

Algorithmes gloutons

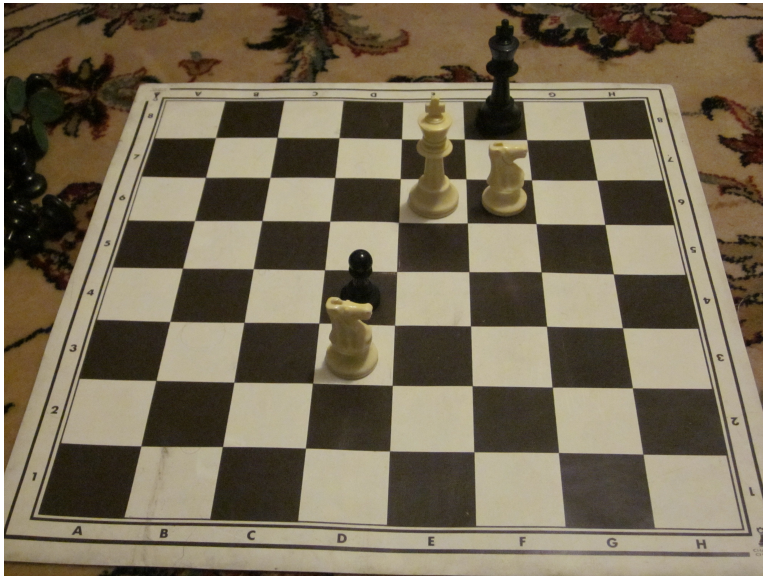
ENS Cachan – Antenne de Bretagne



A B C D E F G H
1
2
3
4
5
6
7
8
A B C D E F G H

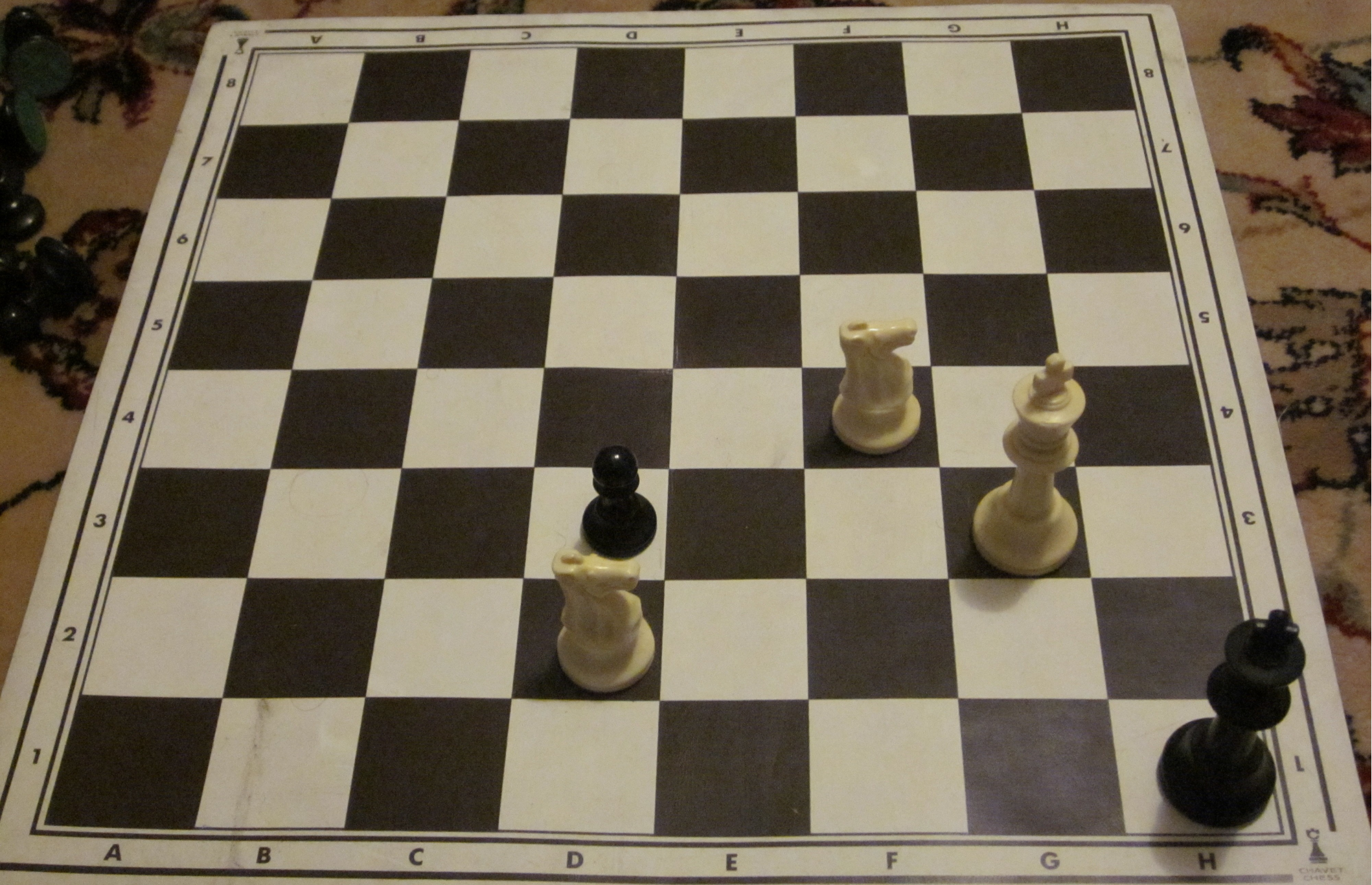


Approche gloutonne = forcer l'avantage matériel à tout prix

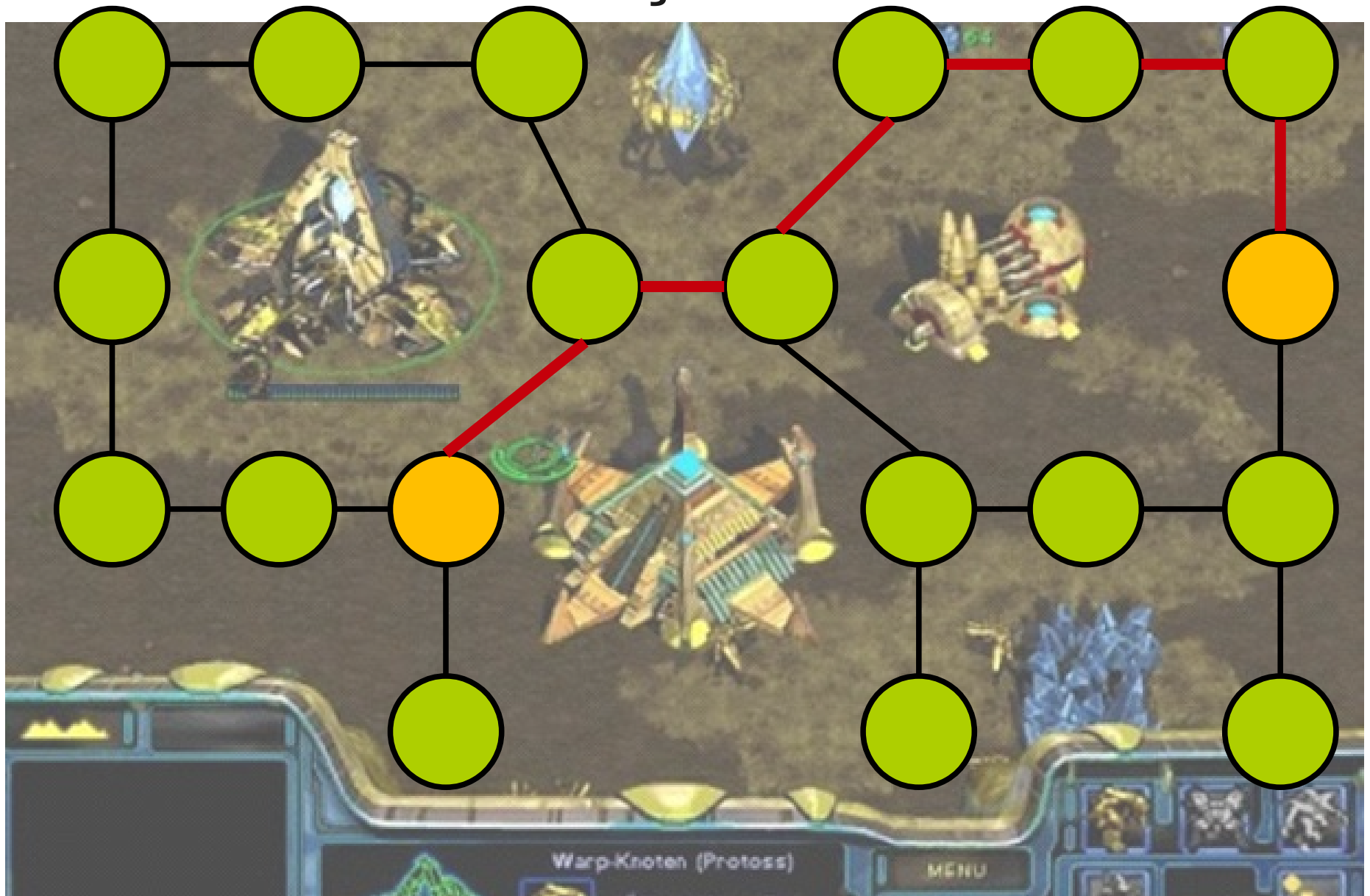


- Ici : tuer le pion
- Problème :
roi blanc VS roi noir
+ 2 cavaliers

= PAT
- Solution : il existait une solution non gloutonne...



