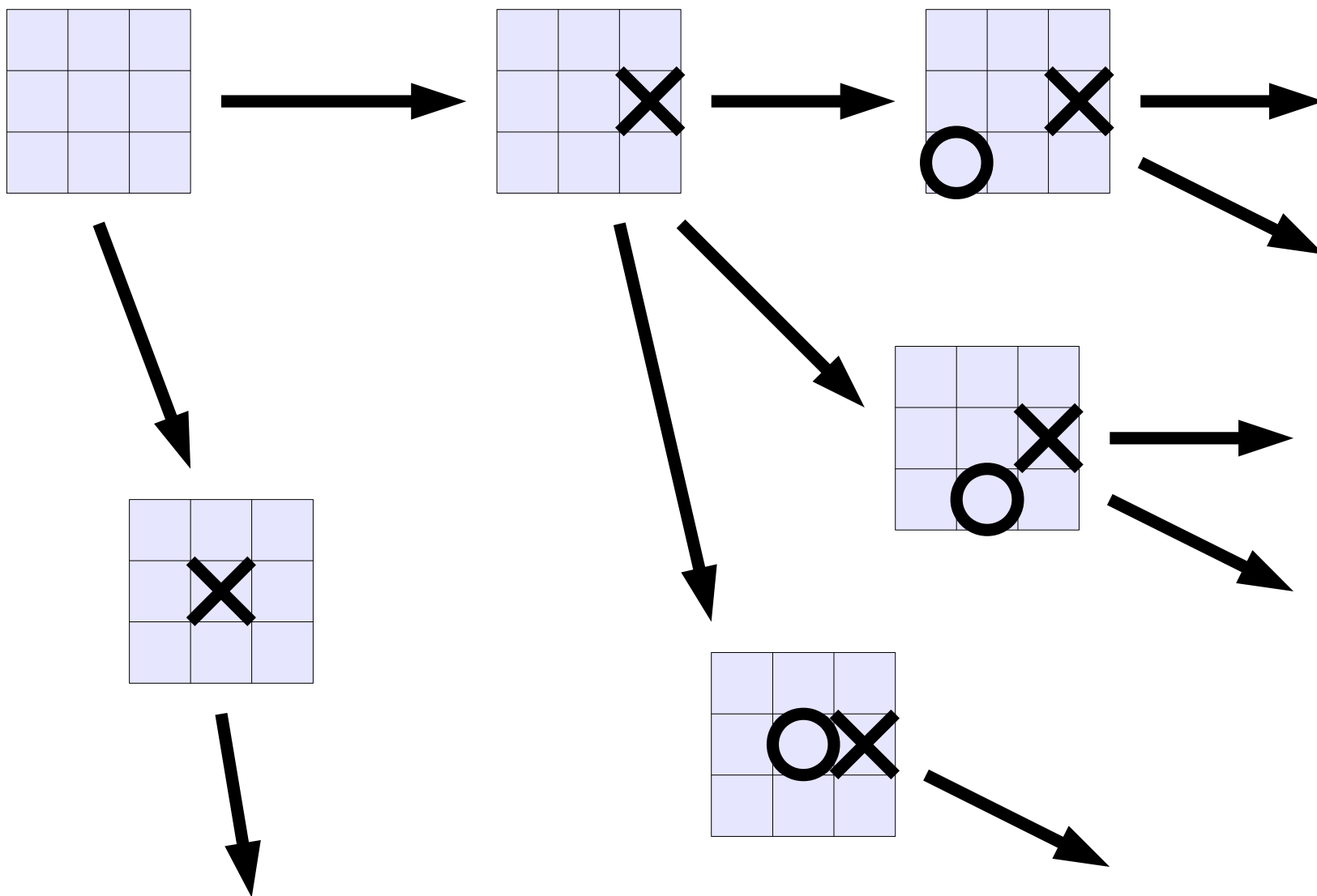
# Applications

- Machine
- Espace
- Dépendances entre tâches
- Expressions
- Réseau
- Contraintes

