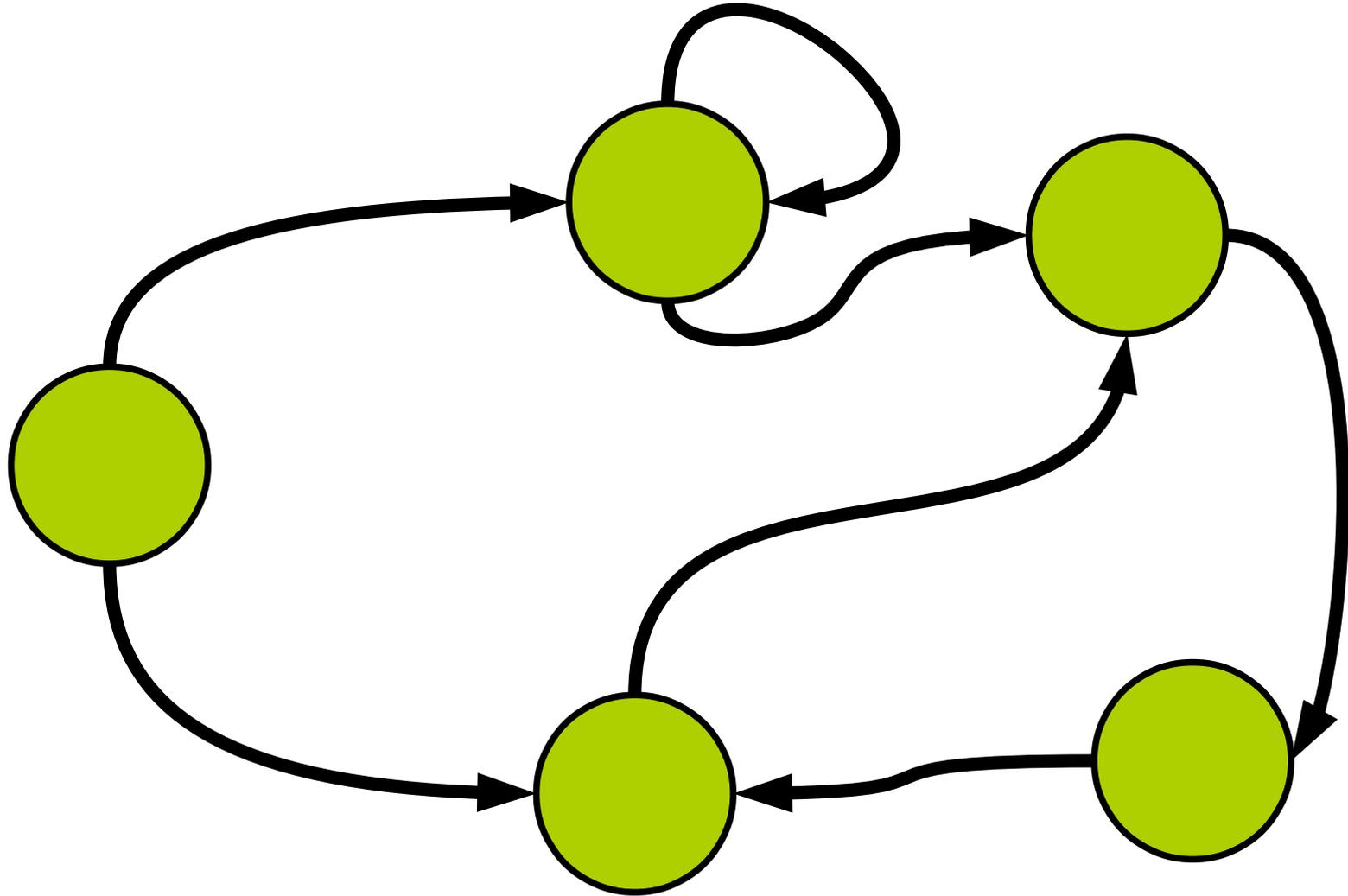


Graphes et parcours de graphe

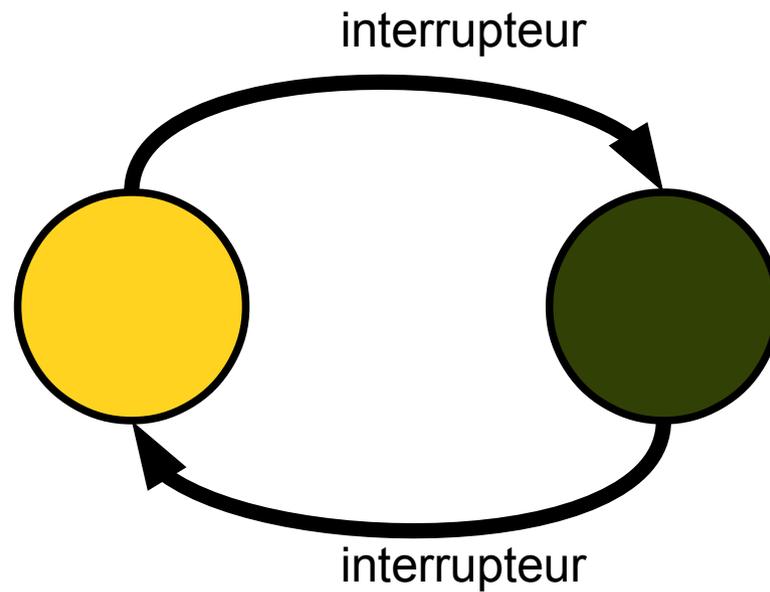
Exemple



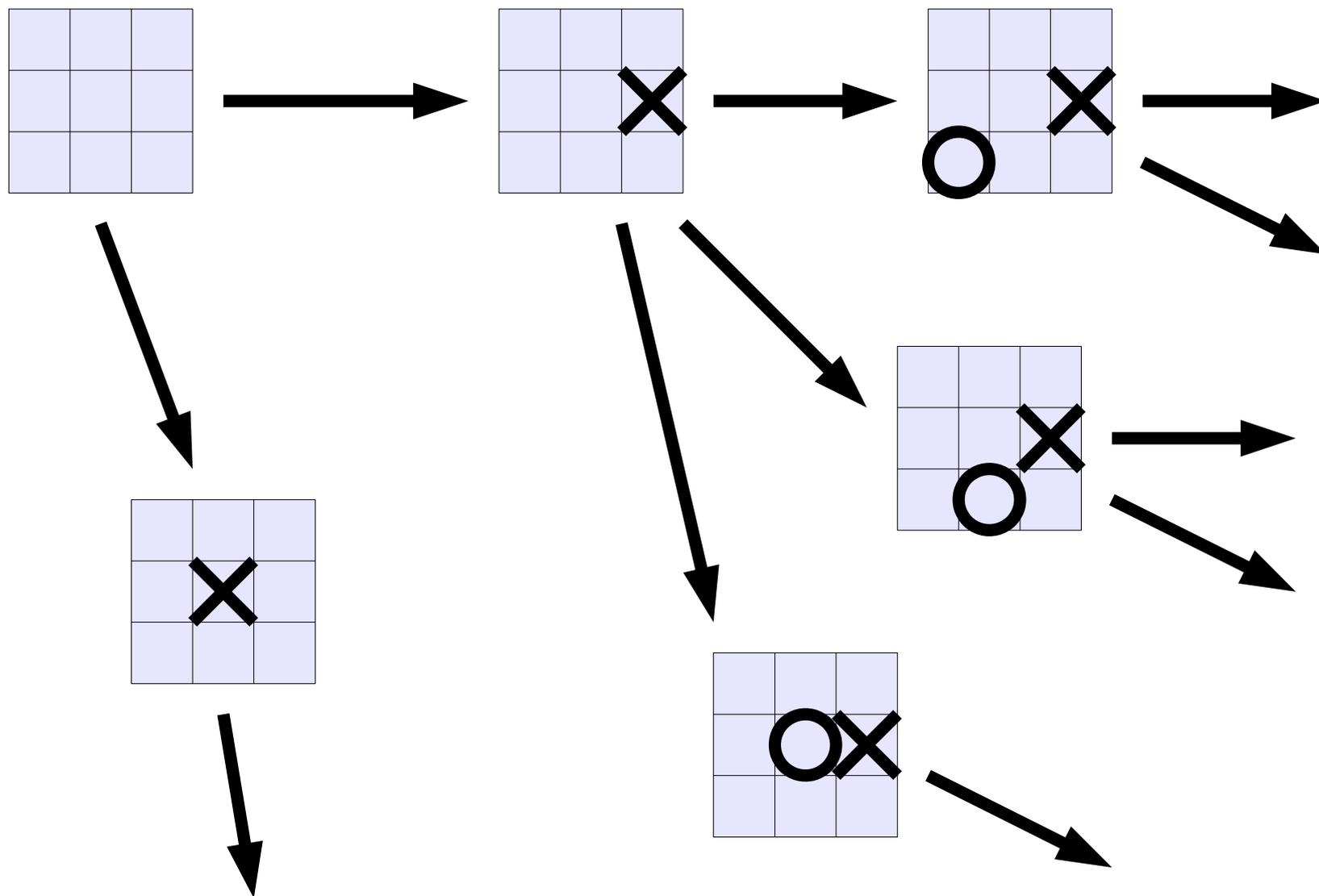
Applications