Des fois ça marche



Algorithmes gloutons

- Arbre couvrant de poids minimal
 - algorithme de Kruskal
 - algorithme de Prim
- Encodage de Huffman
- Clauses de Horn

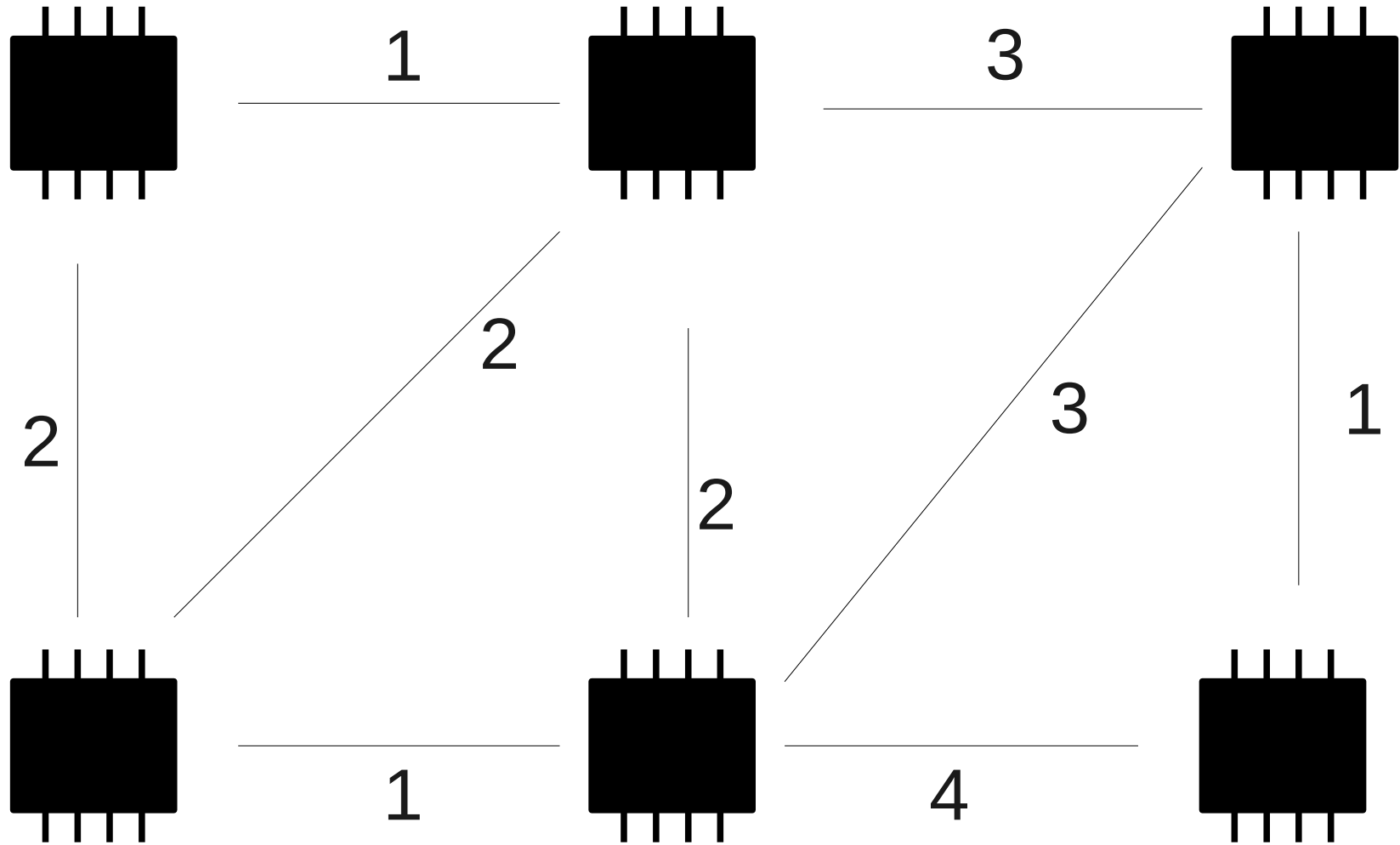
algorithmes exacts

- Couverture d'ensemble

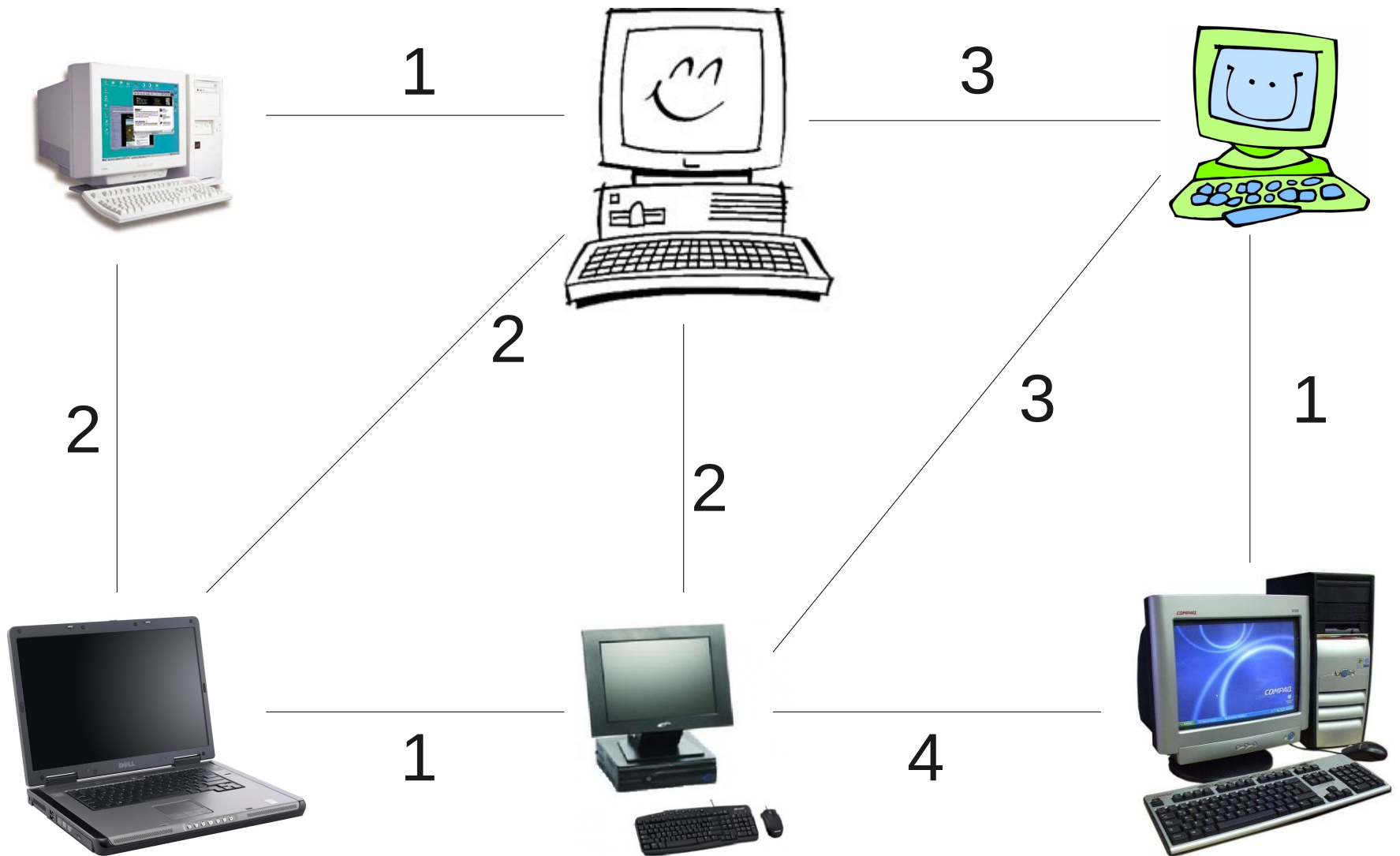
algorithmes
approximatifs