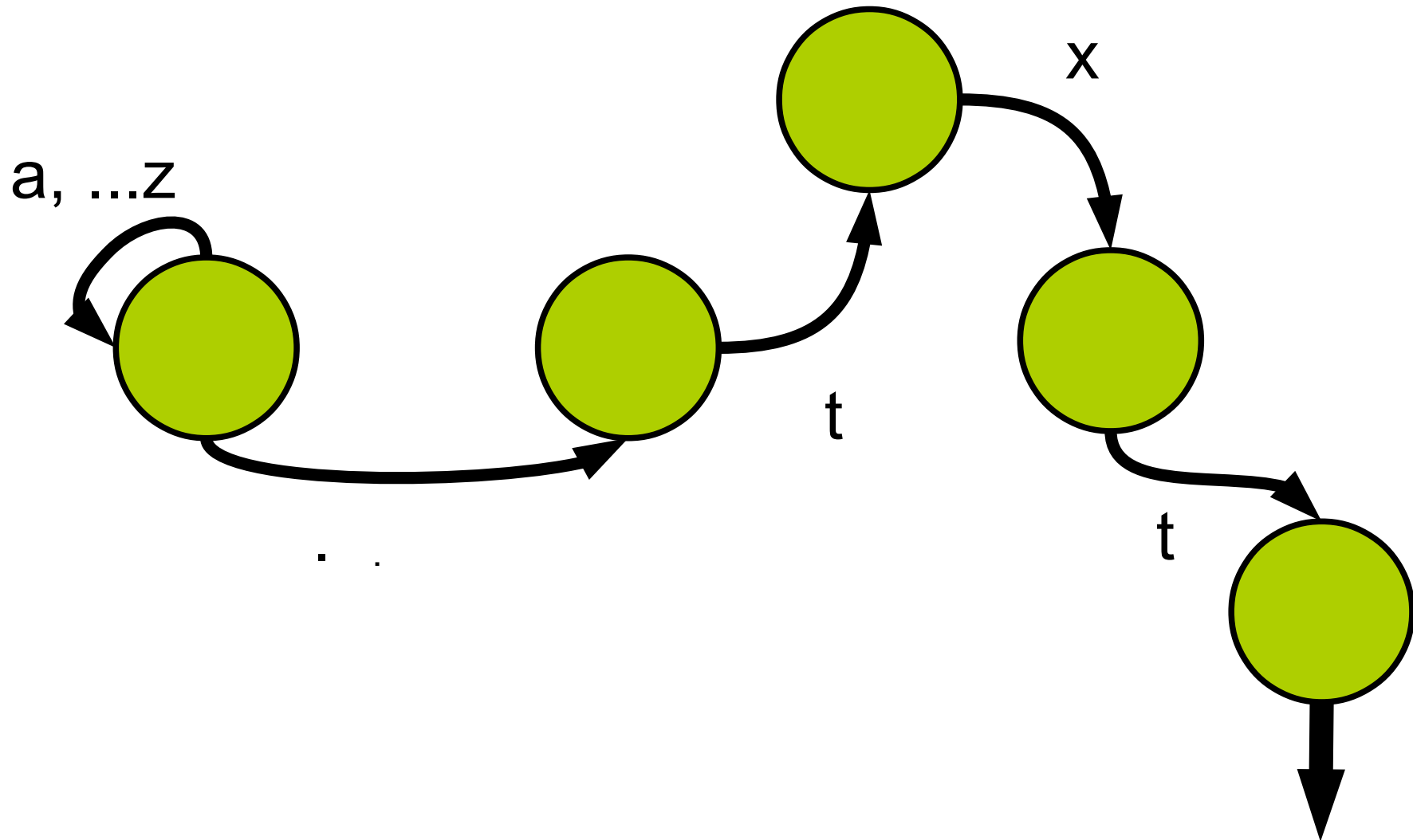
# Etats d'une machine



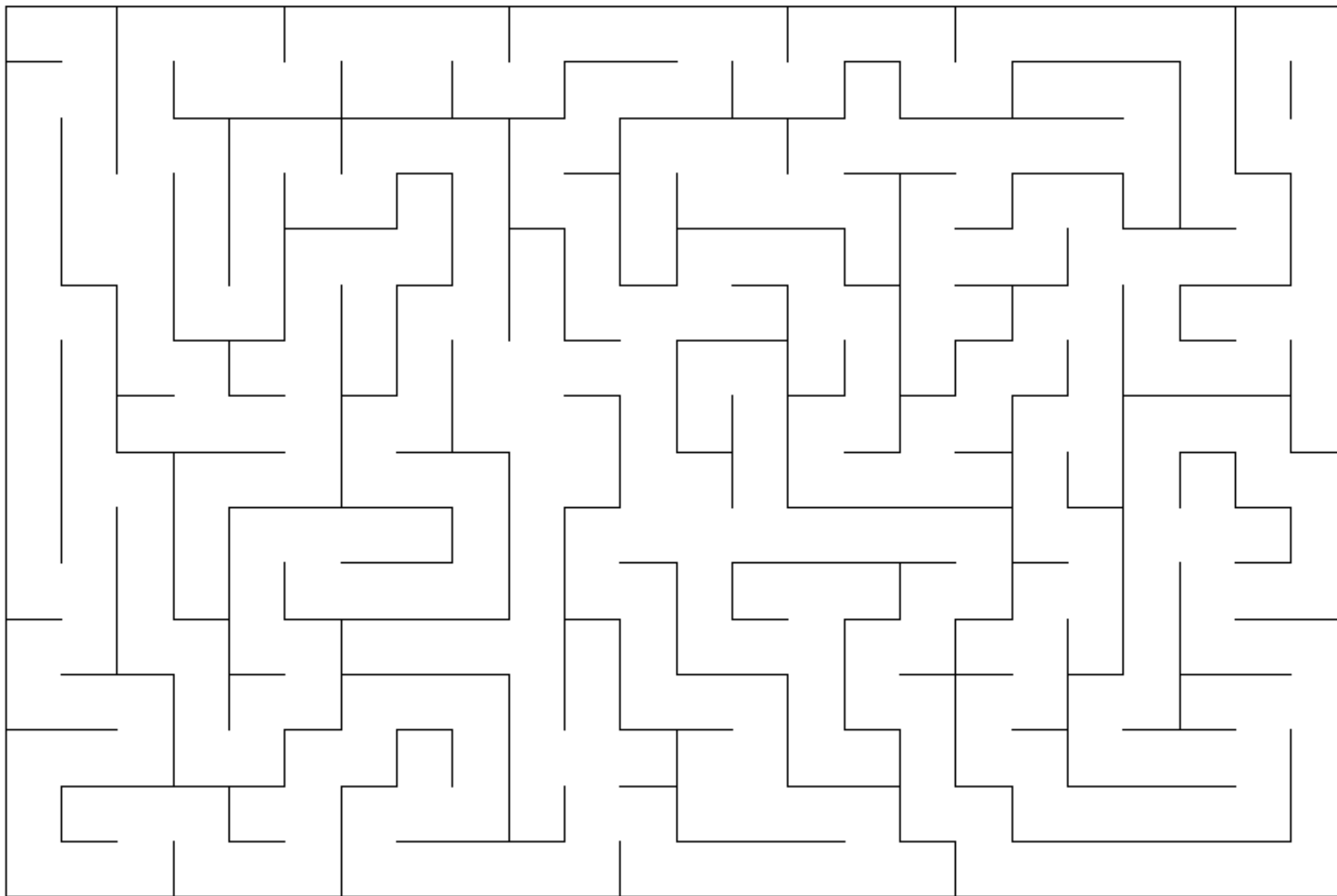
# Etats dans un jeu



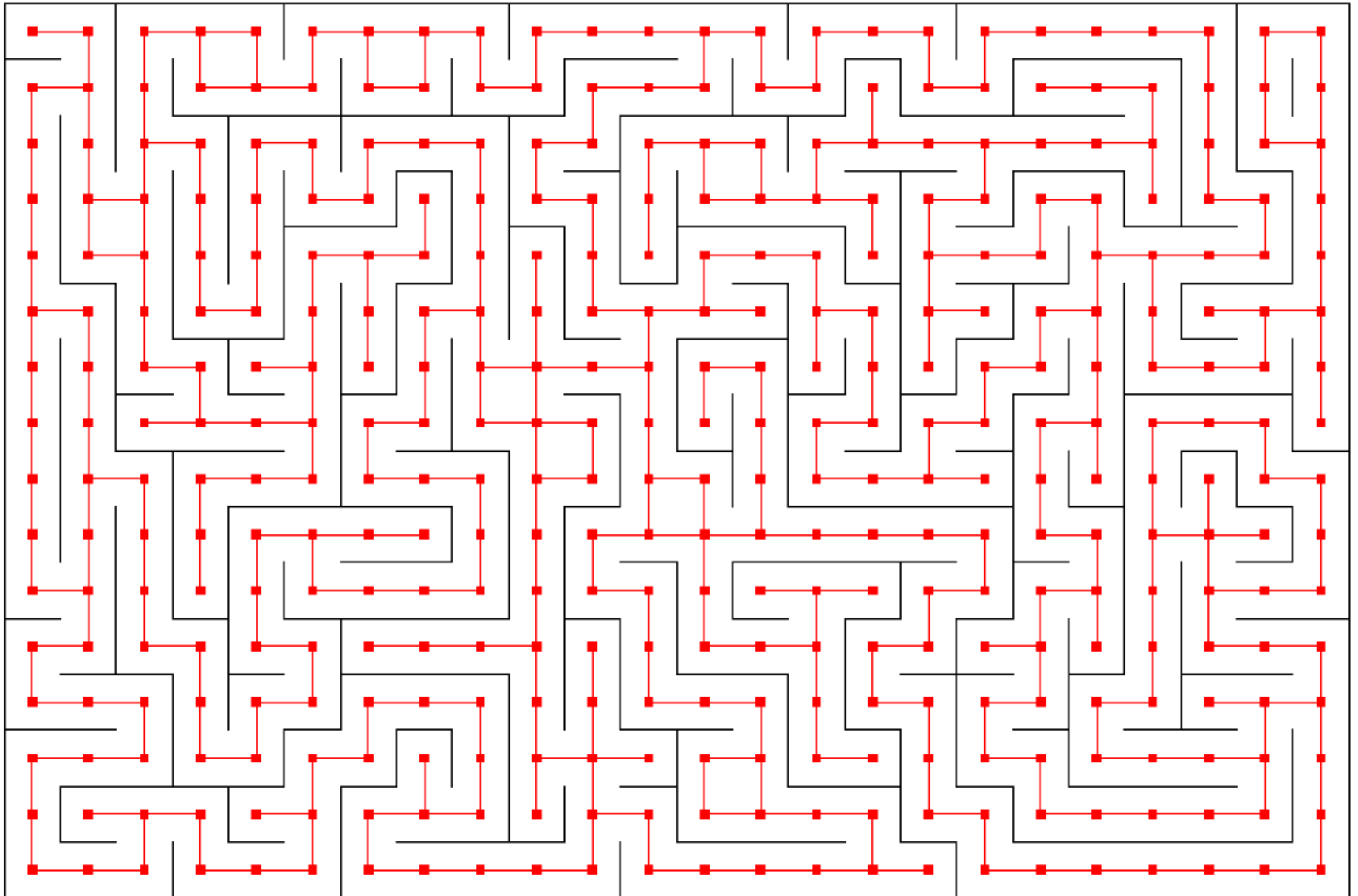
# Automates finis



# Labyrinth

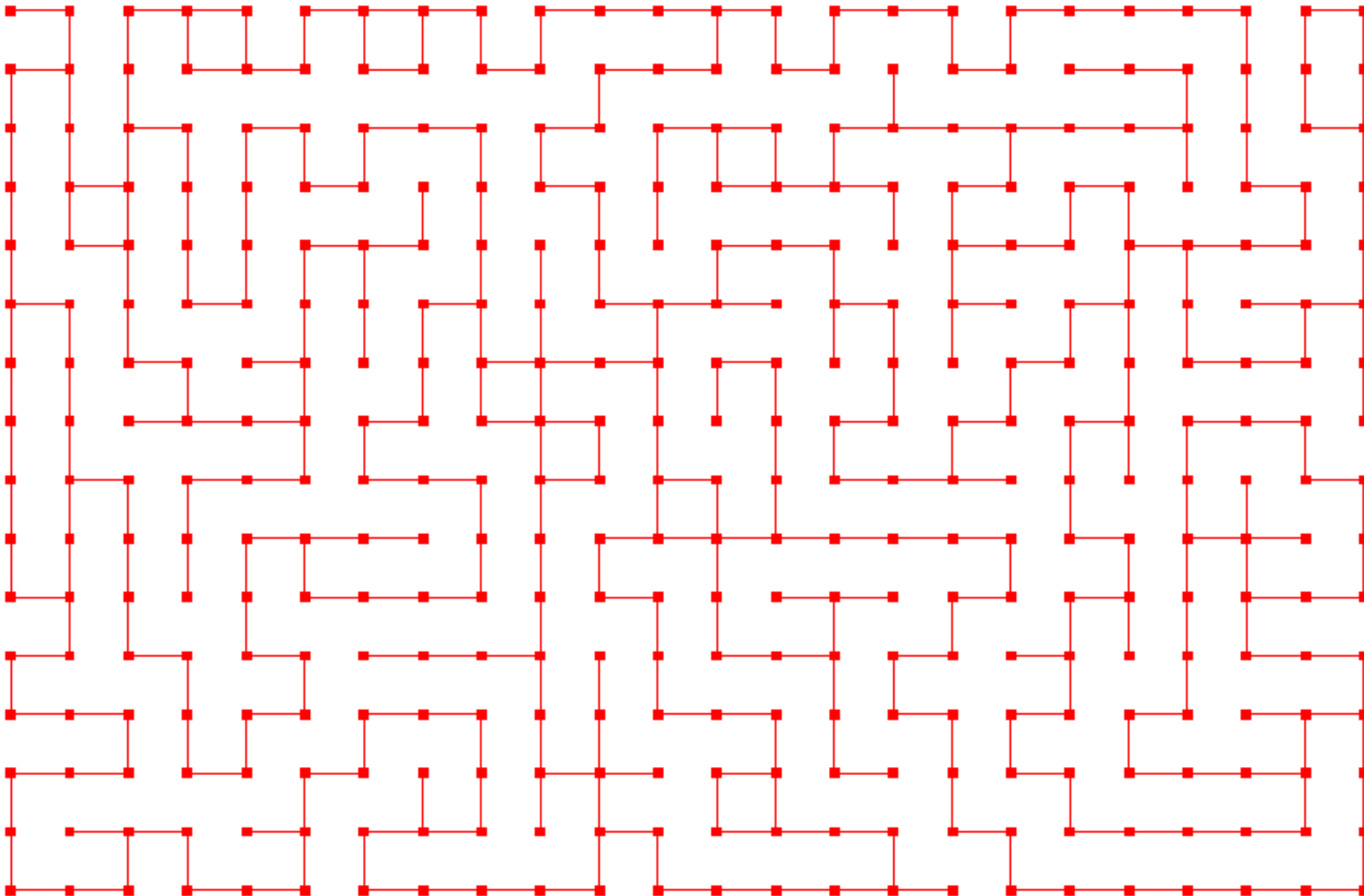