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

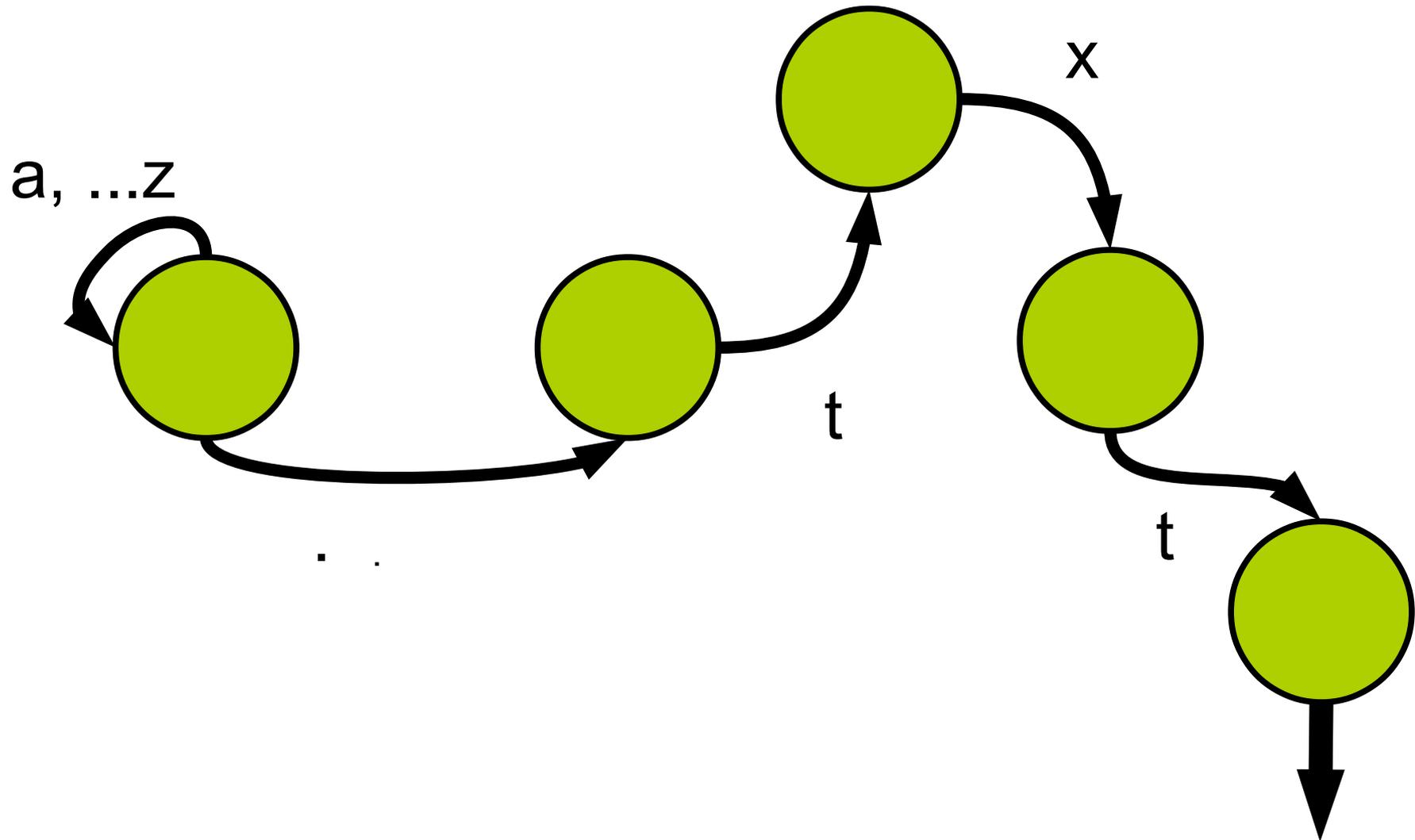
Etats d'une machine



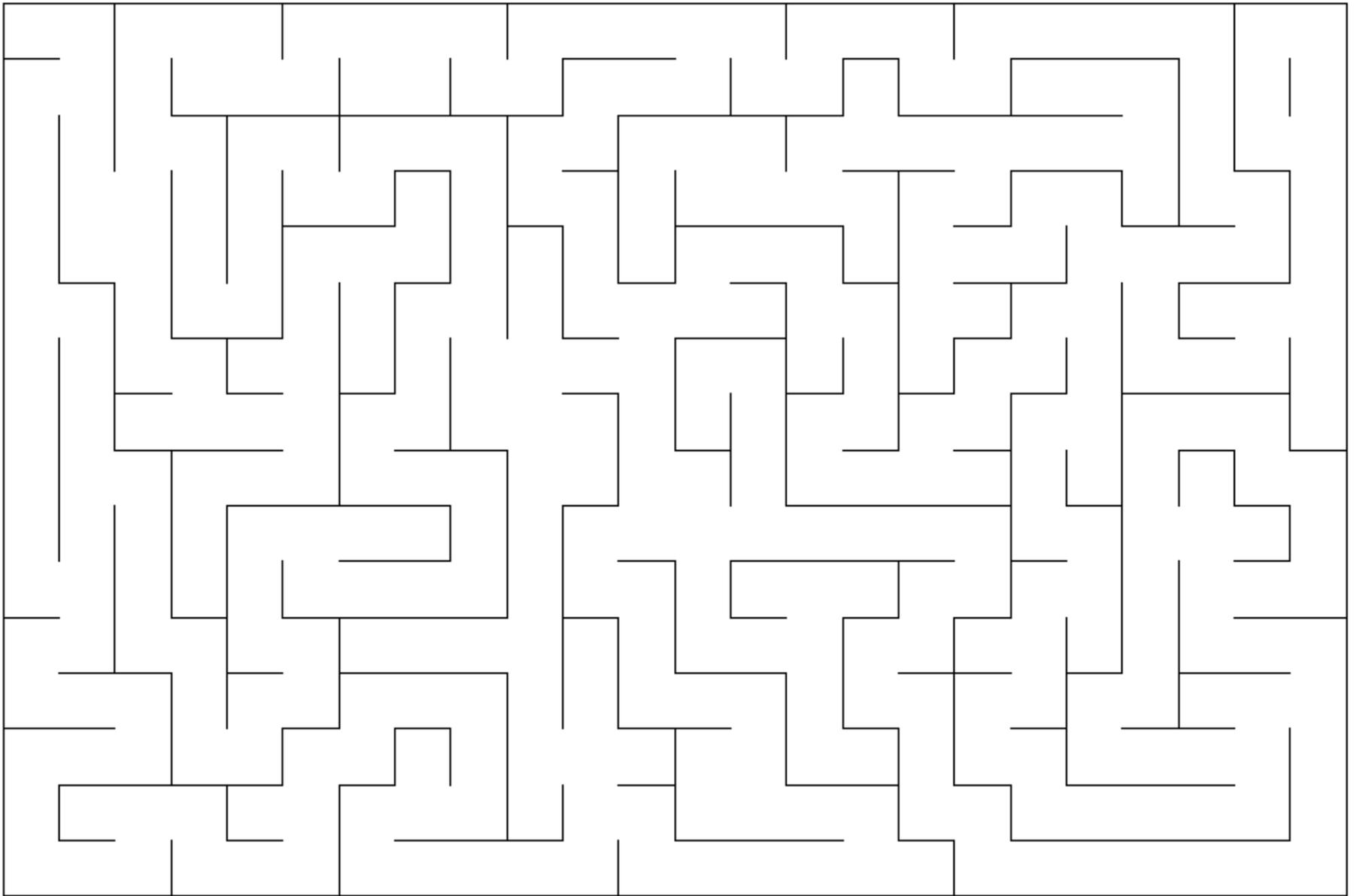
Etats dans un jeu



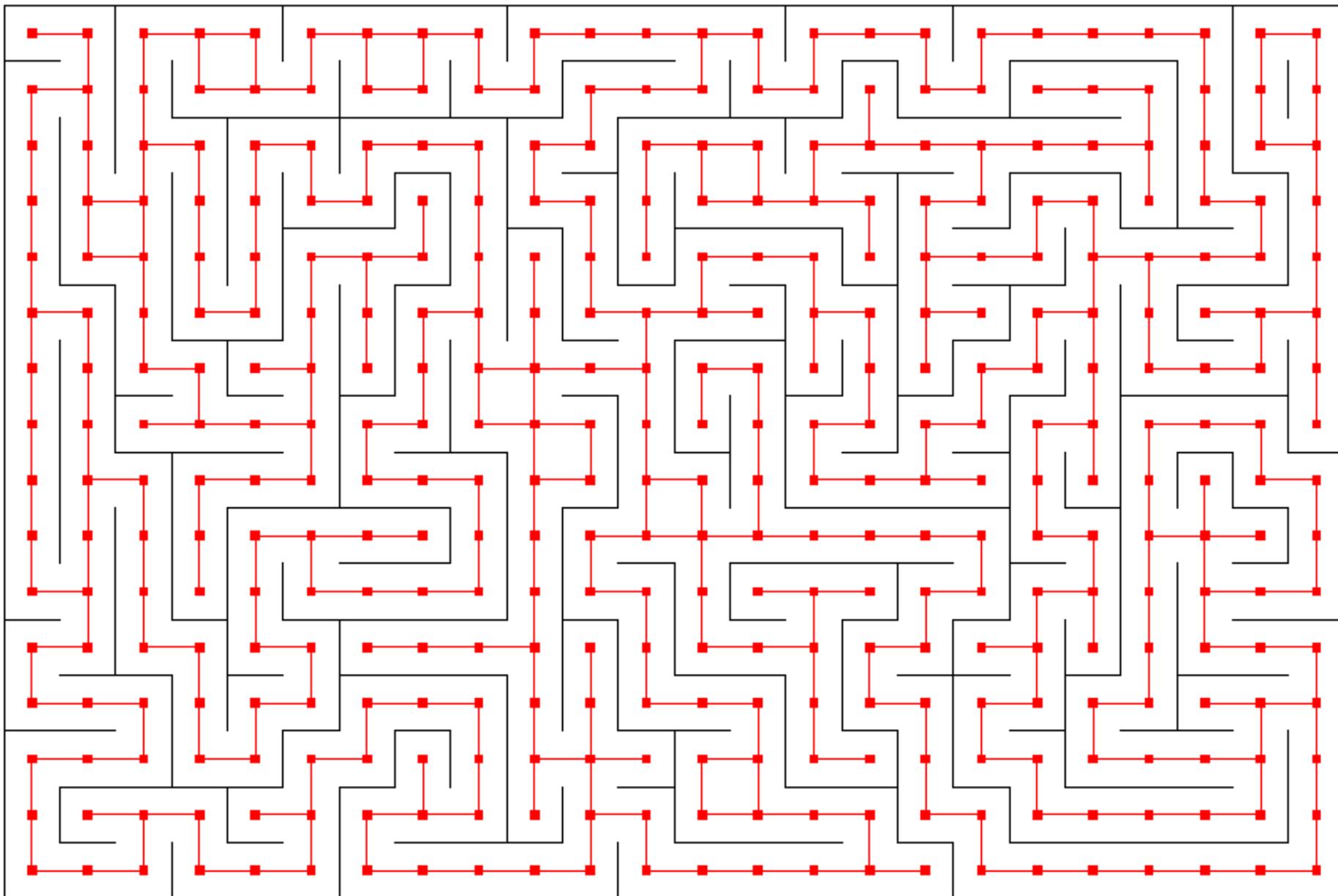