Arbre couvrant de poids minimal

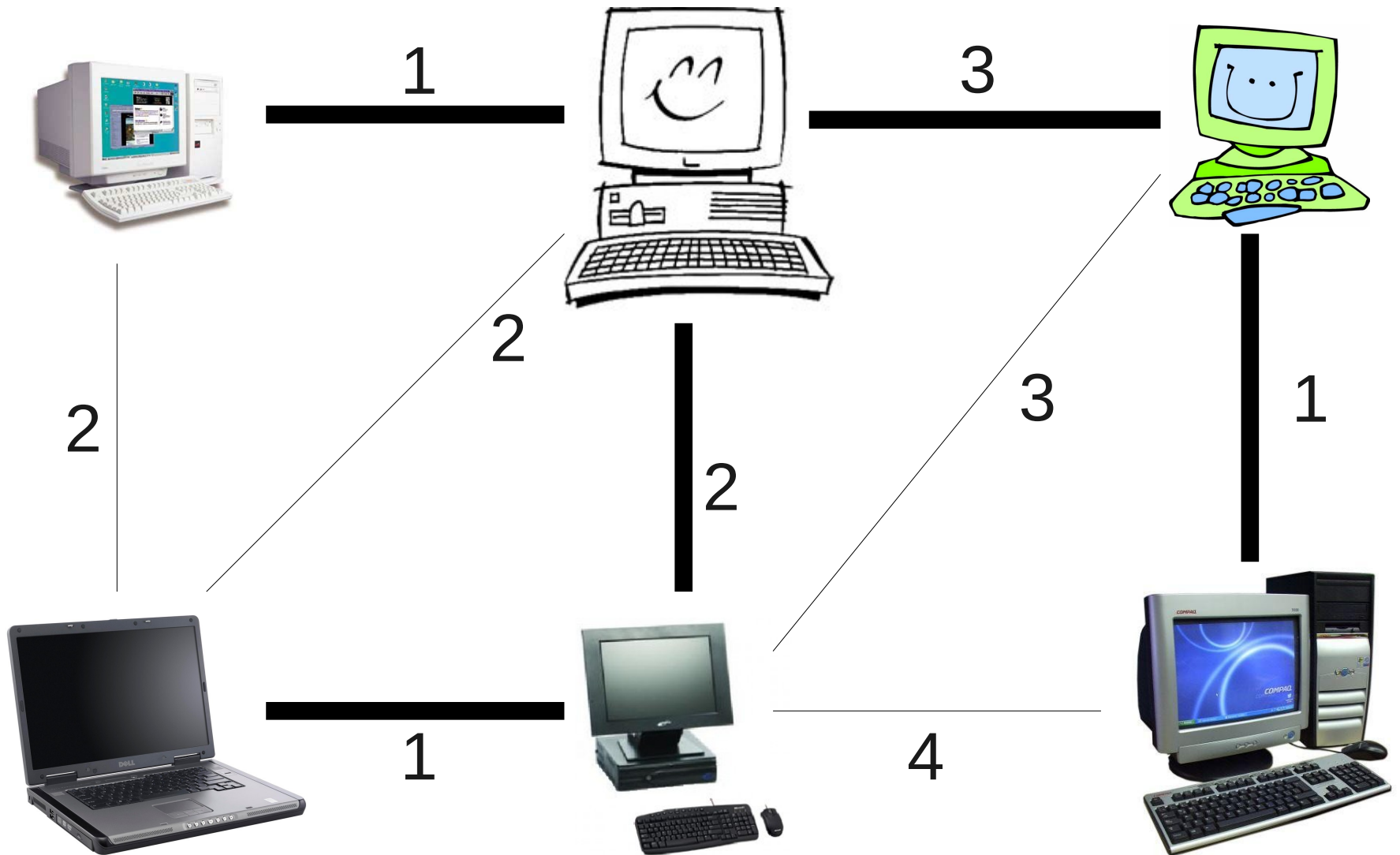
Circuit électronique



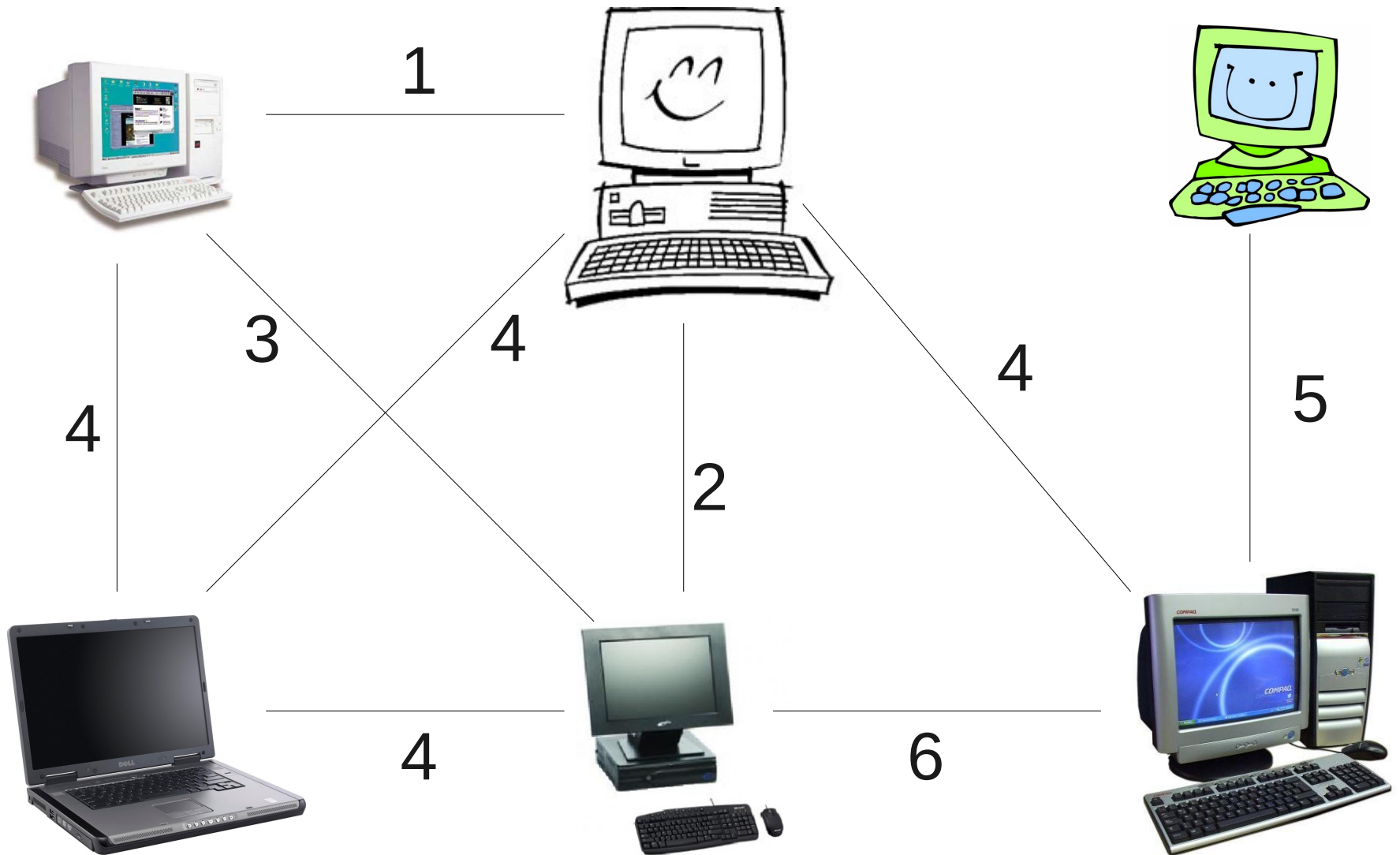
Réseau



Réseau

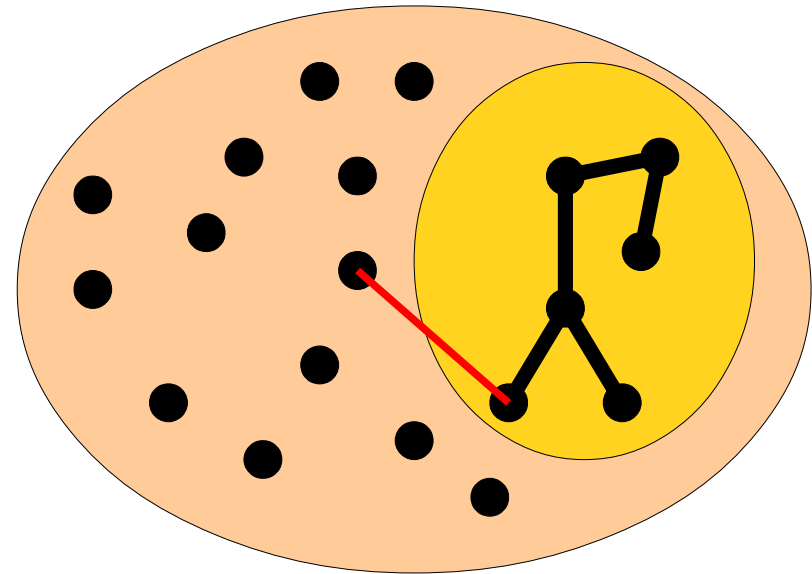
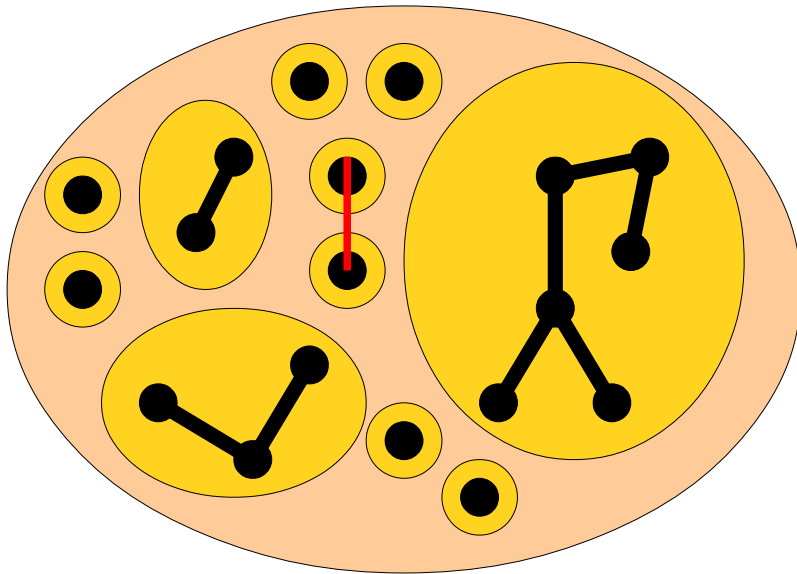


Réseau

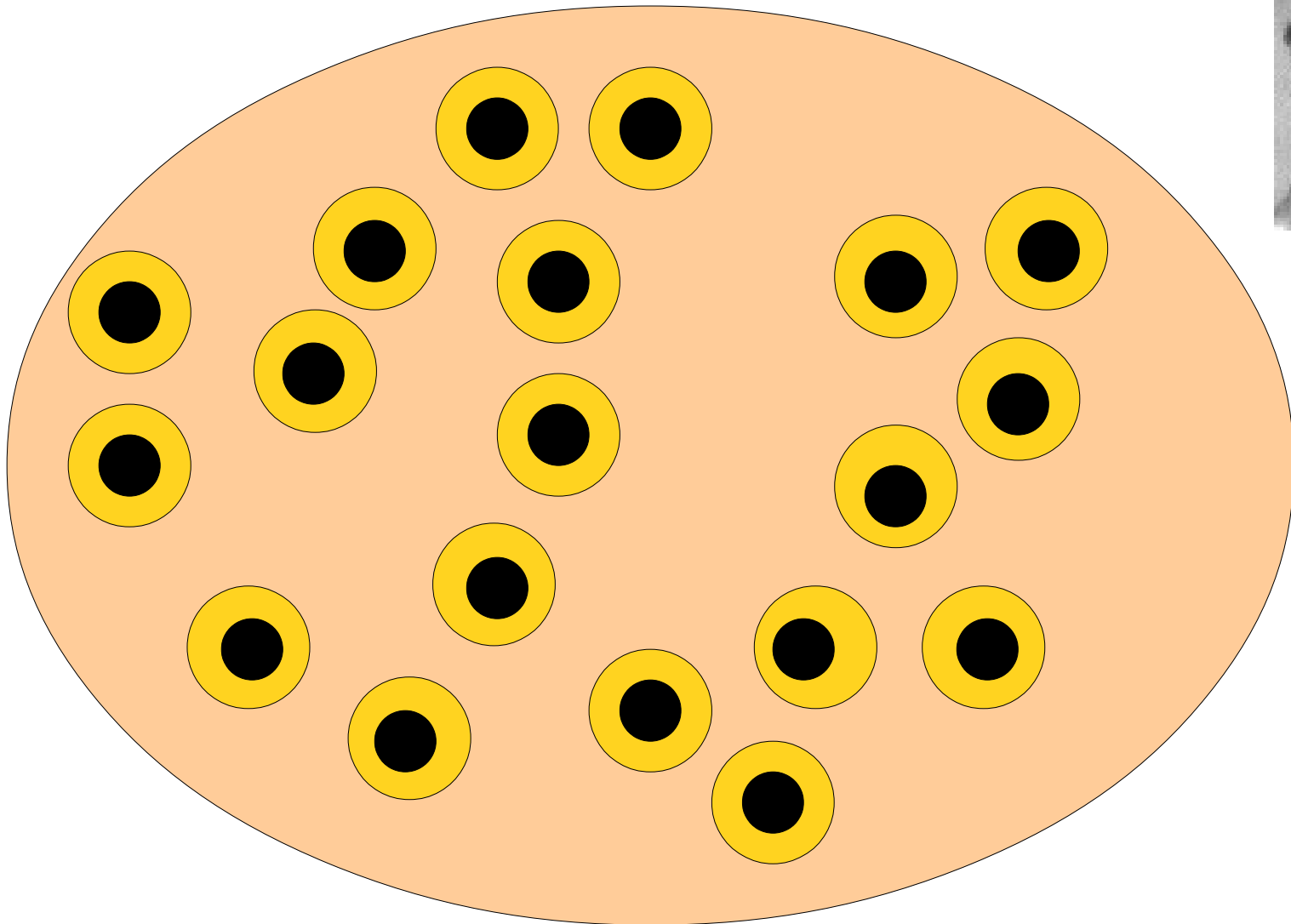
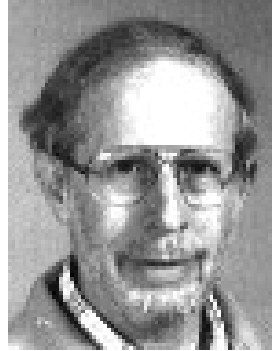