# Labyrinth





# Labyrinth



# Espace



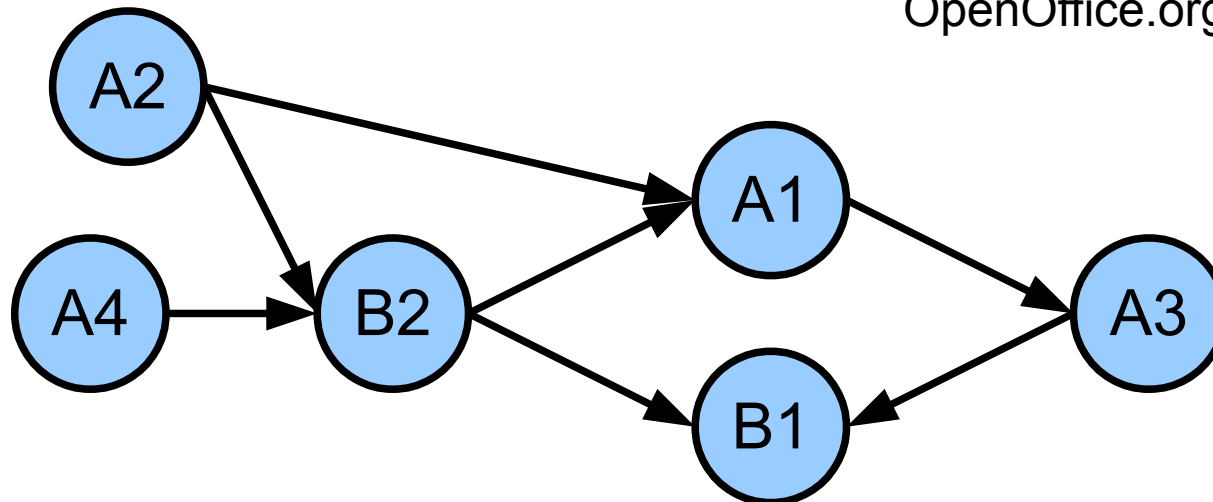
# Espace



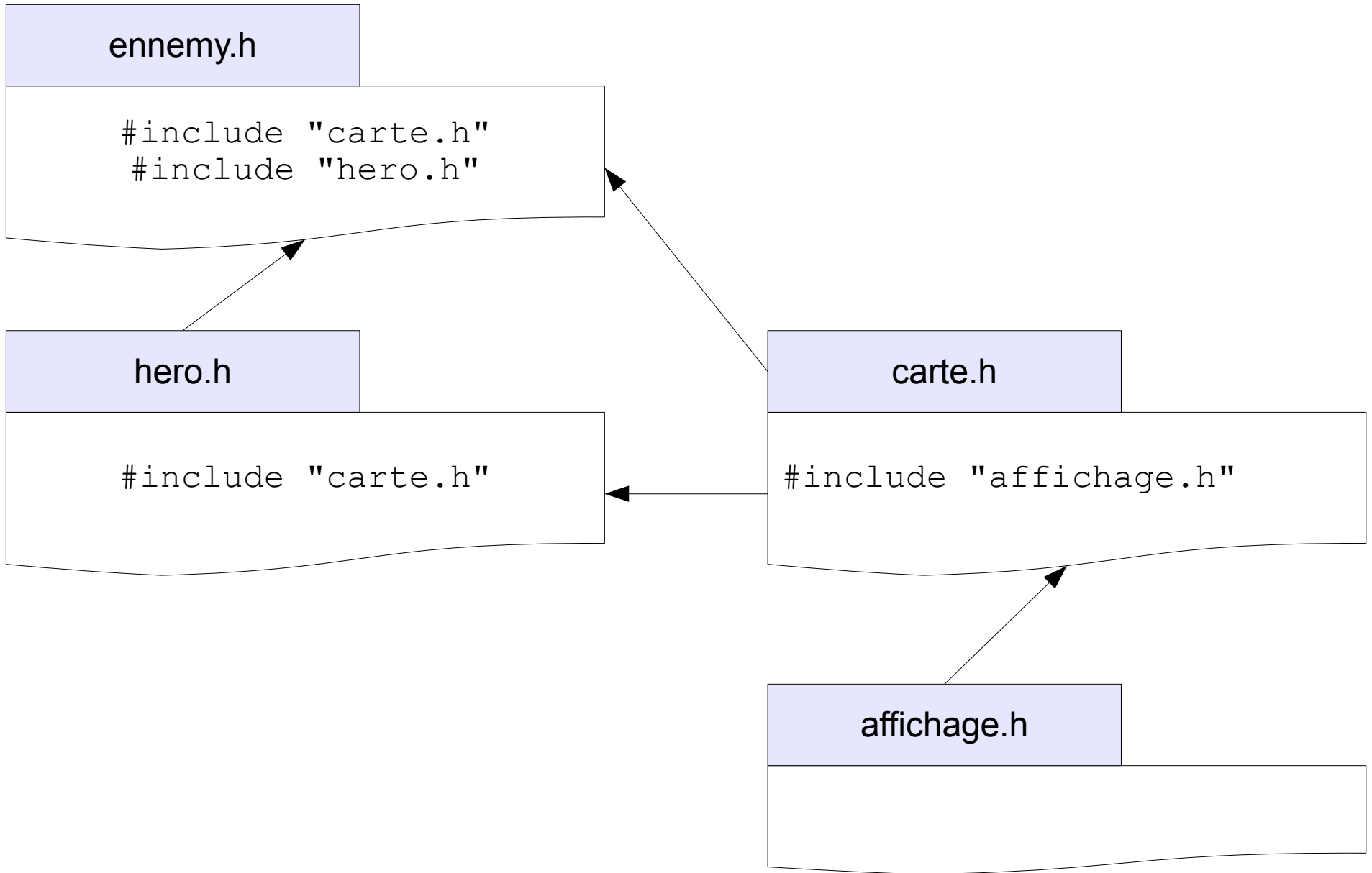
# Graphe de dépendance

	A		B		C
1	=A2+B2	16	=A3+B2	29	
2		3	=A2+A4	13	
3	=A1	16			
4		10			
5					

OpenOffice.org Calc