Automates finis



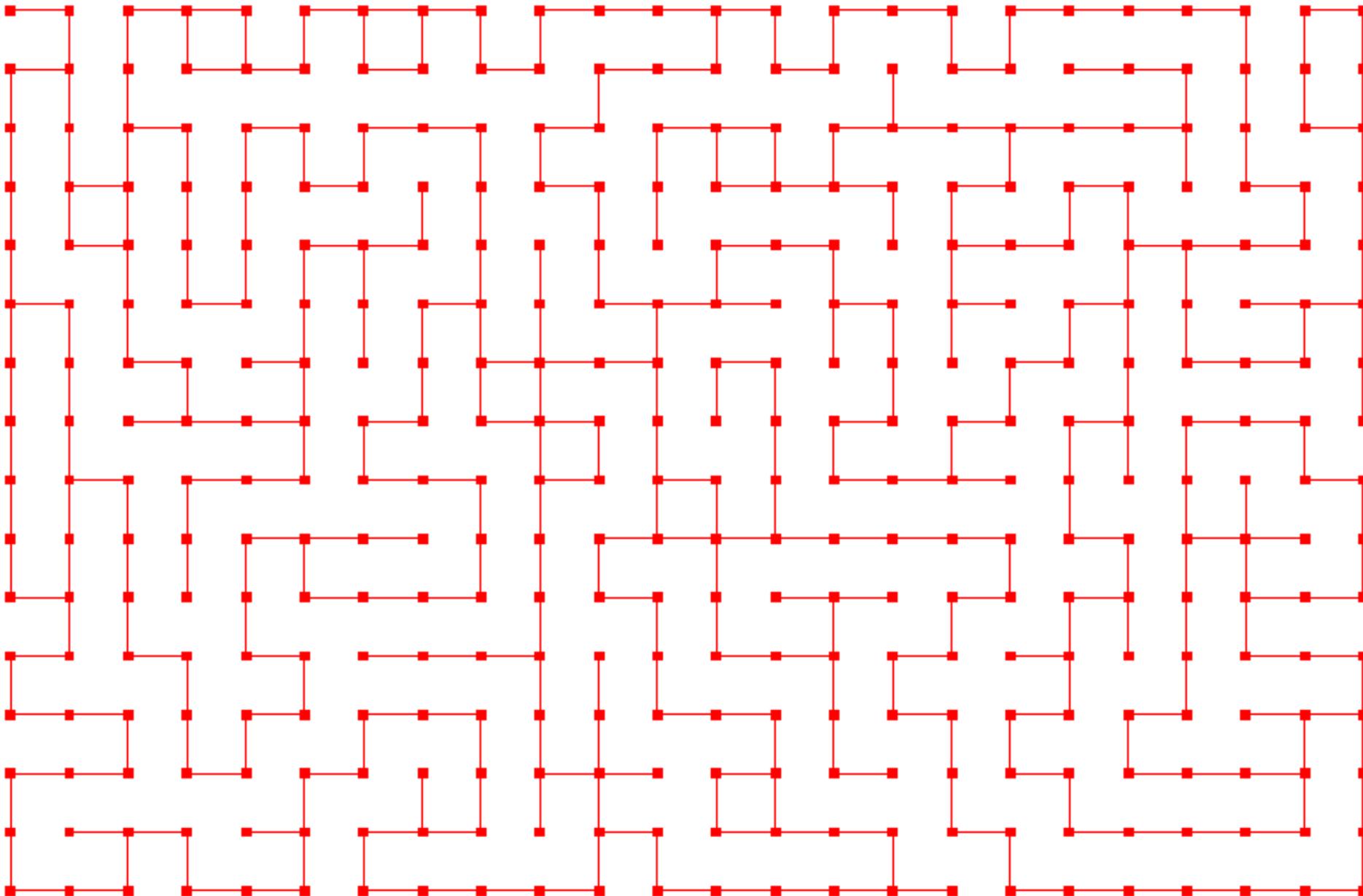
Labyrinthe



Labyrinth



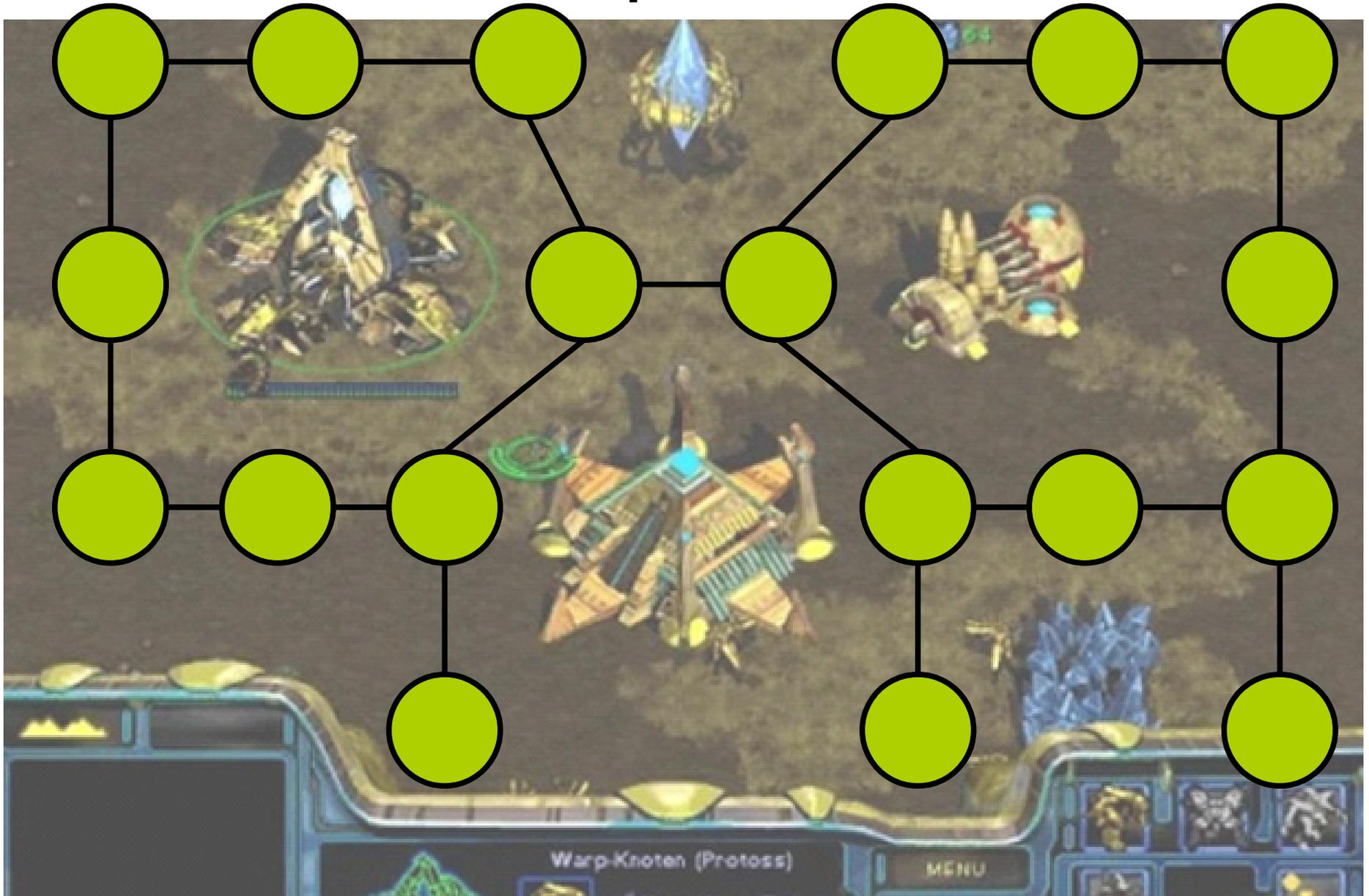
Labyrinth



Espace



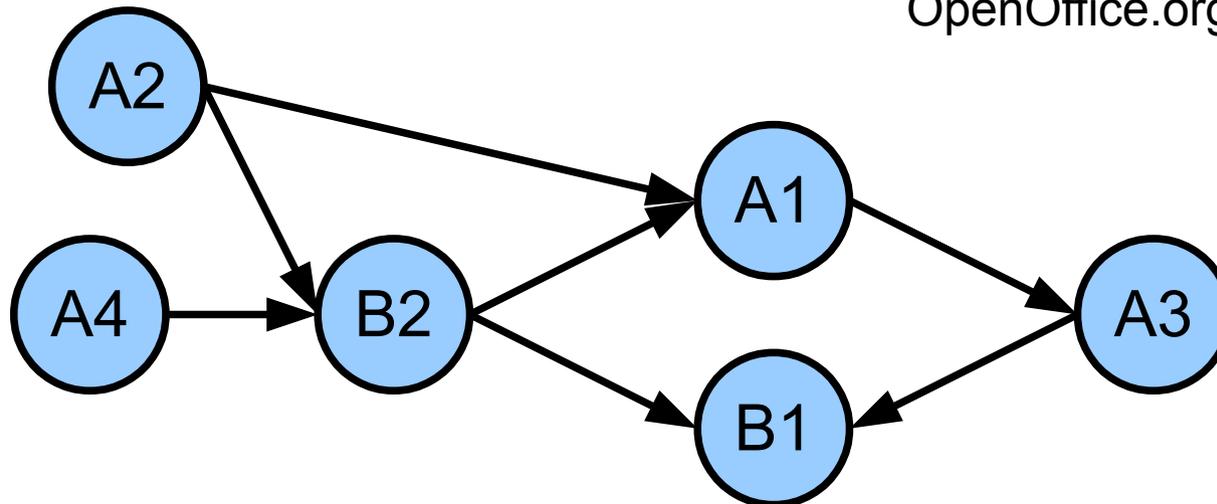