Deux idées

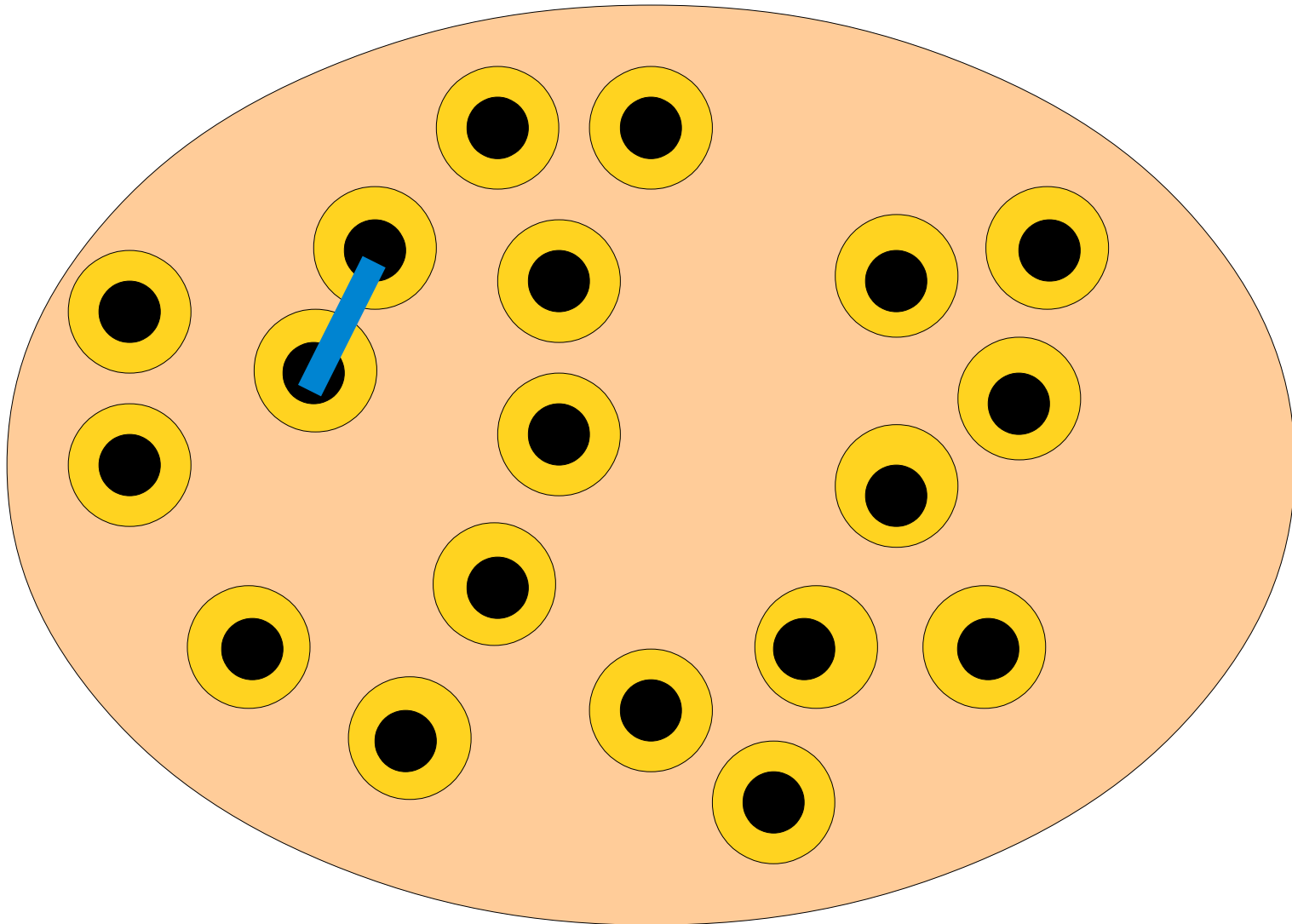
- Algorithme de Kruskal
- Algorithme de Prim



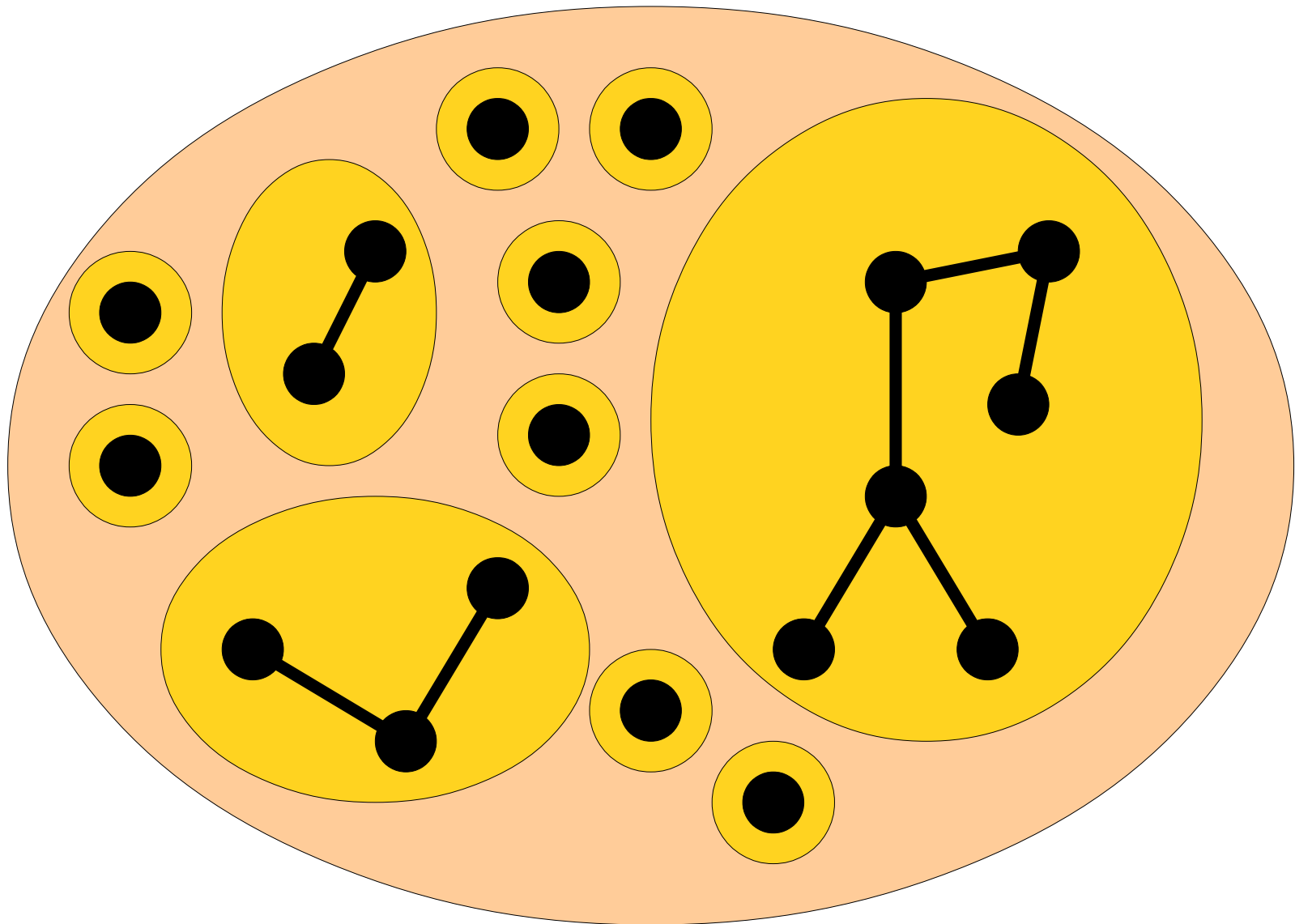
Algorithme de Kruskal (1956)