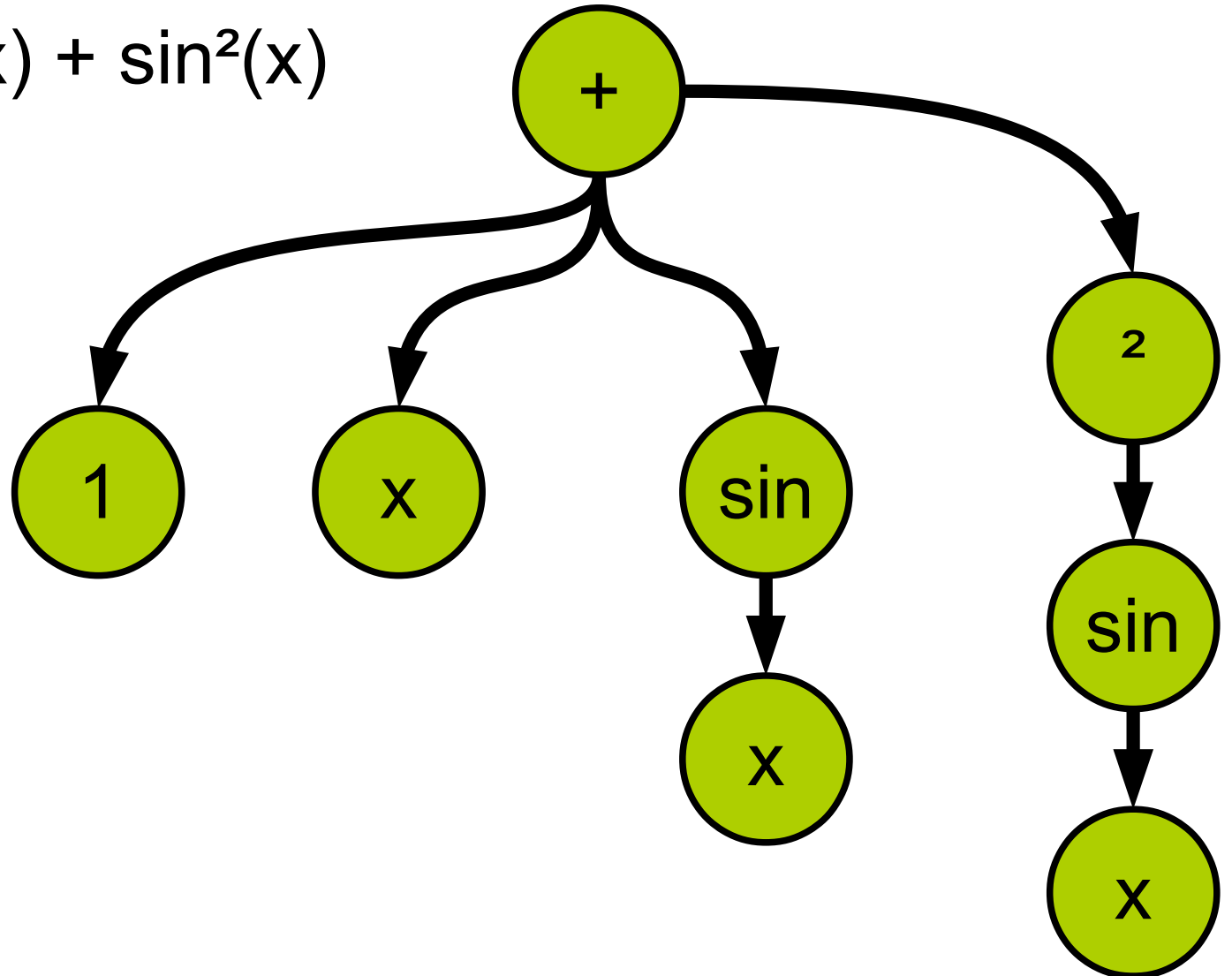


# Graphe de dépendance : compilation



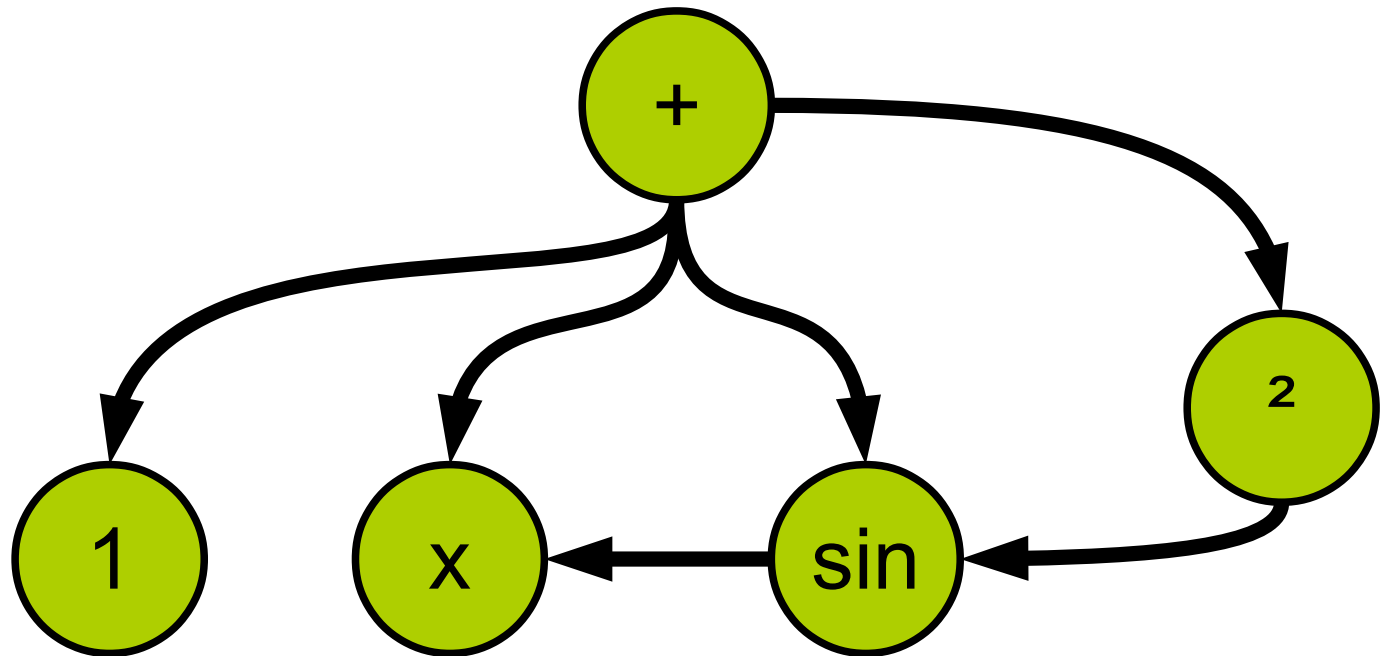
# Expressions

$1 + x + \sin(x) + \sin^2(x)$

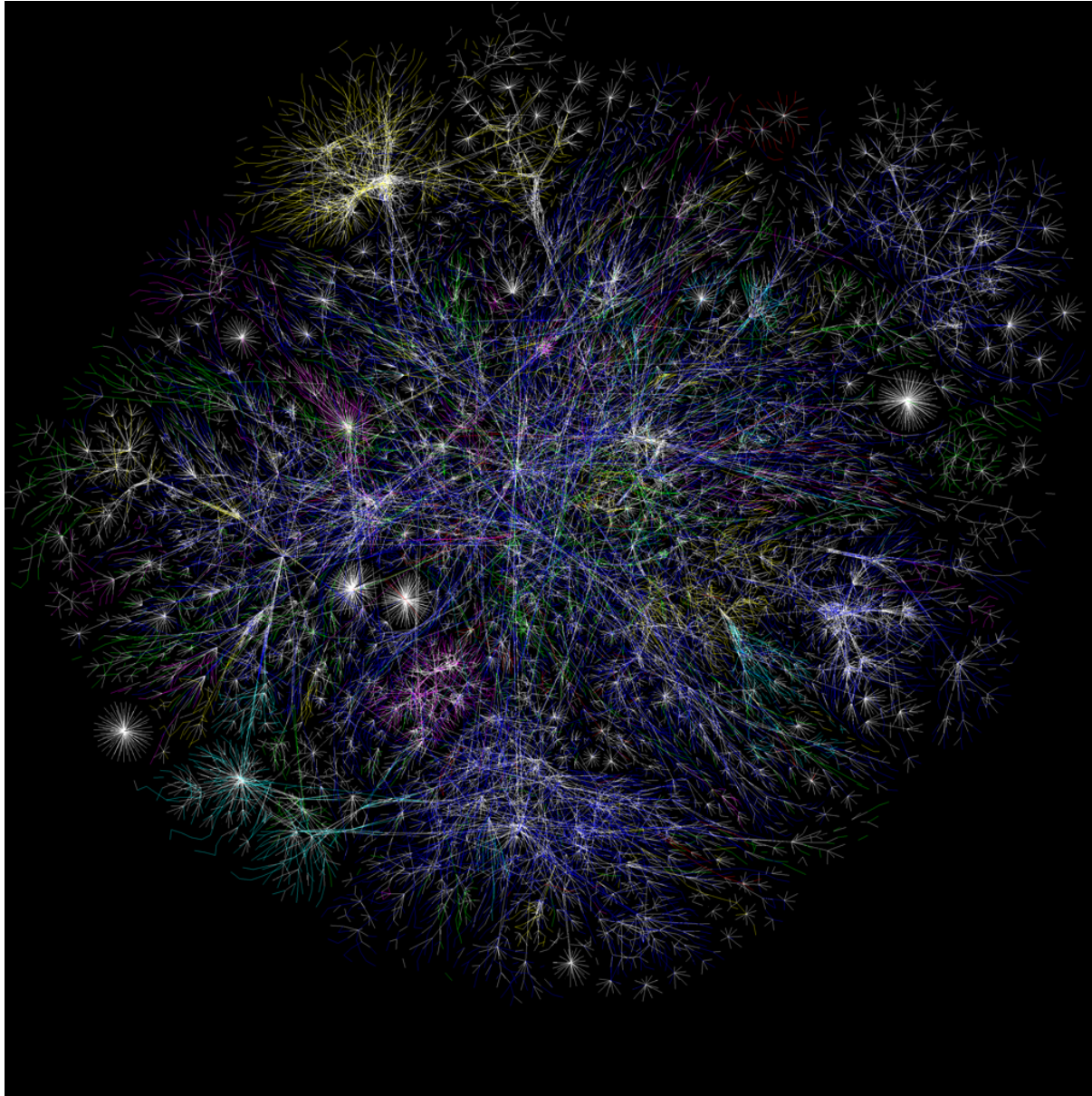


# Expressions (DAG)

$1 + x + \sin(x) + \sin^2(x)$