Espace



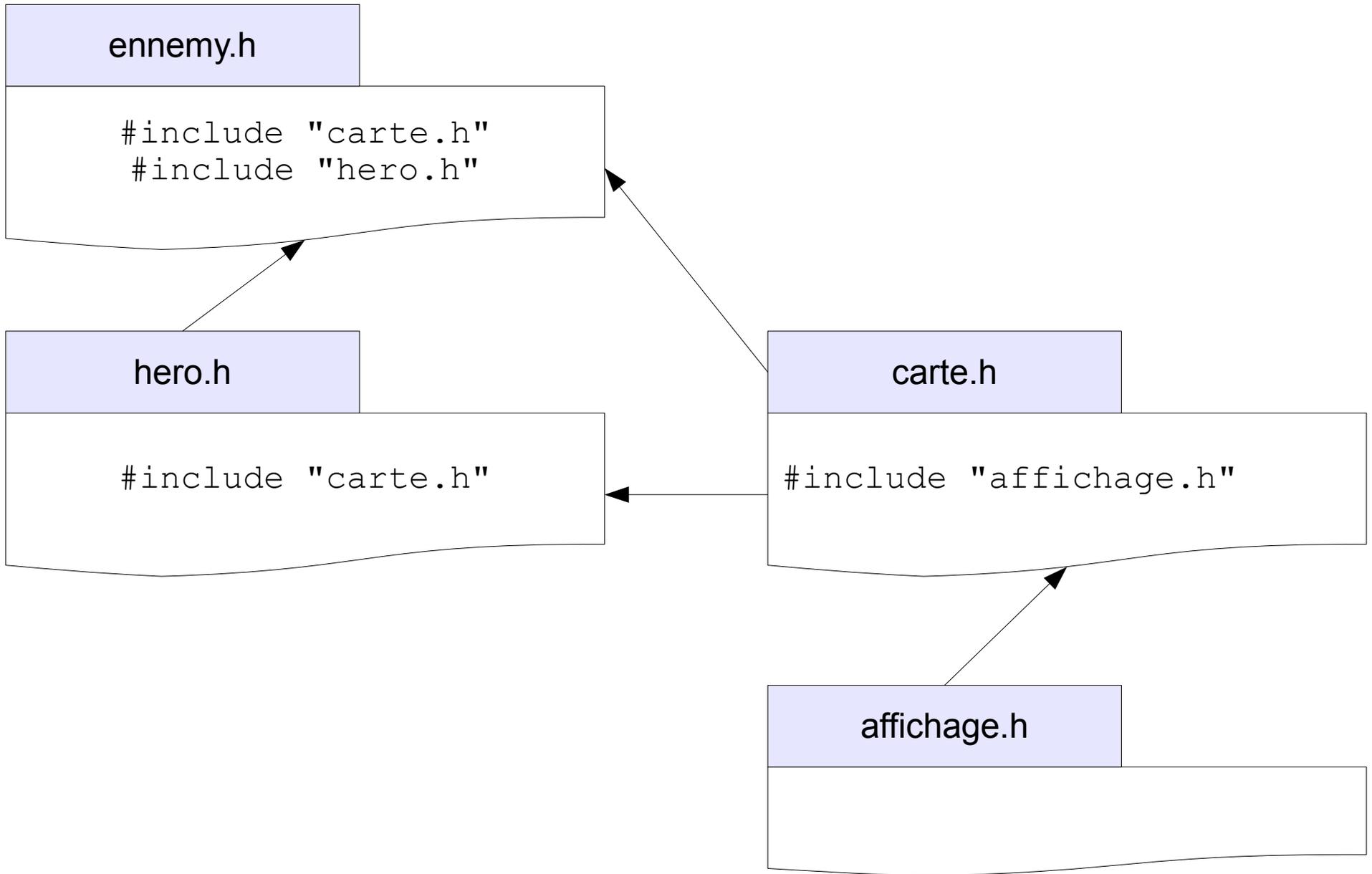
Graphe de dépendance

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

OpenOffice.org Calc

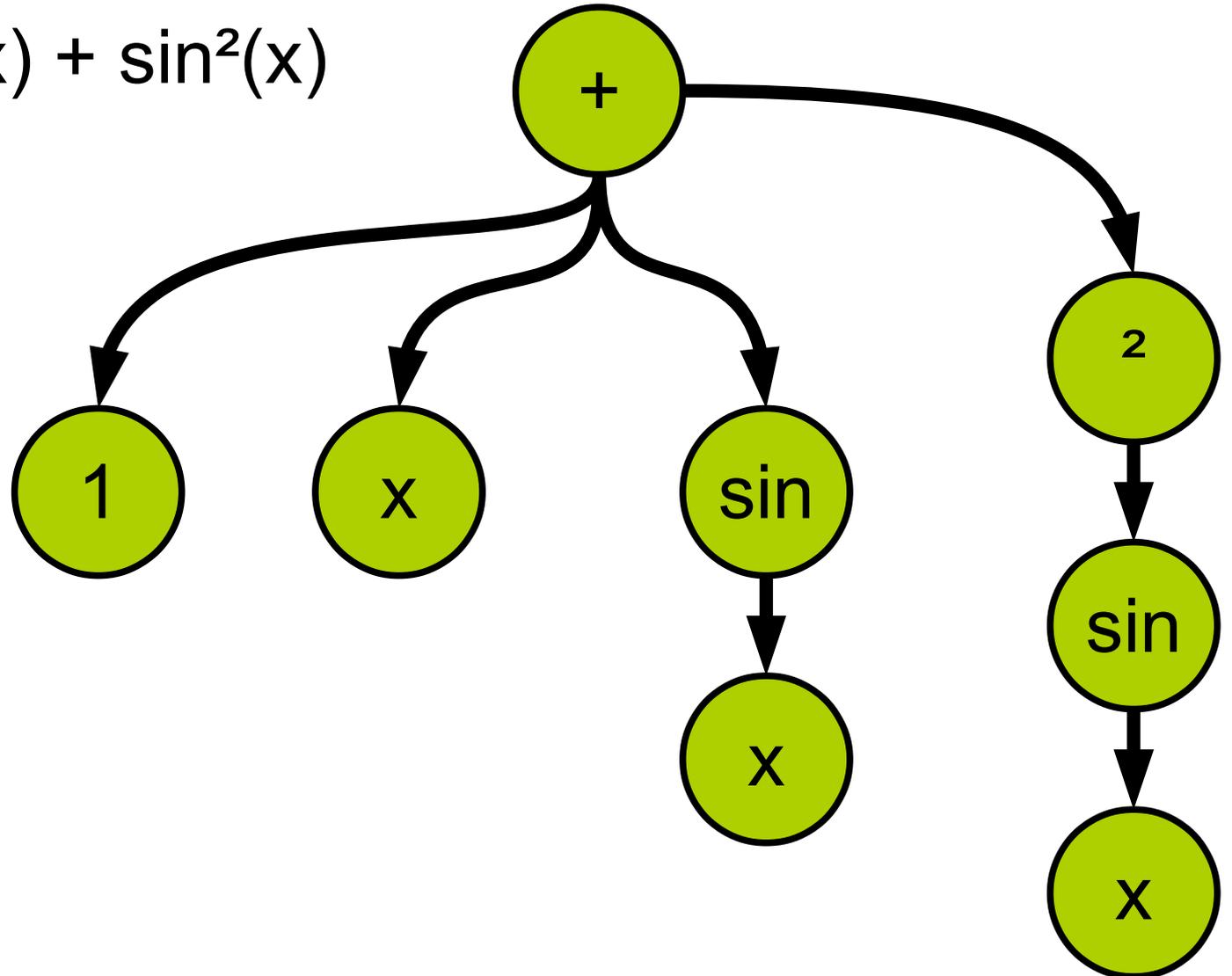