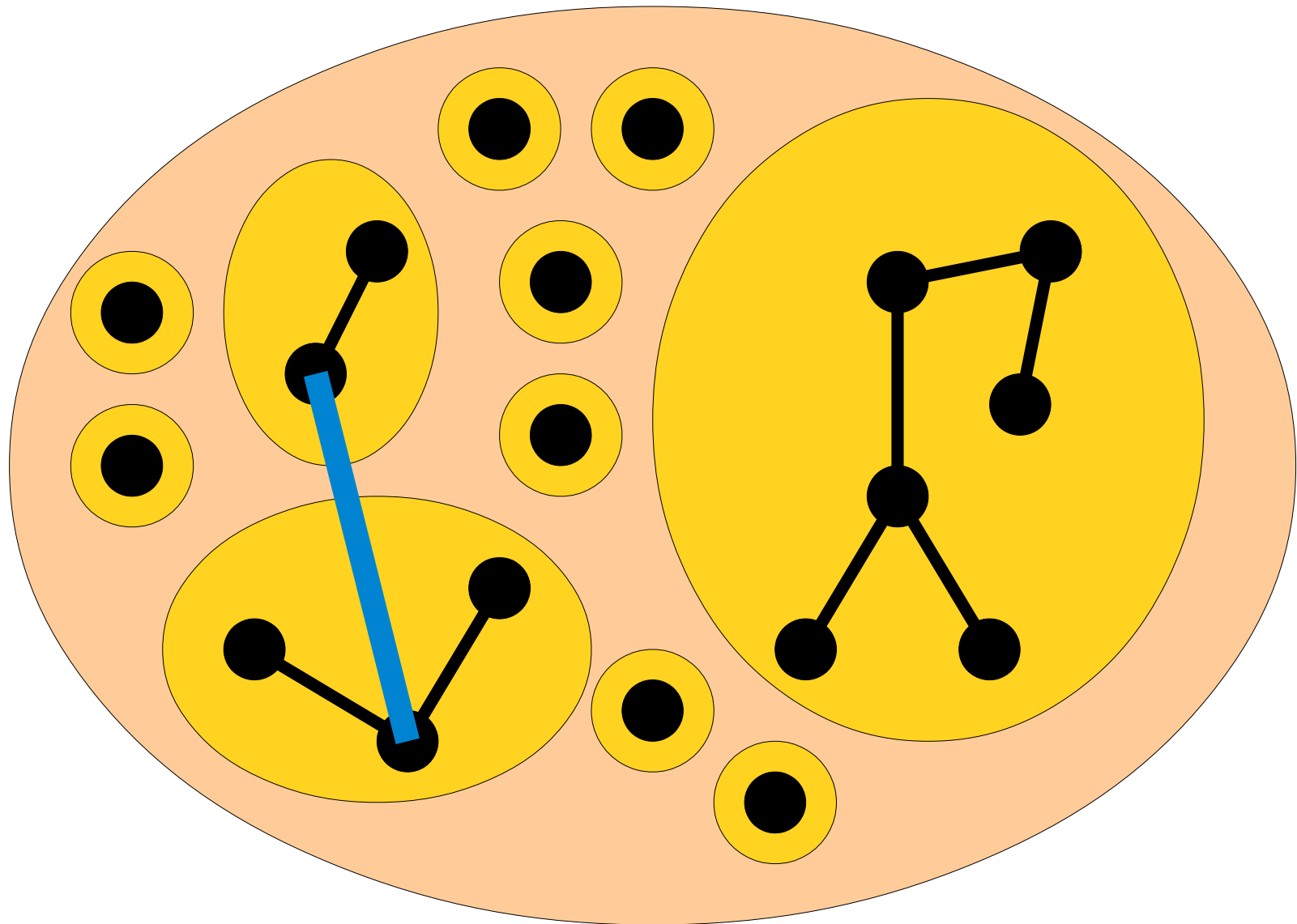
Algorithme de Kruskal



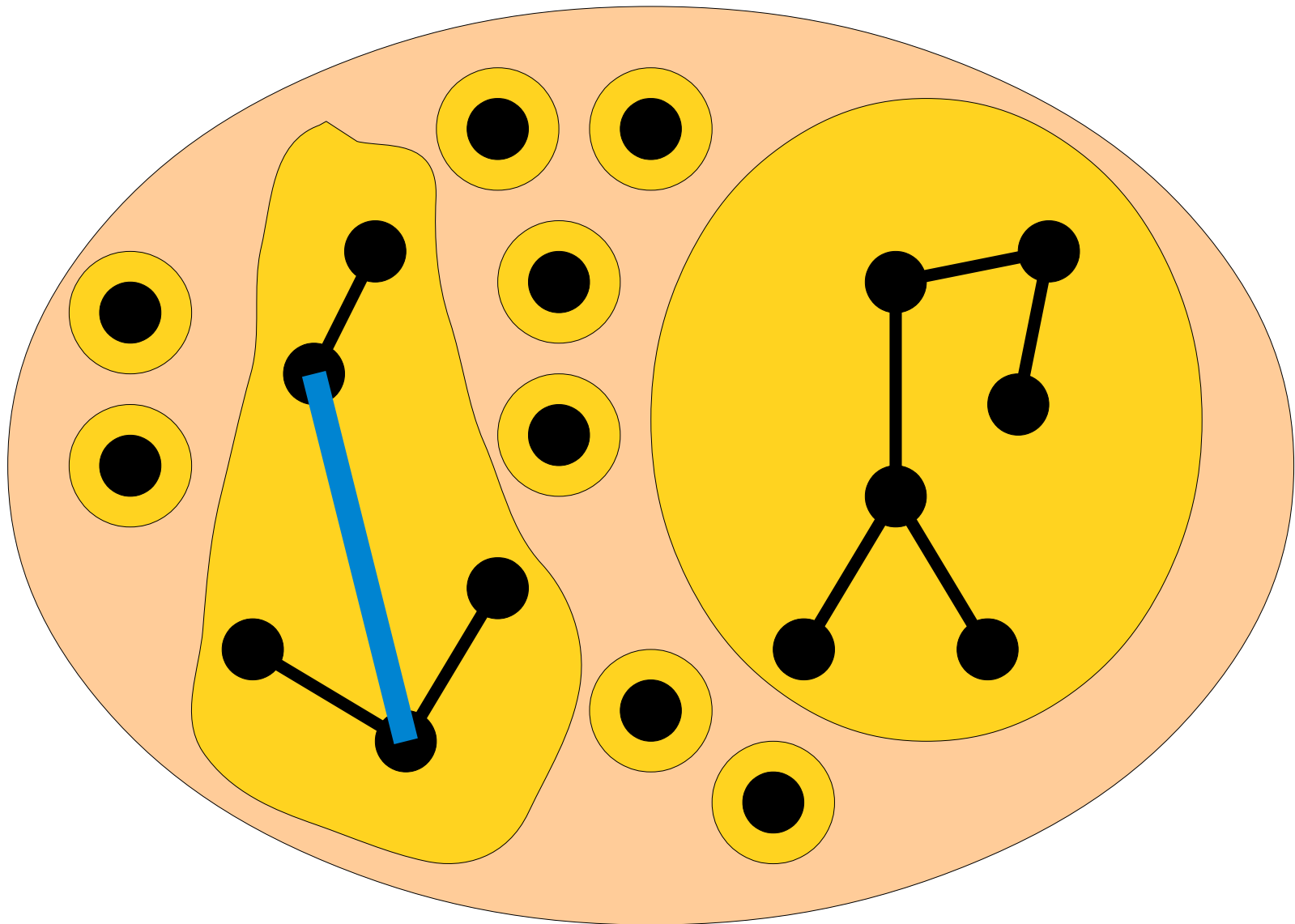
Algorithme de Kruskal



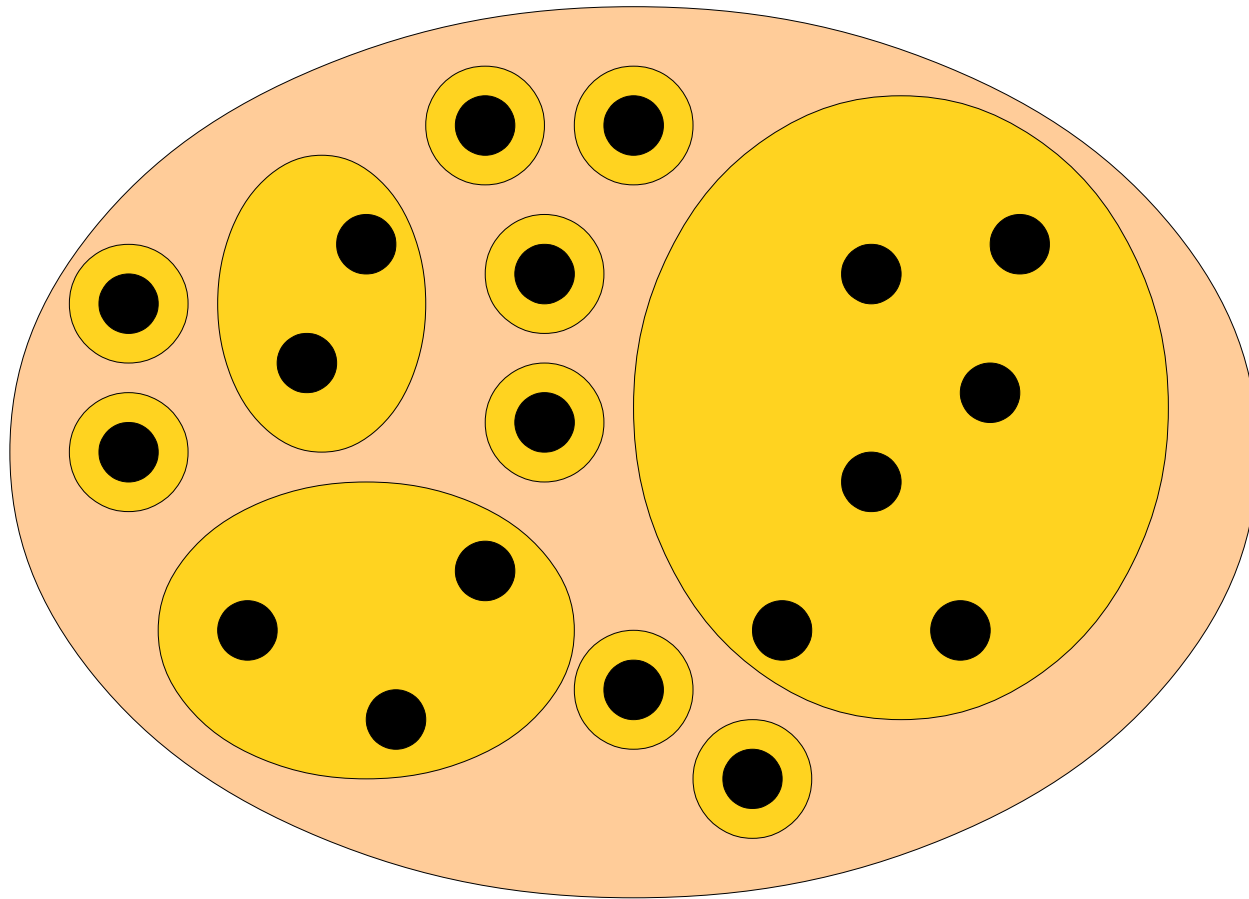
Algorithme de Kruskal



Algorithme de Kruskal



Union-find

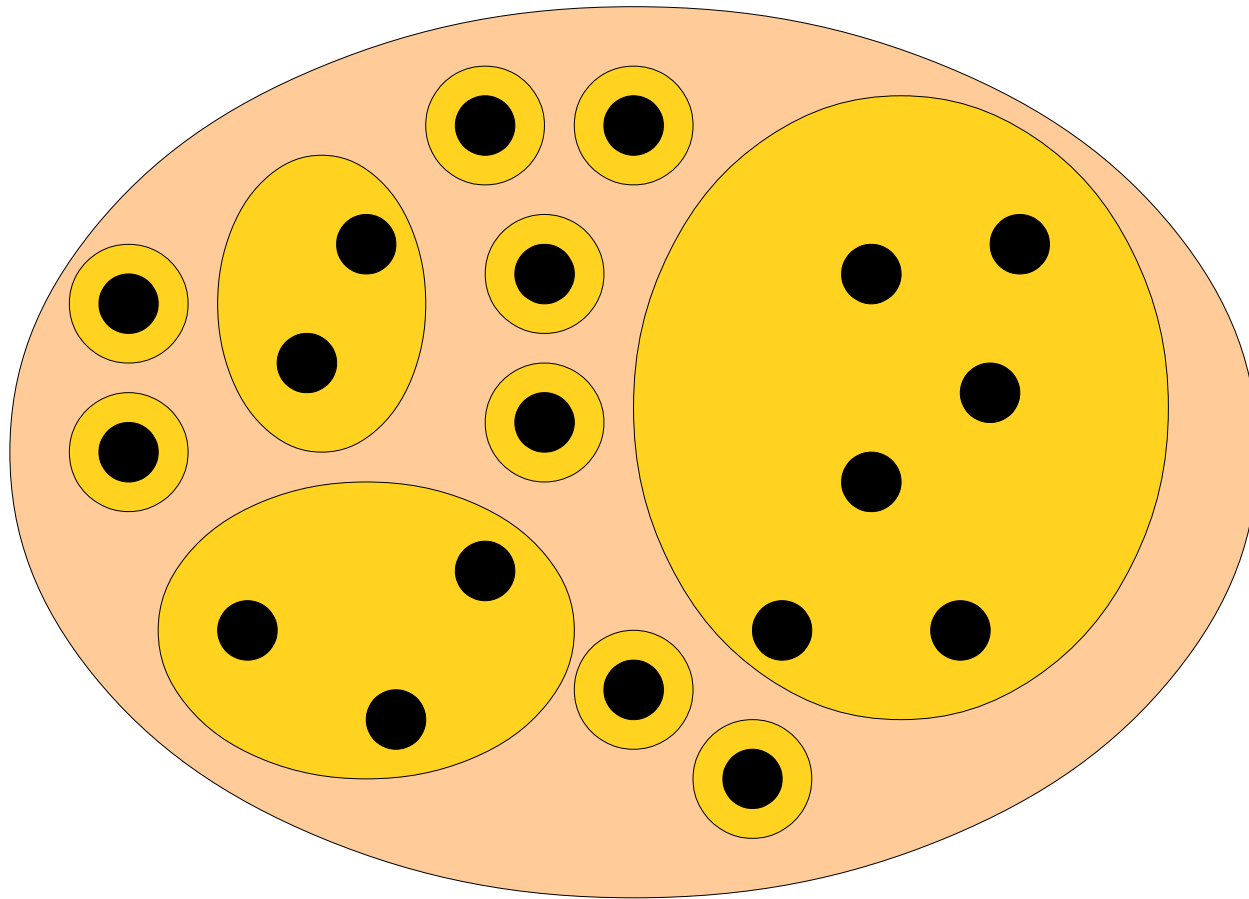


Créer union-find

Find

Union

Union-find

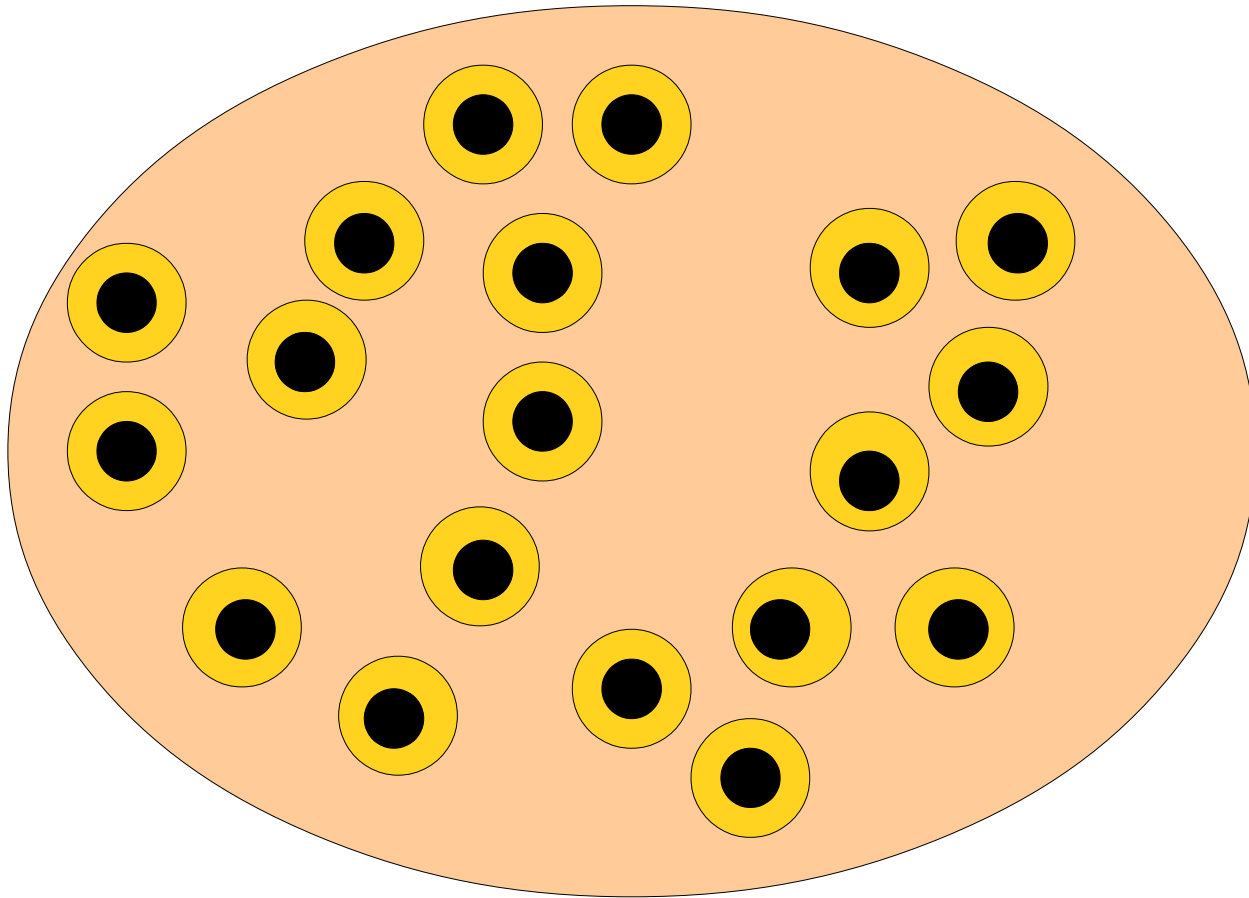


Créer union-find

Find

Union

Union-find

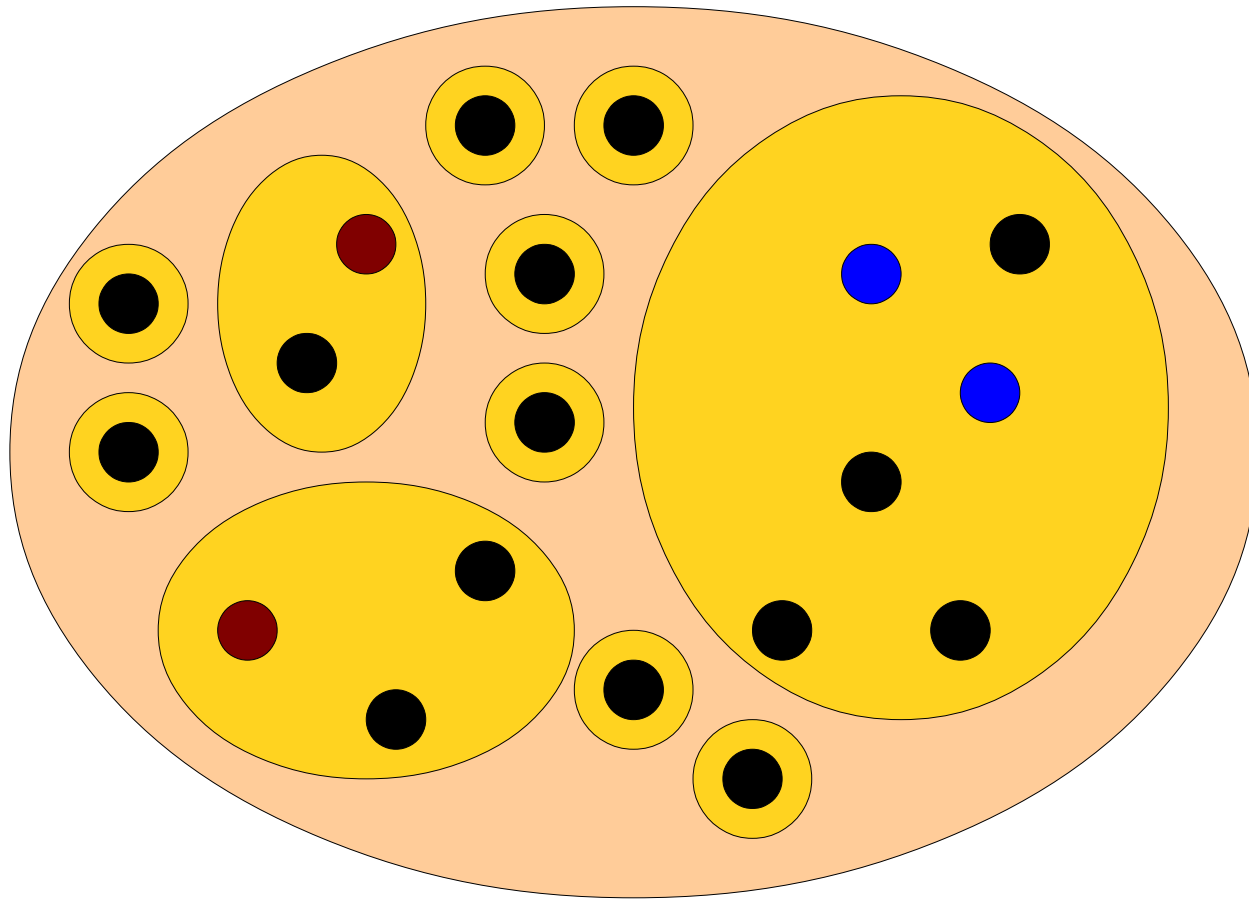