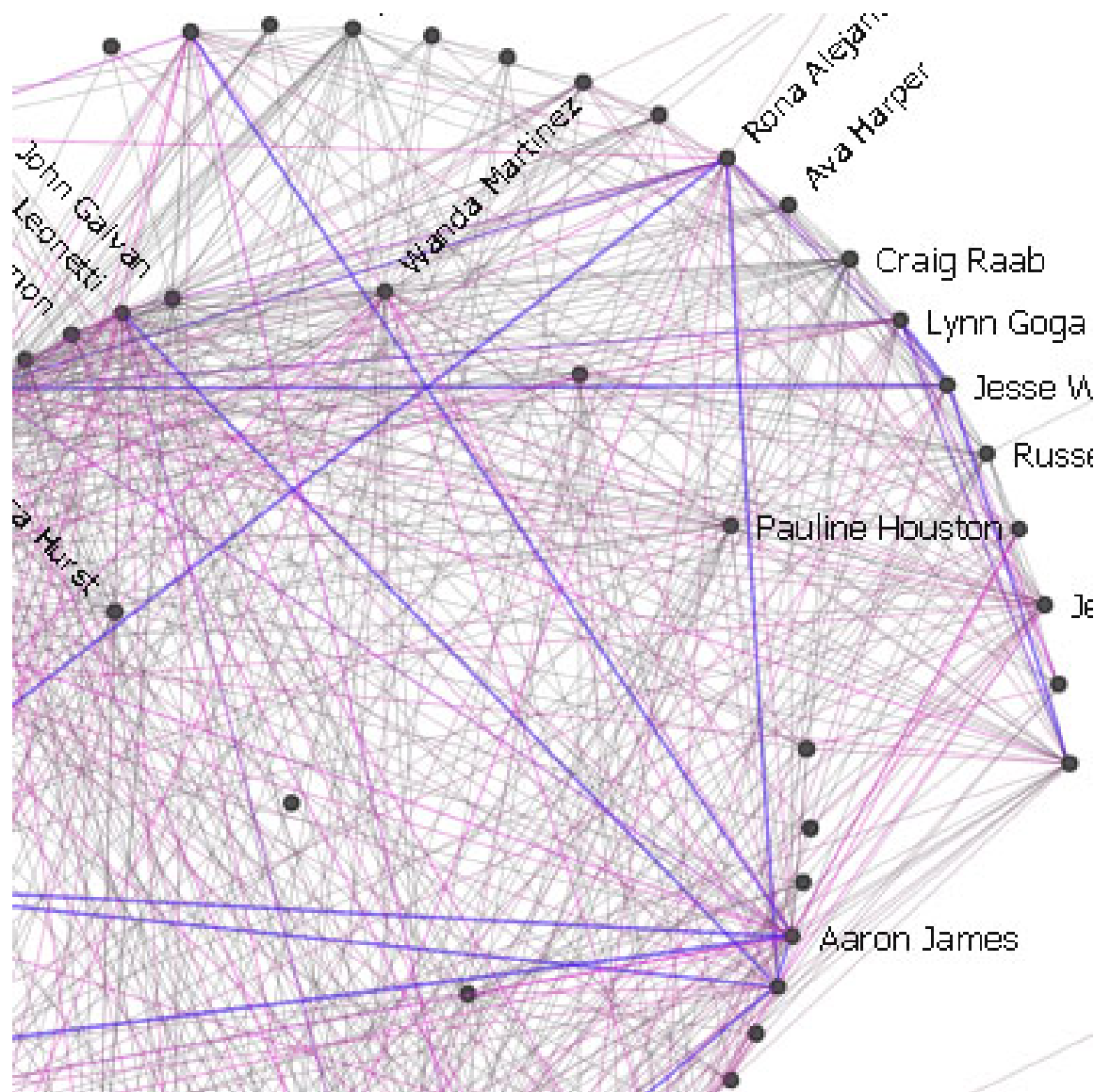


# Web

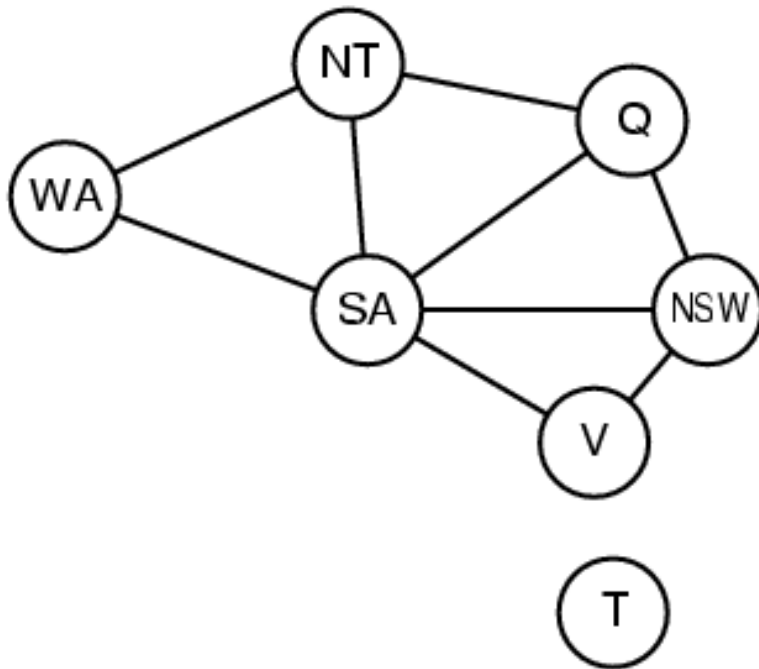




# Réseau social

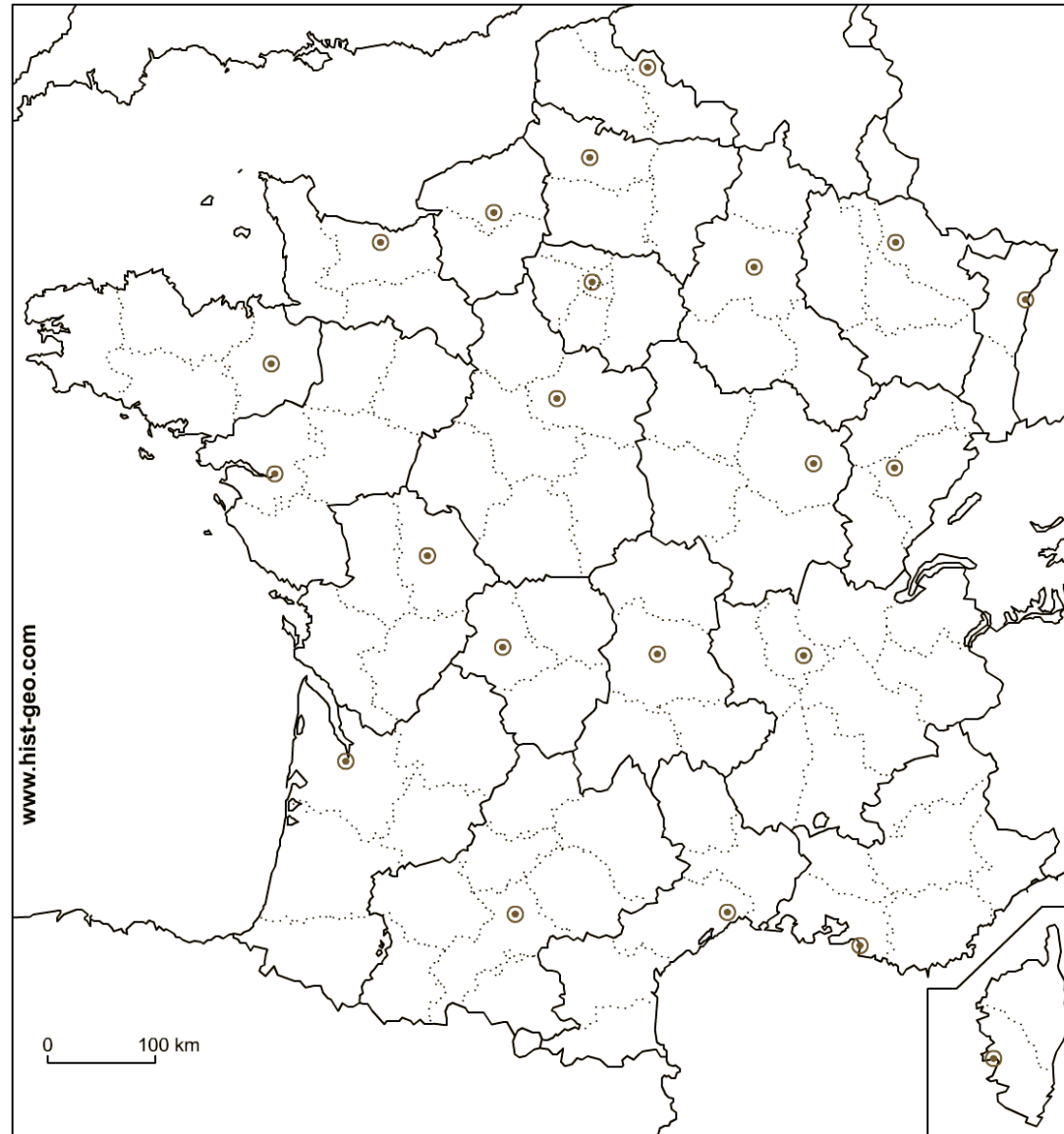


# Constraints set programming

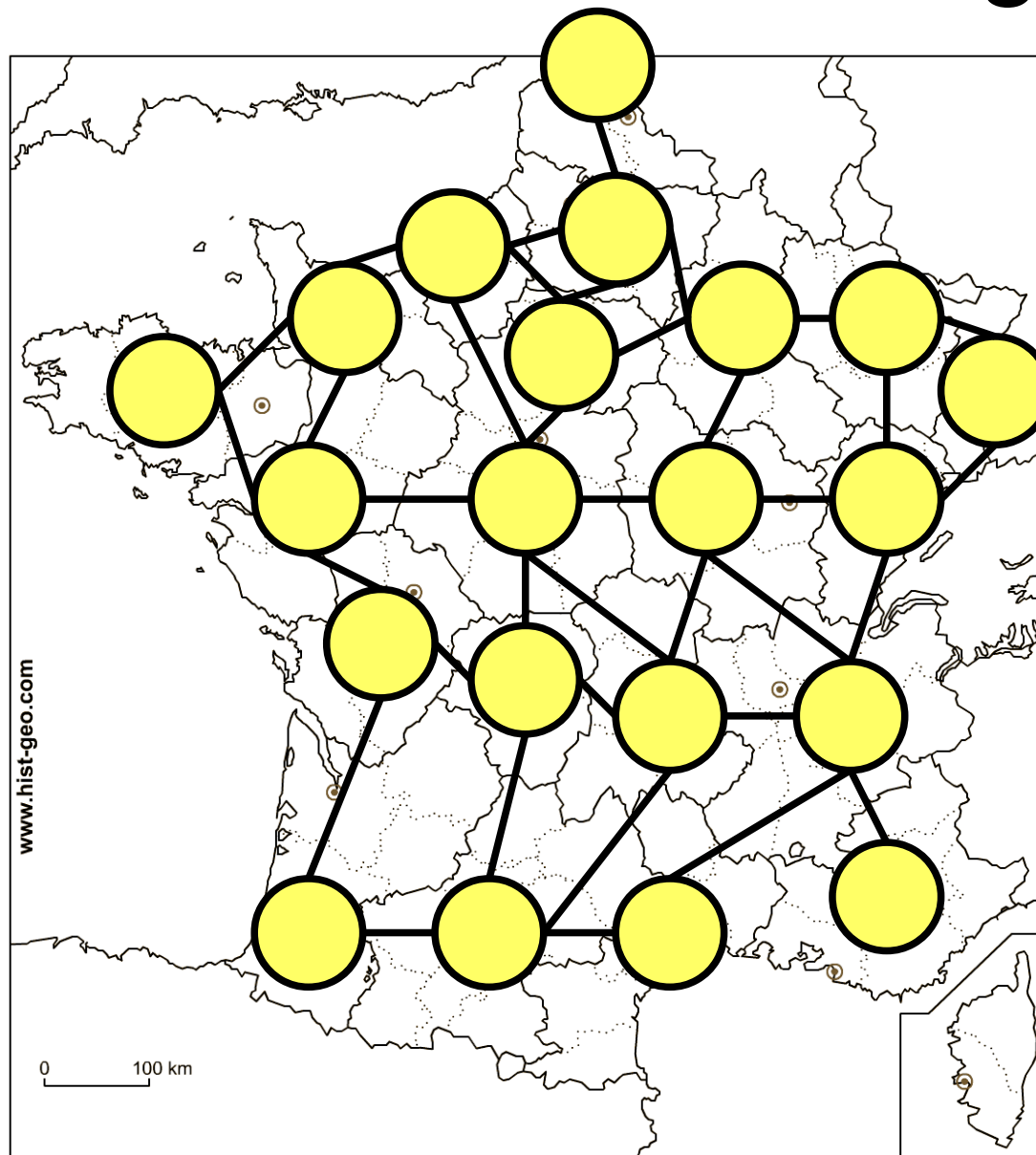