Graphe de dépendance : compilation



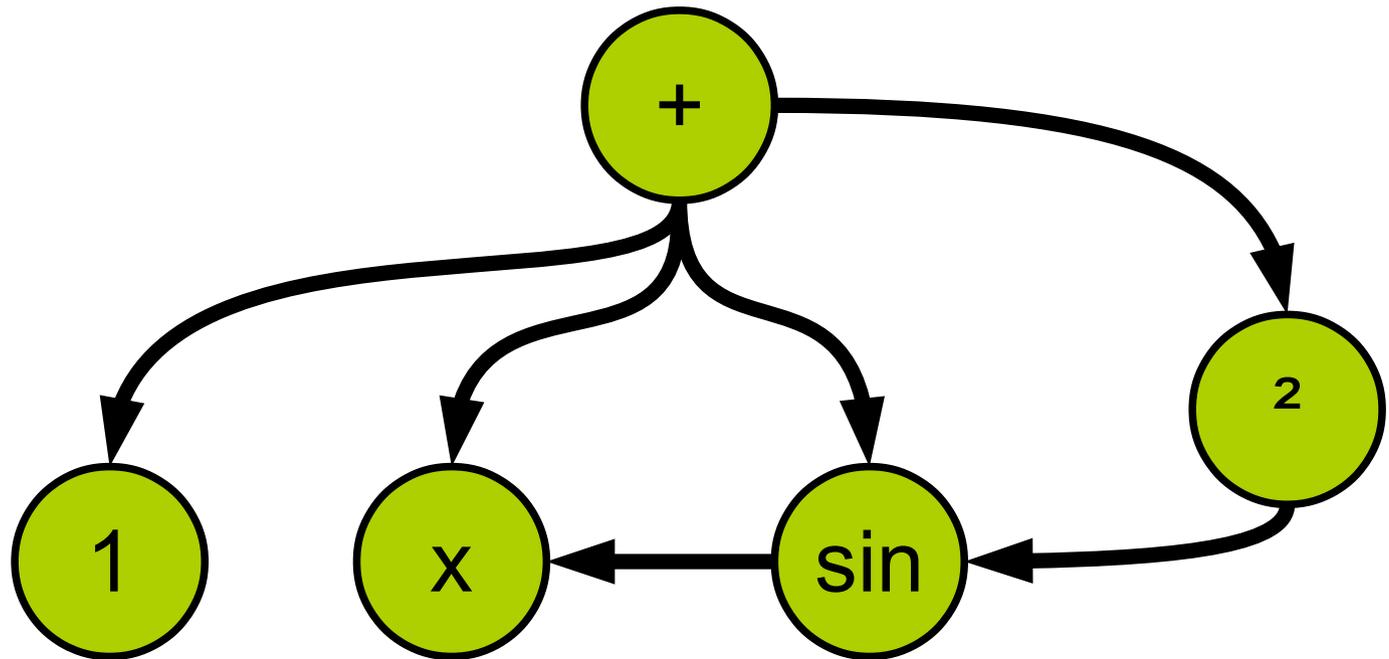
Expressions

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

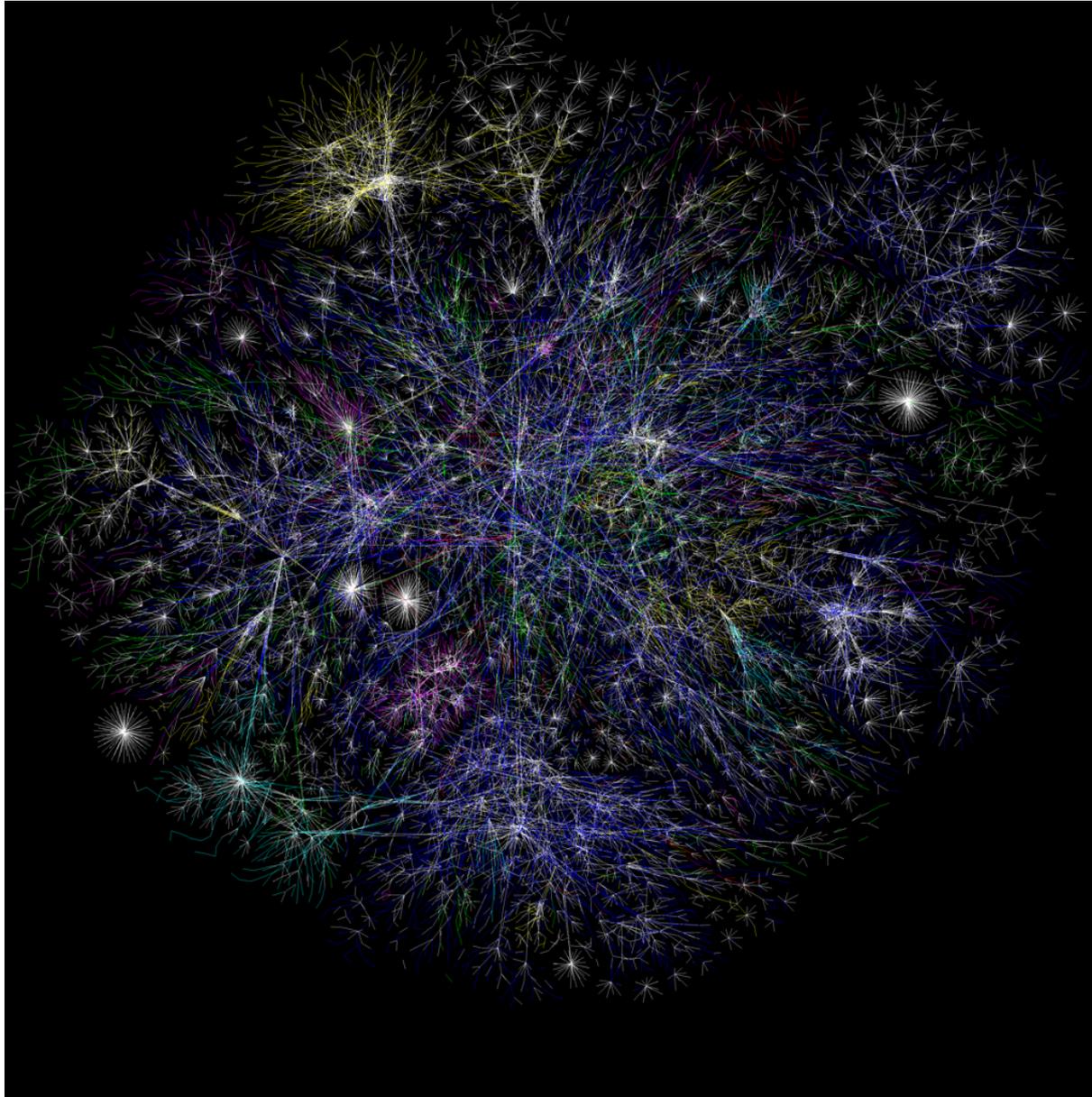


Expressions (DAG)