Créer union-find

Find

Union

Union-find

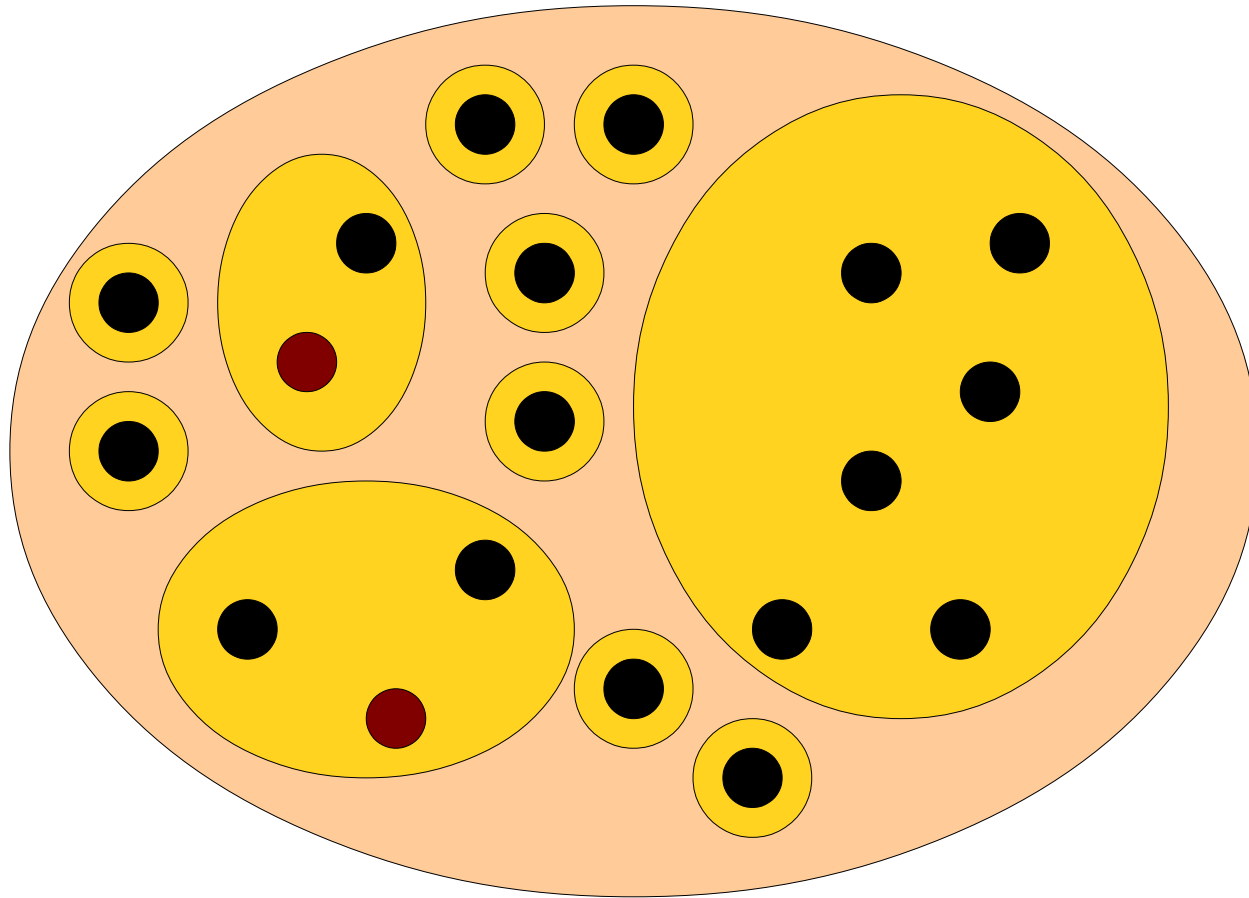


Créer union-find

Find

Union

Union-find

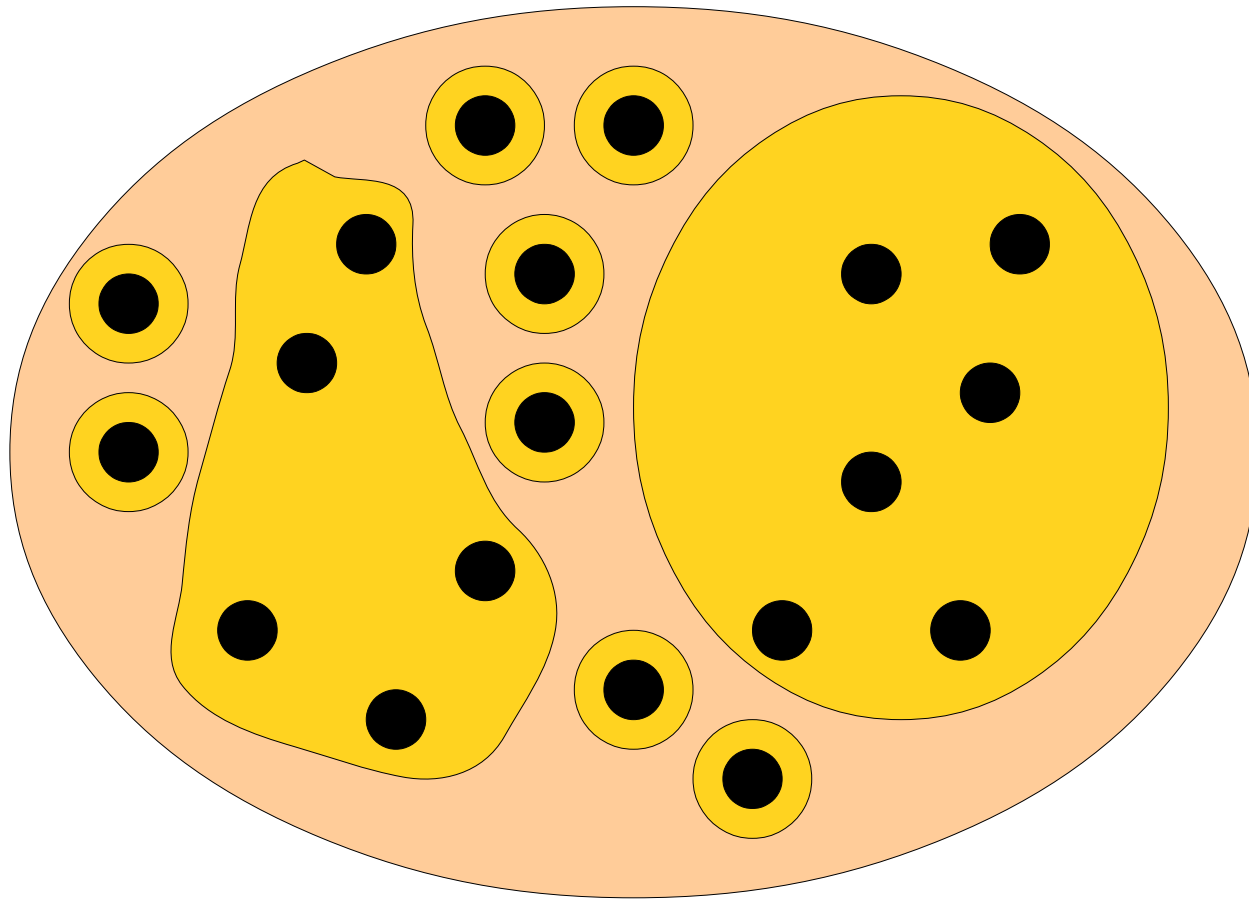


Créer union-find

Find

Union

Union-find

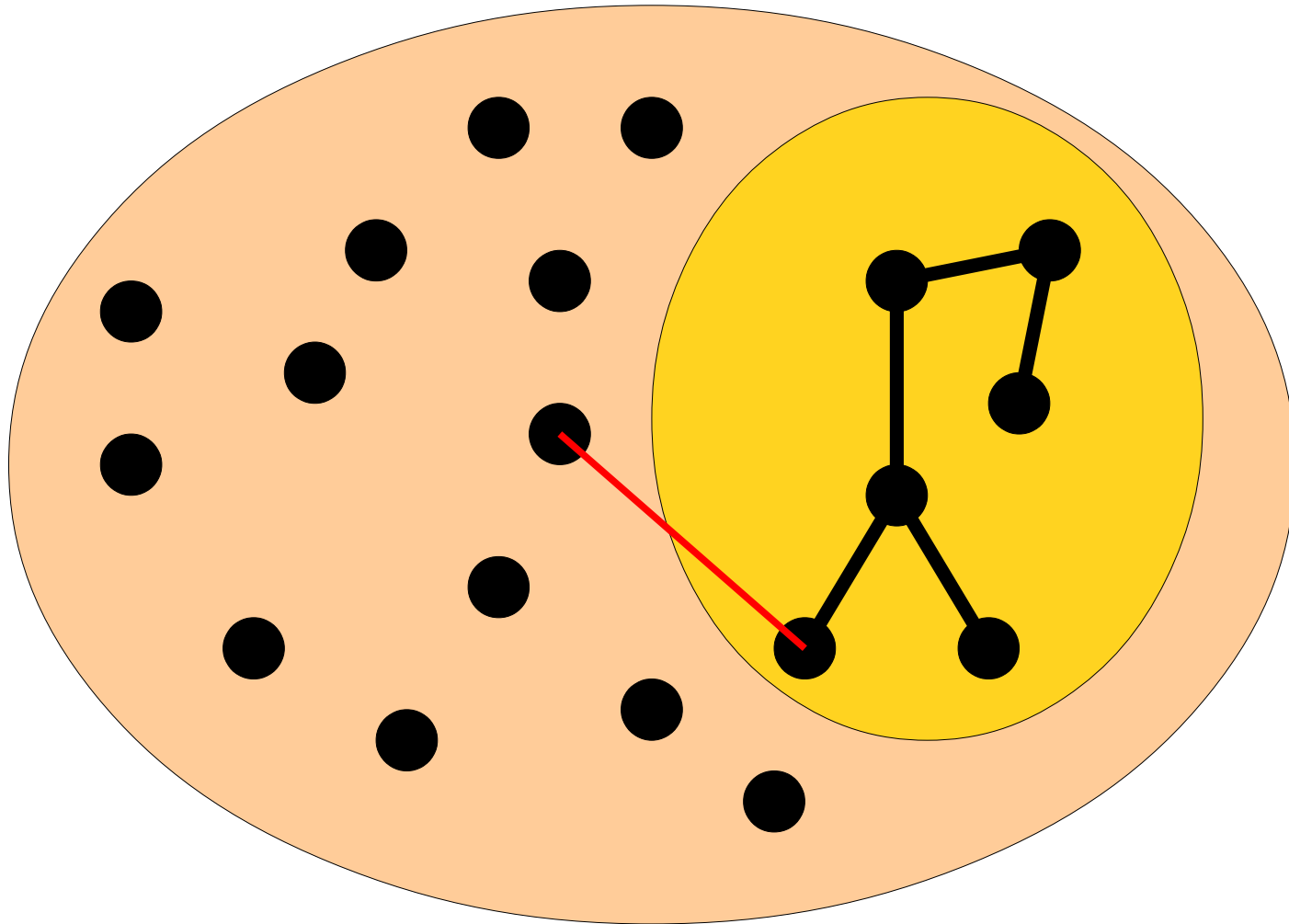


Créer union-find

Find

Union

Algorithme de Prim

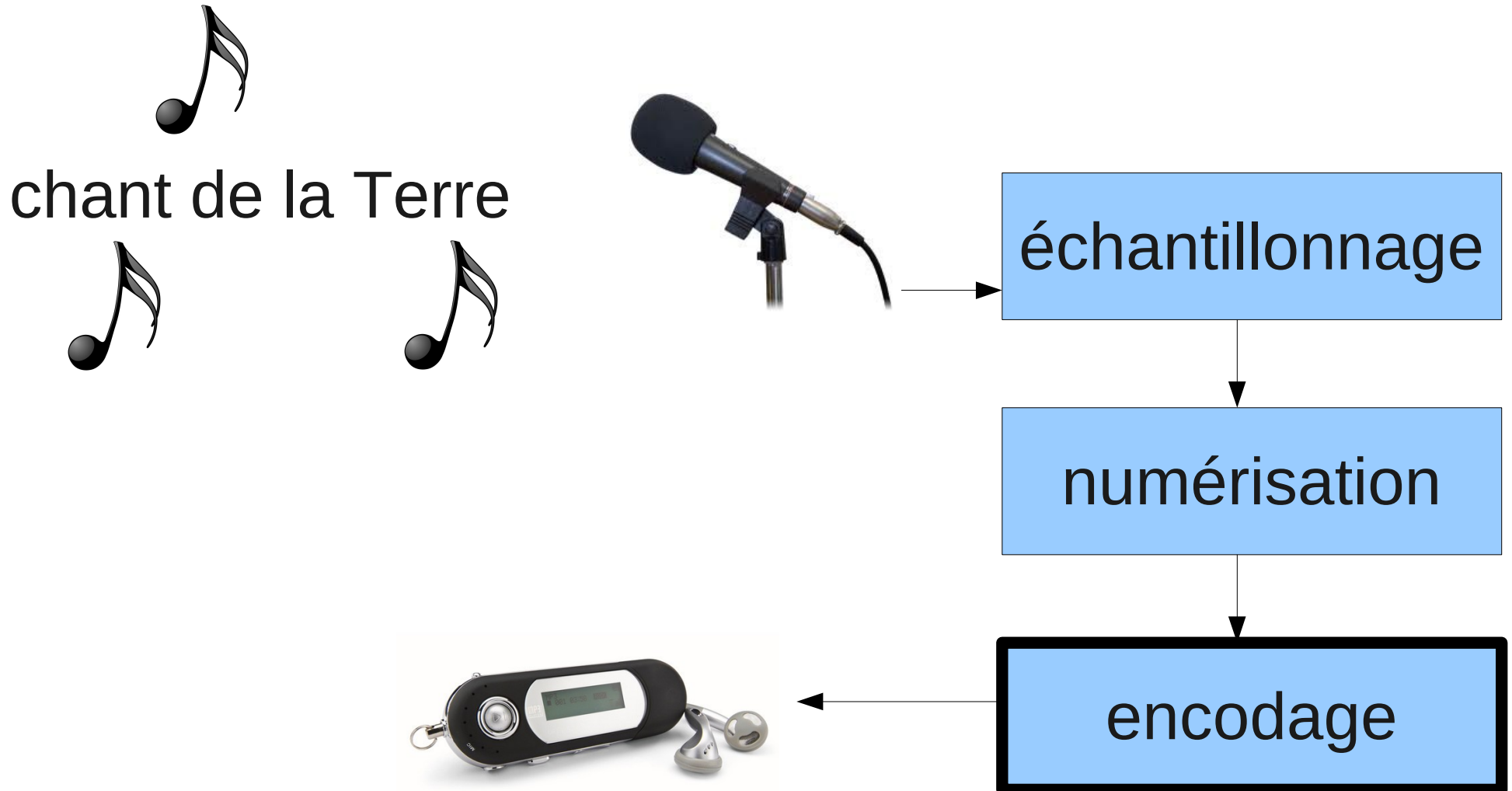


Encodage de Huffman

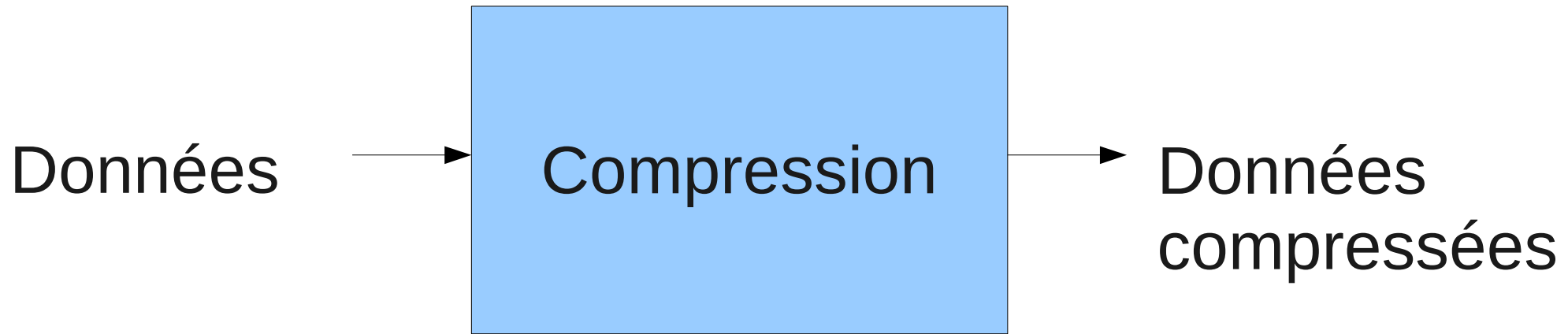