noeuds : variables  
arcs : contraintes

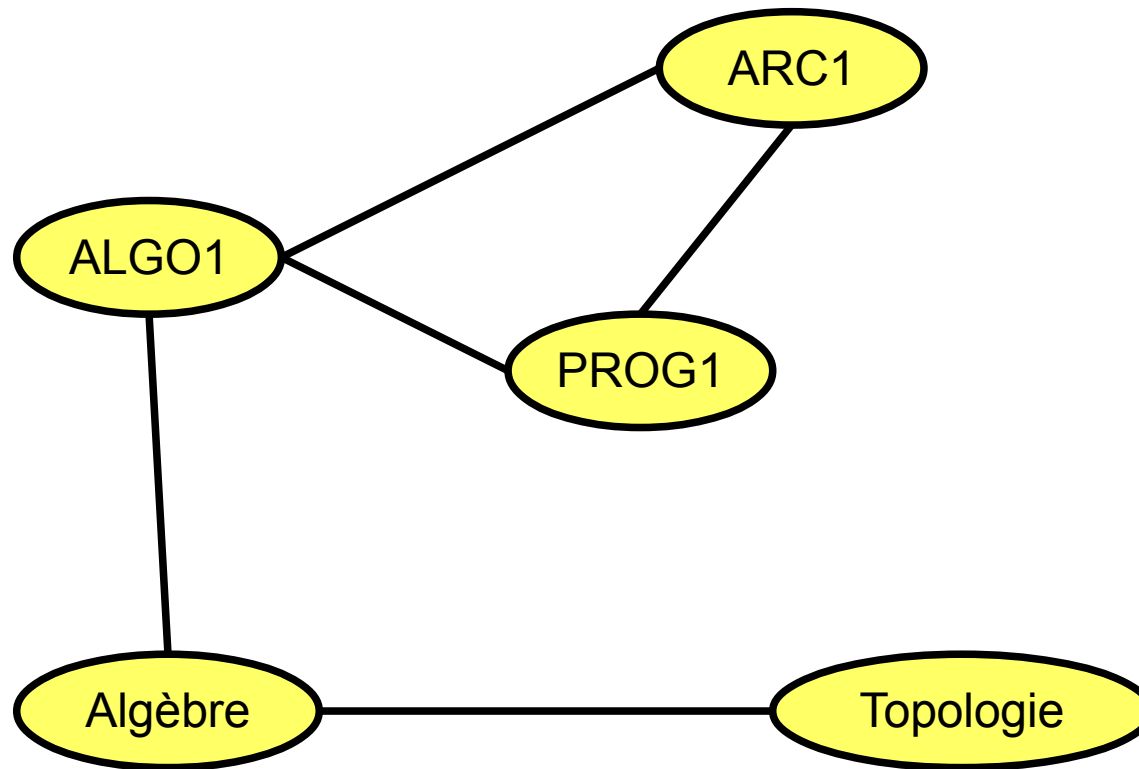
# Problème de coloriage



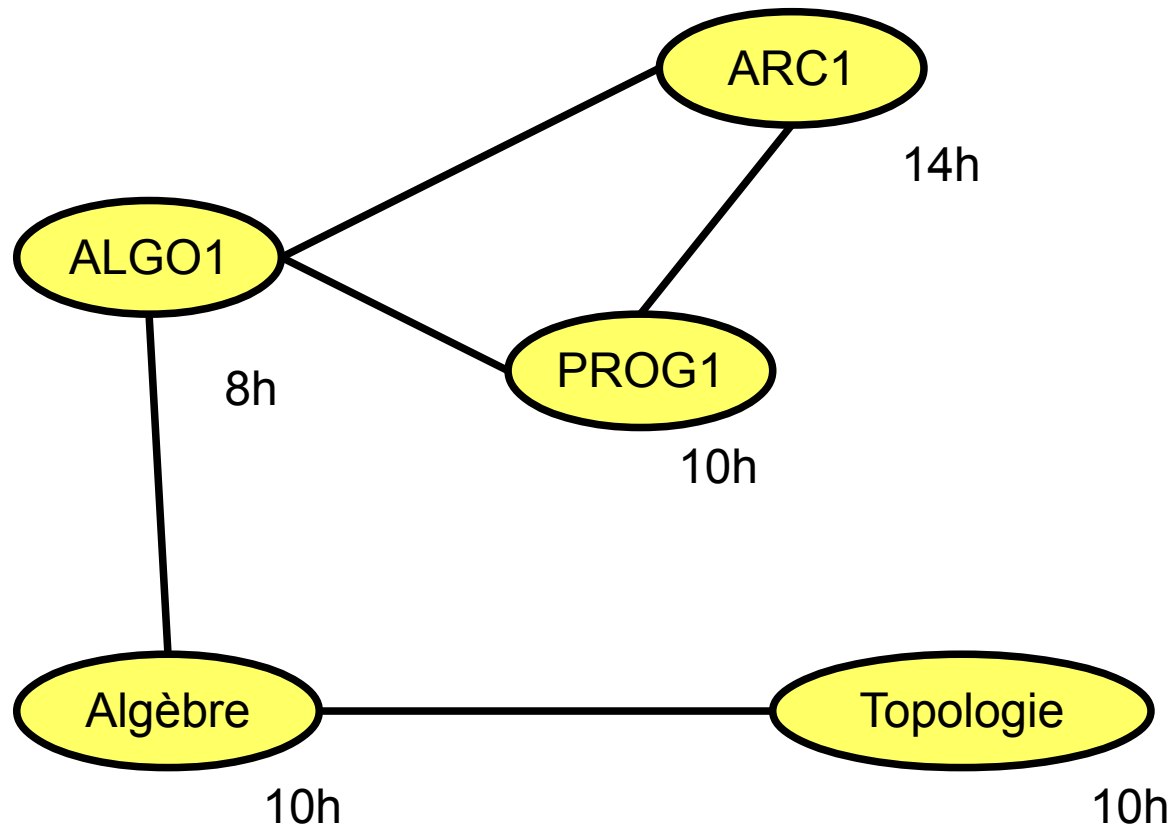
# Problème de coloriage



# Planning

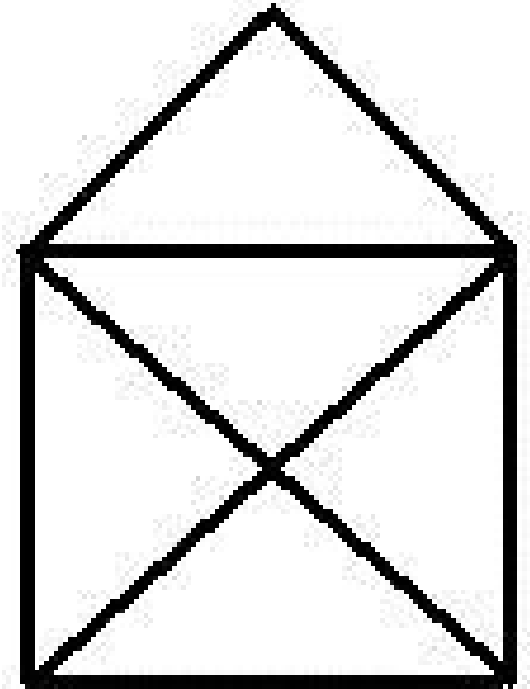