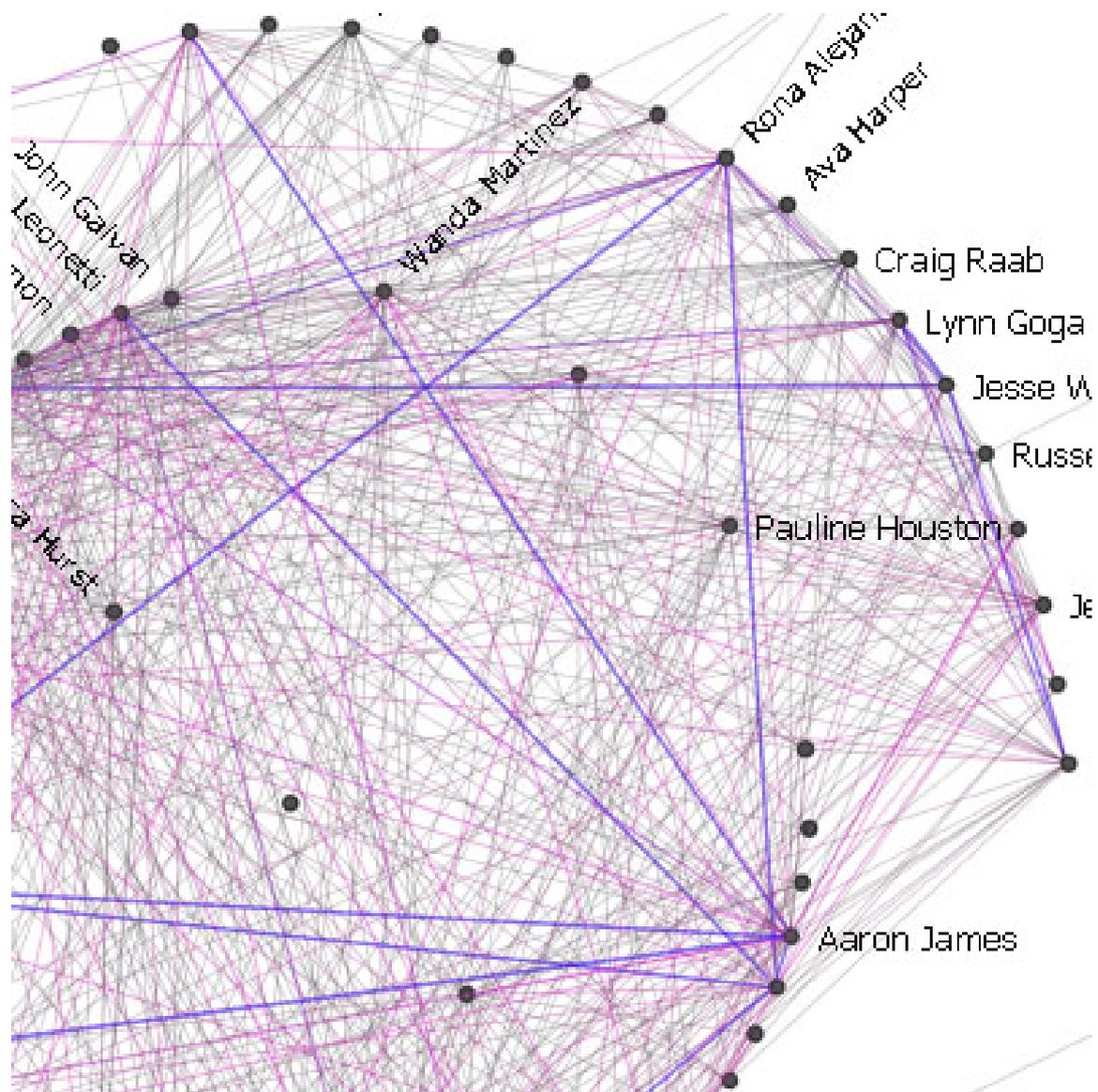
$1 + x + \sin(x) + \sin^2(x)$



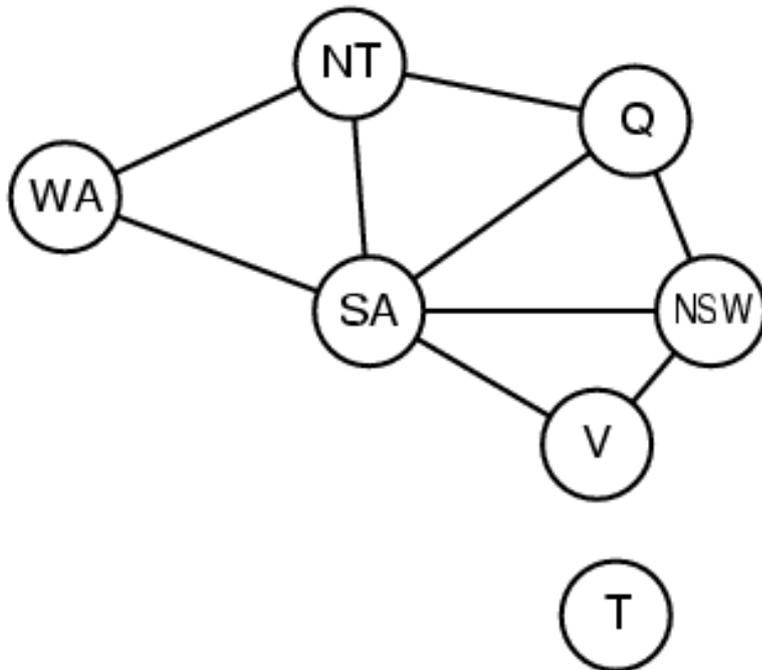
Web



Réseau social

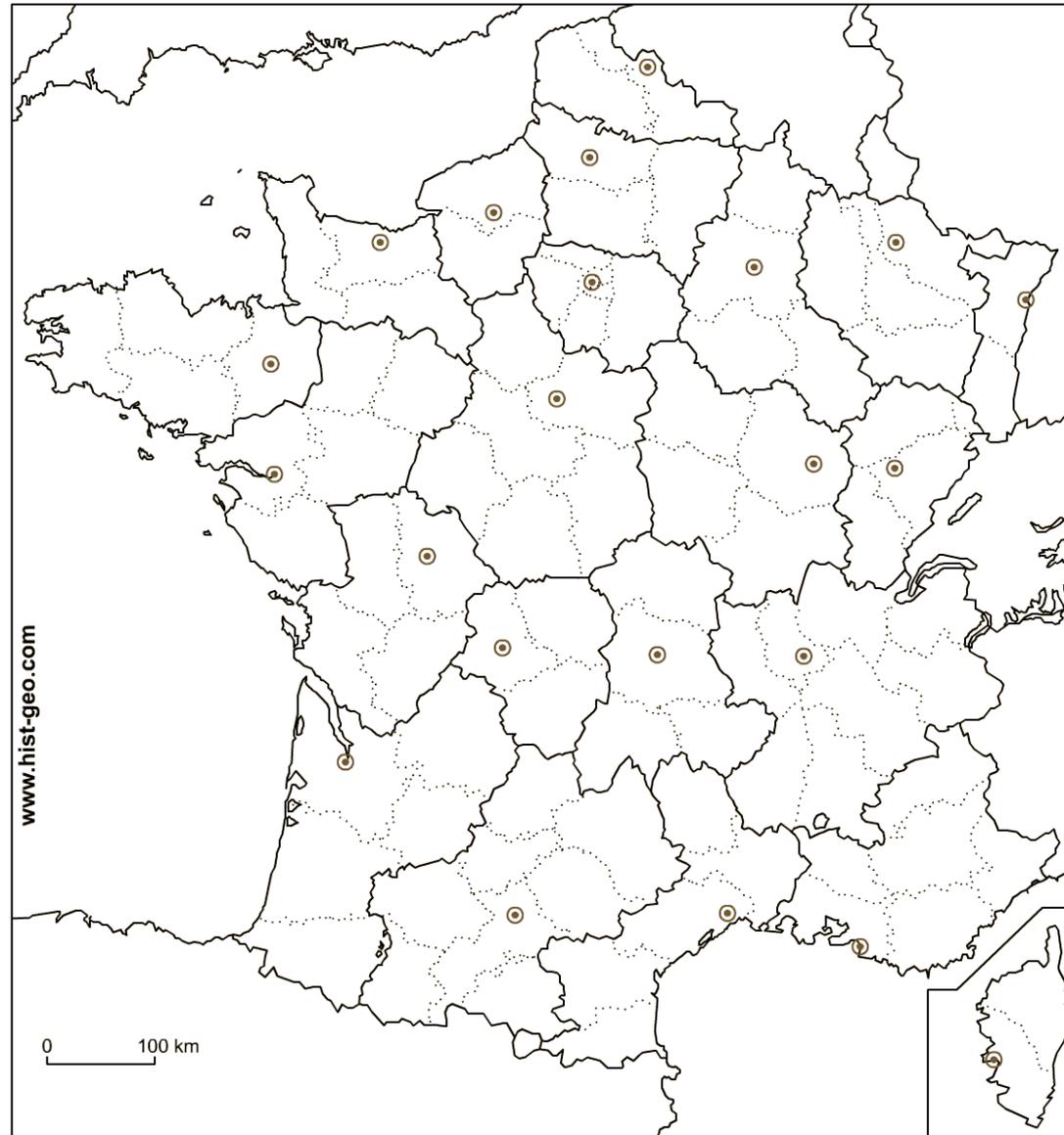


Constraints set programming

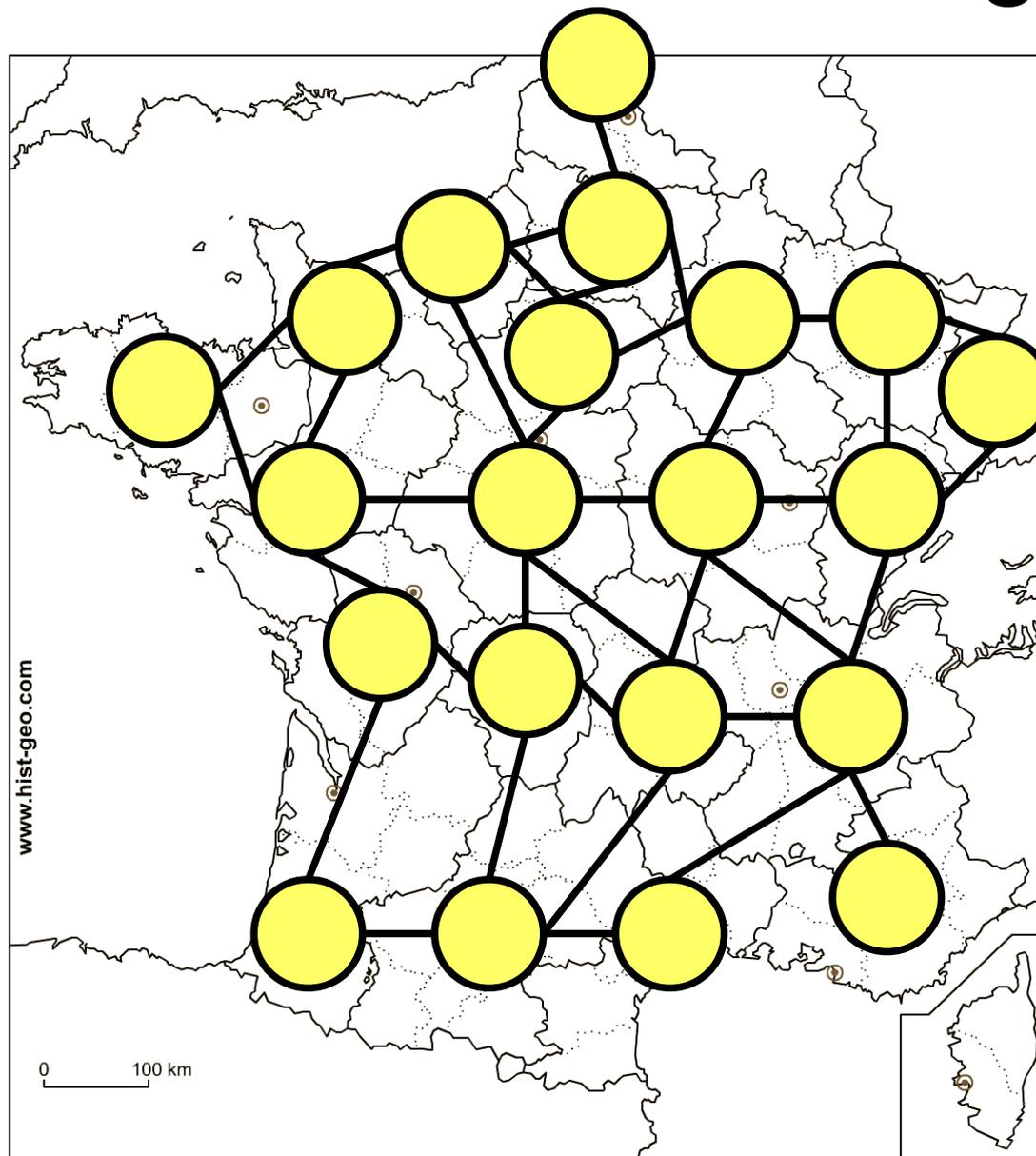


noeuds : variables