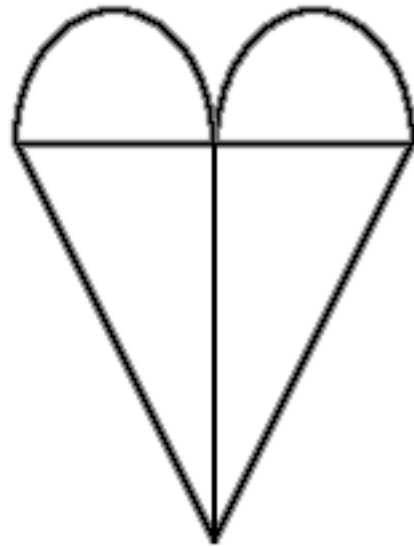
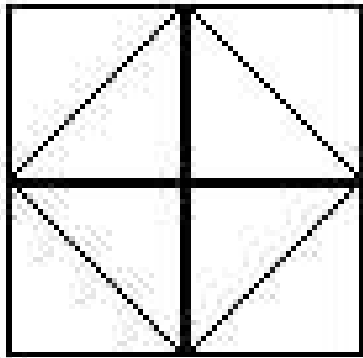


# Planning



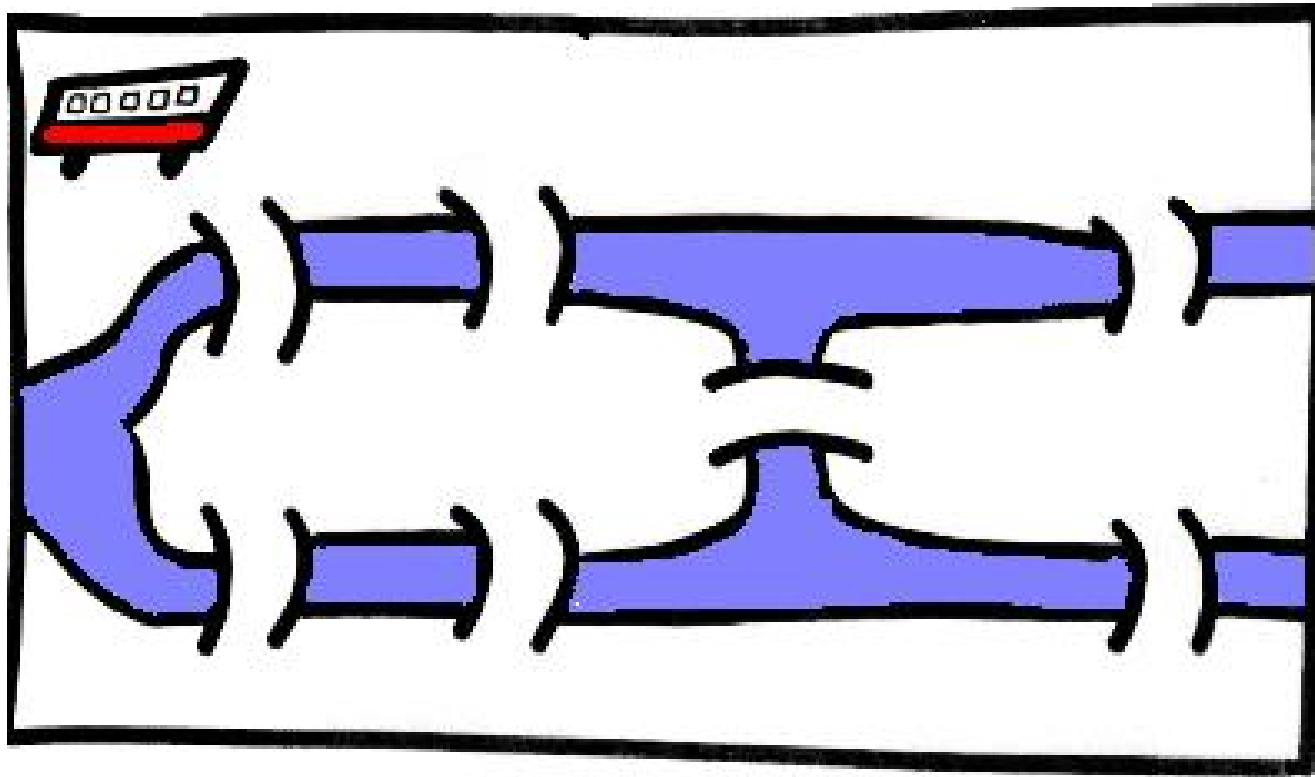
# Génération de circuits électroniques

Est-ce que je peux dessiner sans lever le crayon et sans repasser par le même trait ?

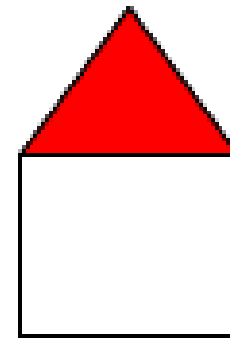
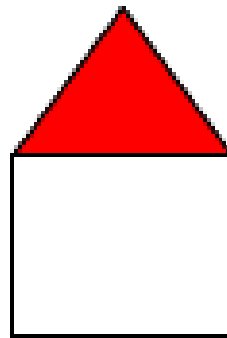
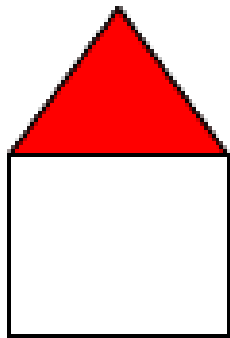
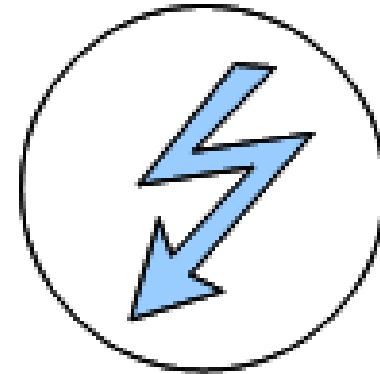




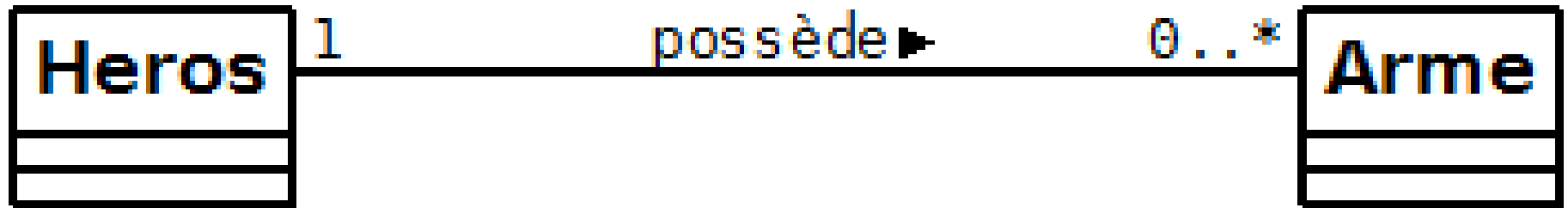
Est-ce que je peux passer une et  
une seule fois par tous les ponts de  
la ville de Königsberg ?



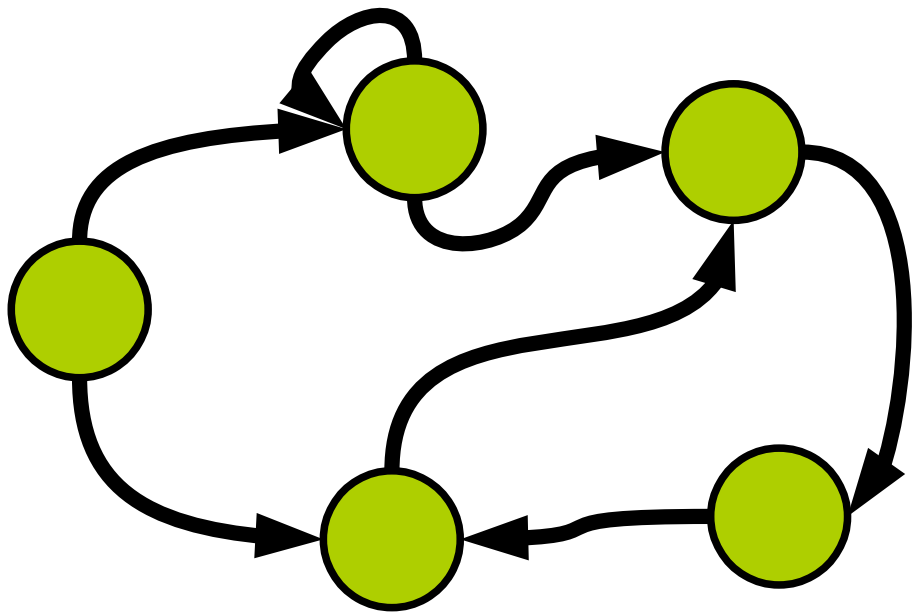
Est-ce que je peux connecter  
chaque maison aux trois  
fournisseurs sans croiser ?



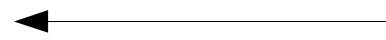
# Diagrammes de classe en génie logiciel



# Structure de données « graphe »



ajouter/supprimer  
un sommet

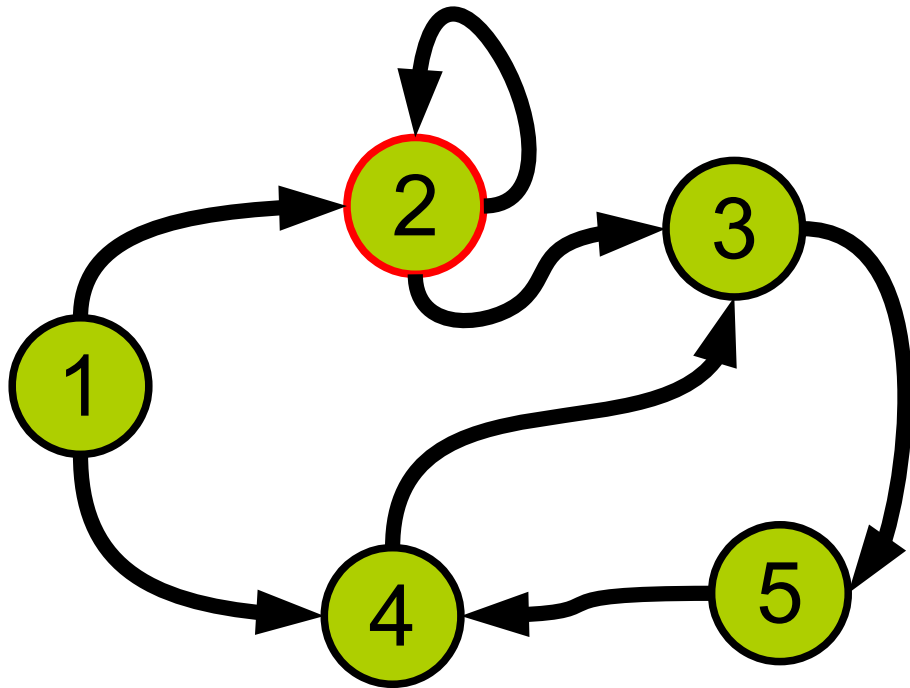


ajouter/supprimer  
un arc

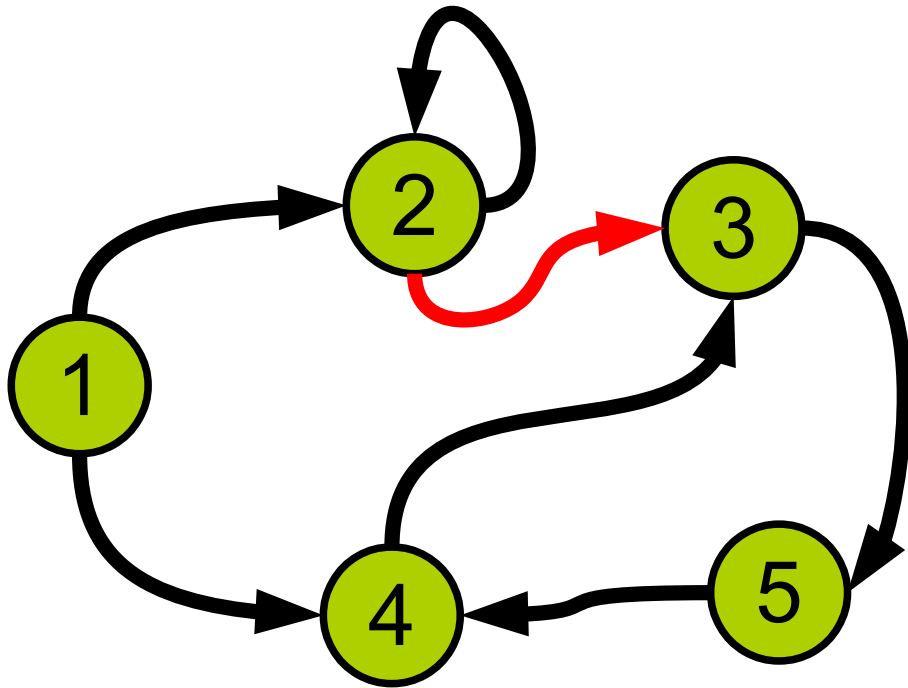
...

# Implémentation par un tableau associatif

<sommet, ensemble des sucesseurs>



# Par exemple implémentation par matrice d'adjacence



$$\begin{pmatrix} 0 & 1 & 0 & 1 & 0 \\ 0 & 1 & \mathbf{1} & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \end{pmatrix}$$

# Par exemple implémentation par des listes d'adjacence