arcs : contraintes

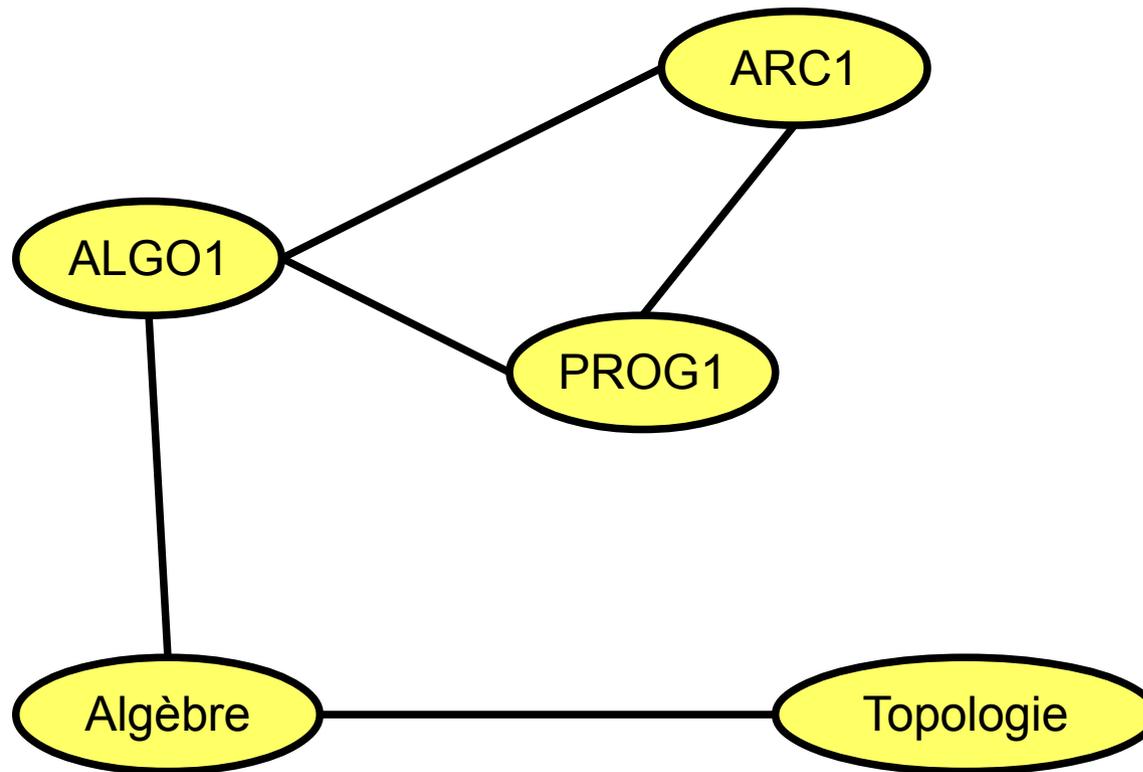
Problème de coloriage



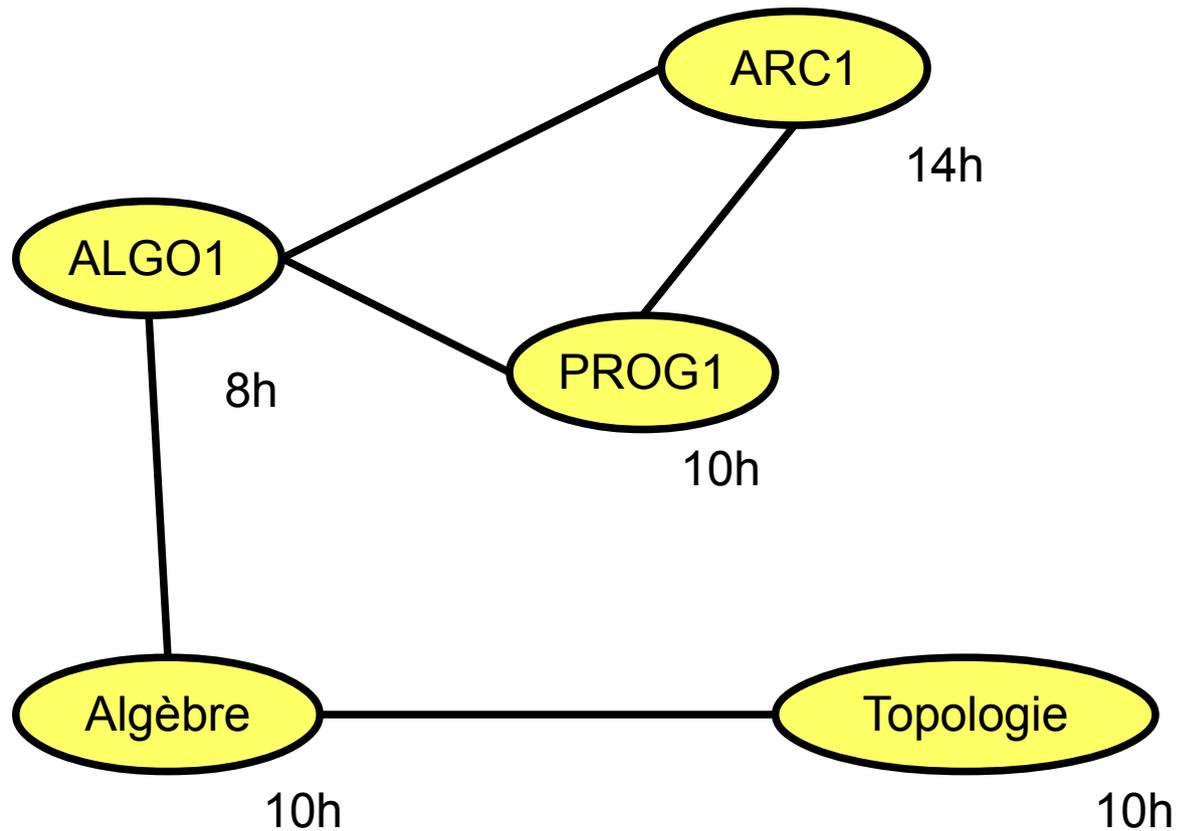
Problème de coloriage



Planning

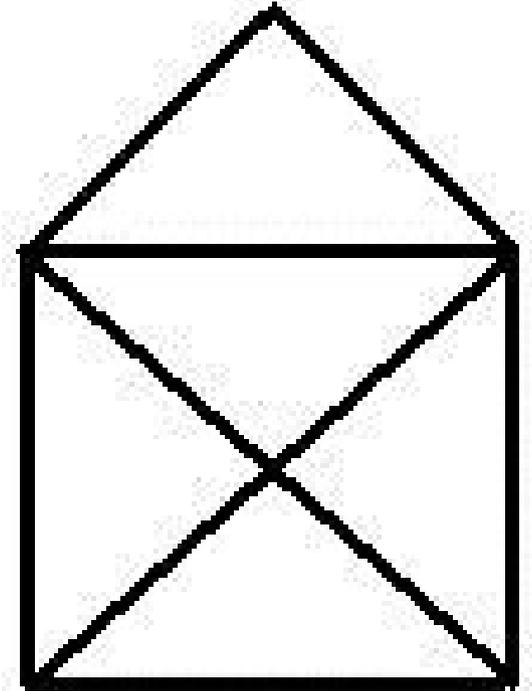
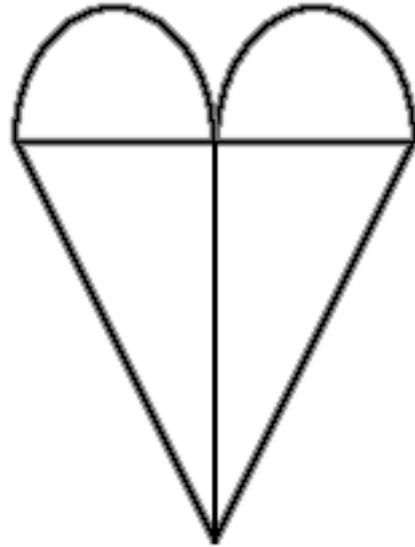
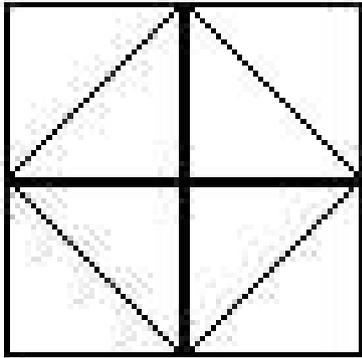


Planning

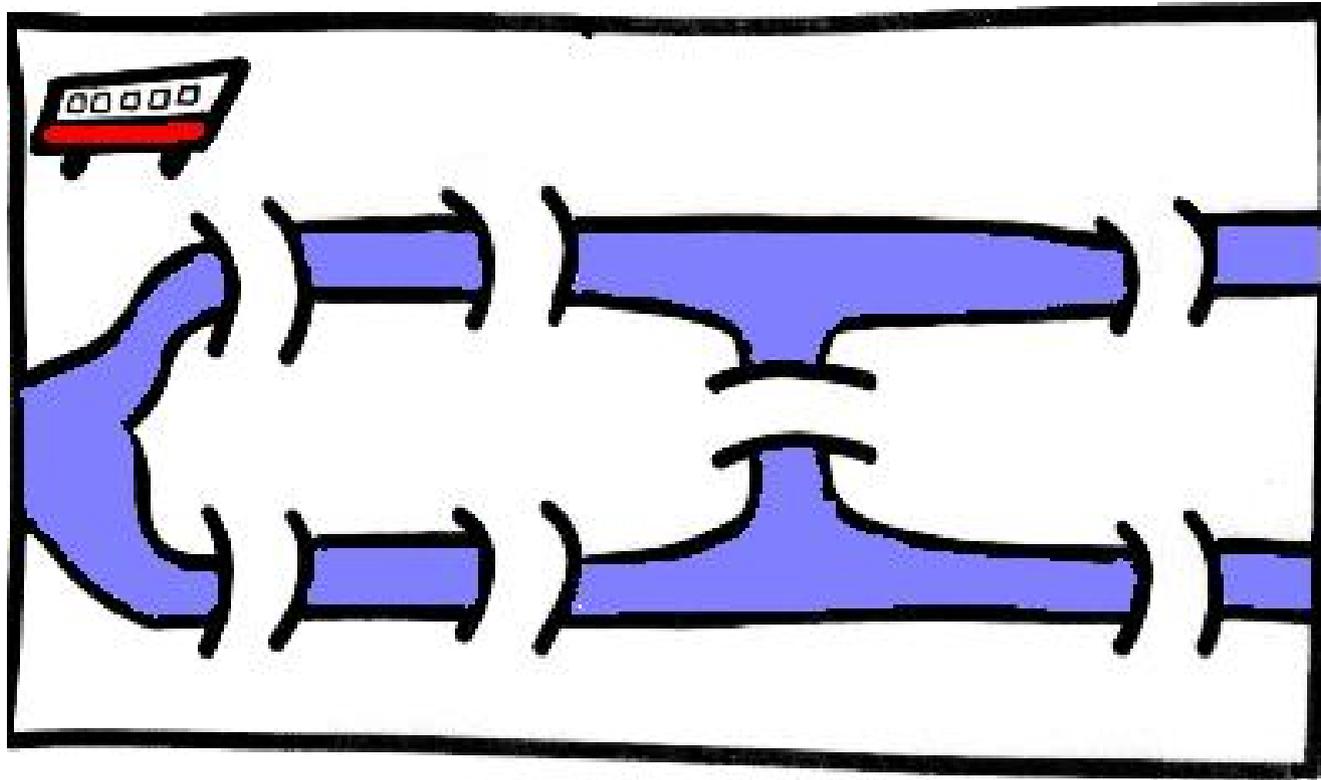


Génération de circuits électroniques

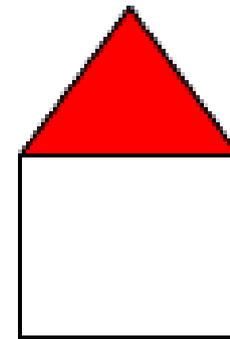
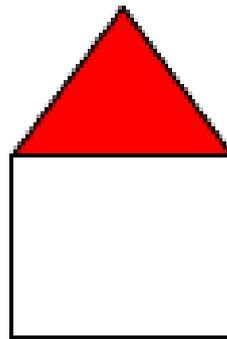
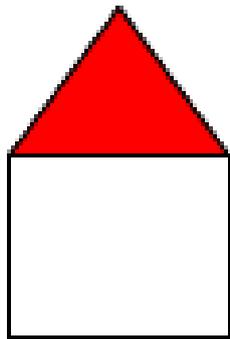
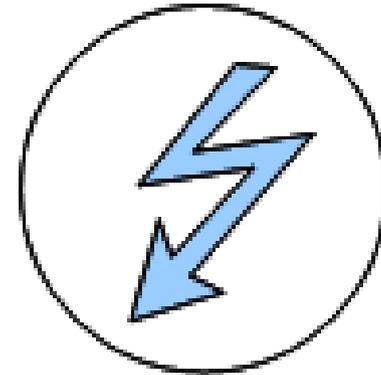
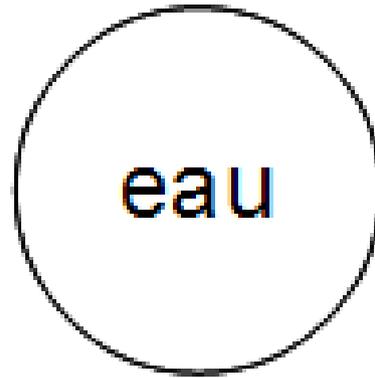
Est-ce que je peux dessiner sans lever le crayon et sans repasser par le même trait ?



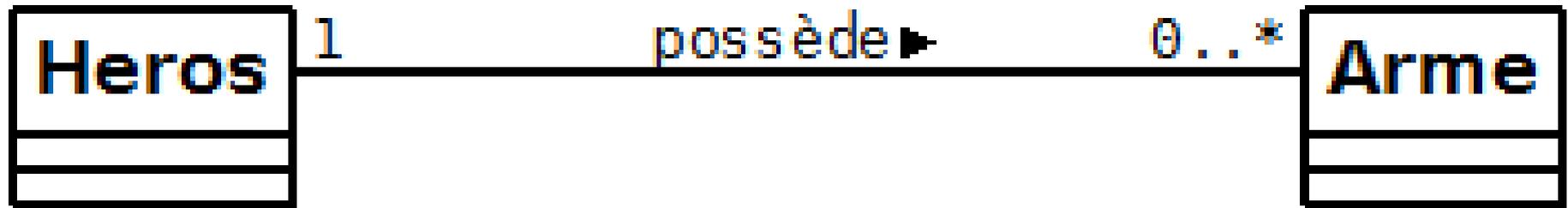
Est-ce que je peux passer une et
une seule fois par tous les ponts de
la ville de Königsberg ?



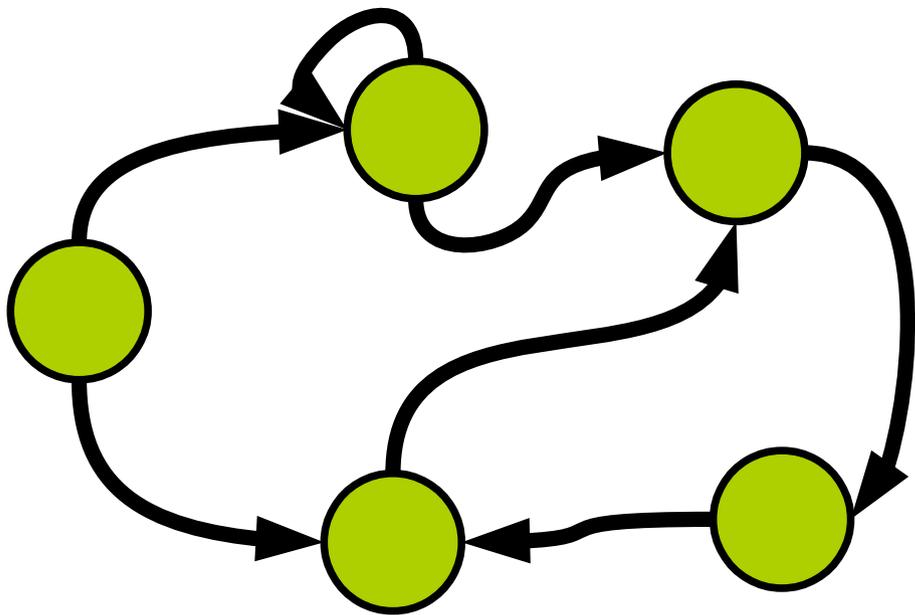
Est-ce que je peux connecter
chaque maison aux trois
fournisseurs sans croiser ?



Diagrammes de classe en génie logiciel



Structure de données « graphe »



ajouter/supprimer
un sommet

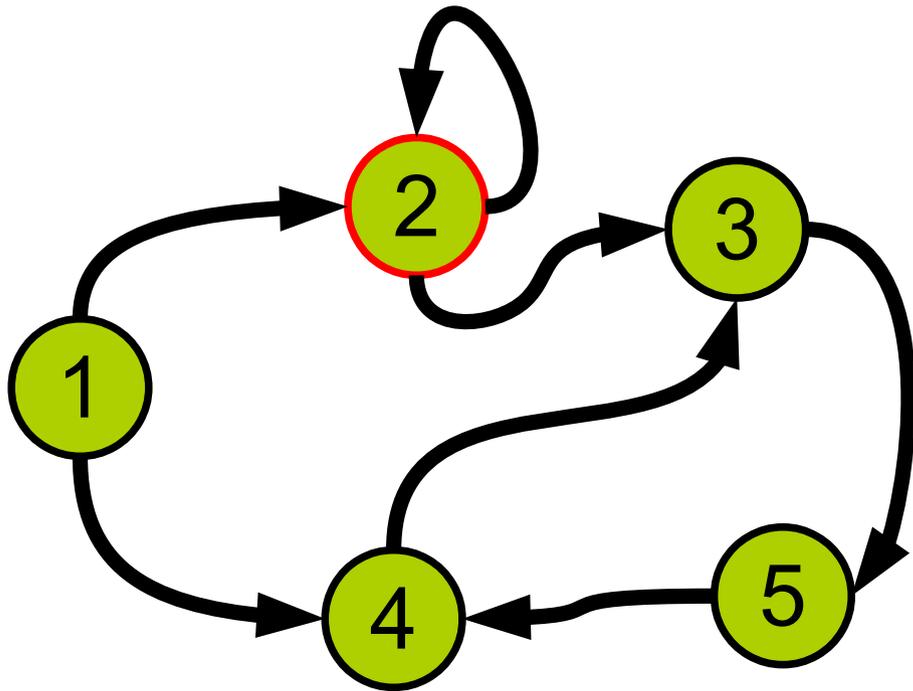


ajouter/supprimer
un arc

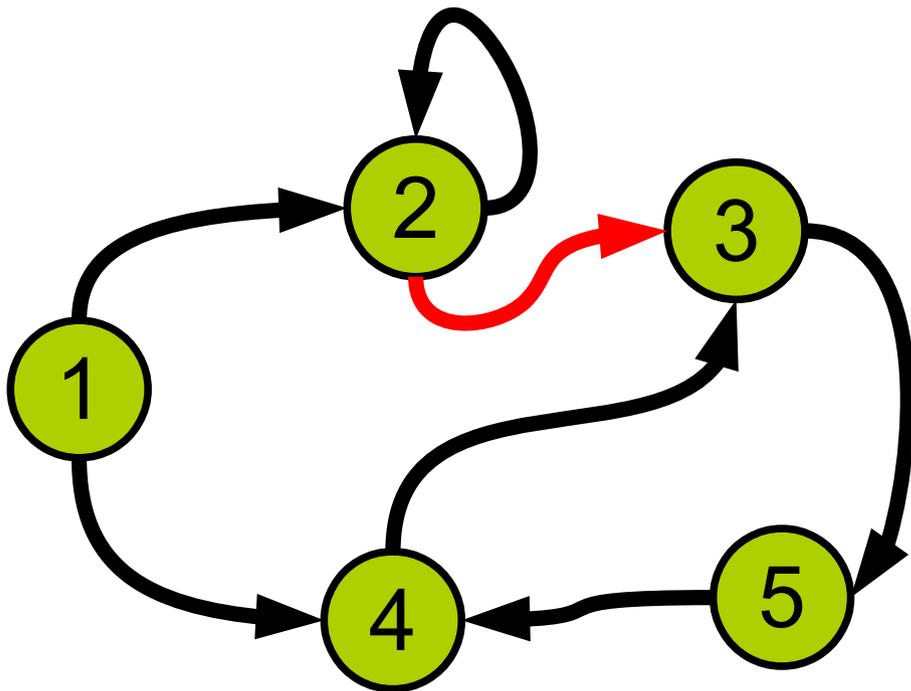
...

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