Savez-vous combien de temps dure
le « chant de la Terre » de Mahler ?

Compression MP3



Compression



Encodage naïf

- ABADACACAADAADACAAAD
- 00010011001000100000110000110010000000
11

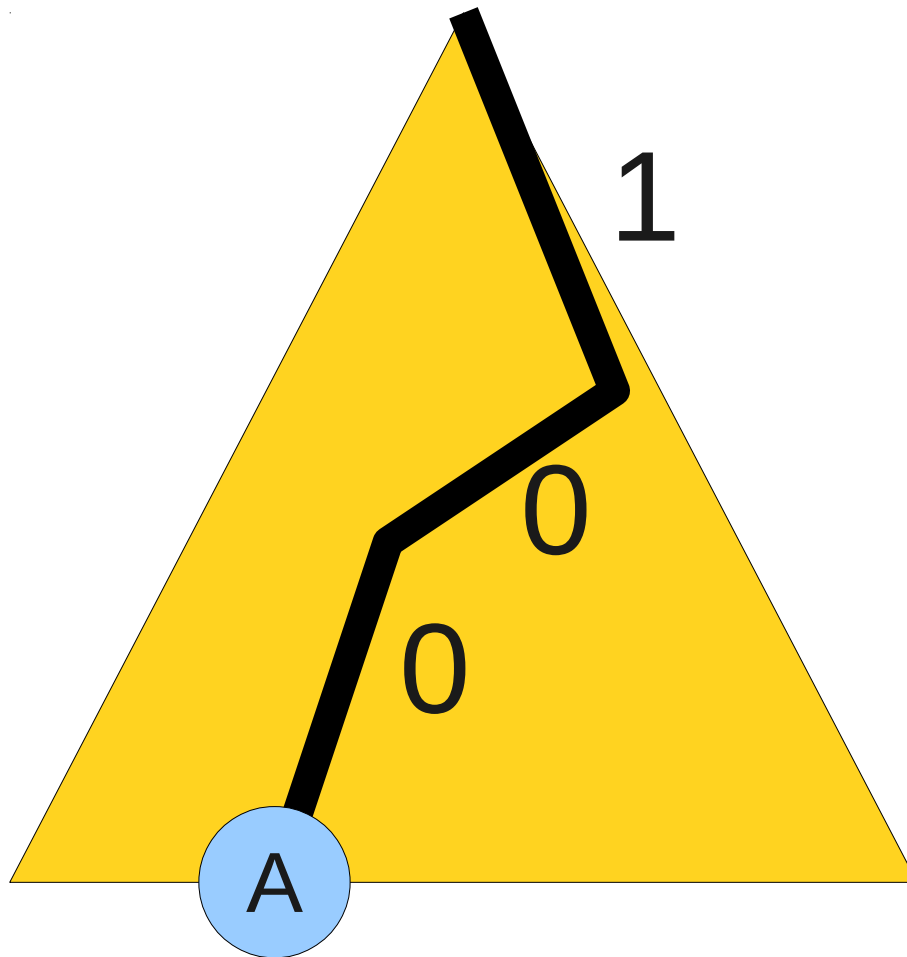
Compression... problème : ambiguïté

- A**B**A**D**A**C**A**C**A**A**D**A**A**D**A**C**A**A**A**D**
- 0**0**0**1**0**1**1**0**0**1**0**0**1**0**0**1**0**0**1**1**0**0**1**1**0**1**0**0**0**0**1

Compression... sans ambiguïté

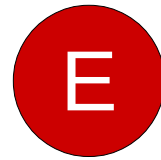
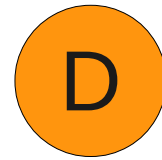
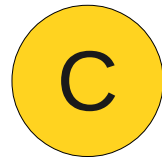
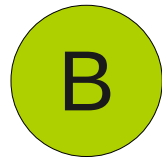
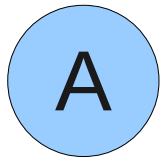
- A**B**A**D**A**C**A**C**A**A**D**A**A**D**A**C**A**A**A**D**
- 0**1****0****1**0**1****1**0**1****0****1****0****1****0****0****1****1****0****0****1****1**0**1****0****1****0****0****0****1**

Arbre préfixe

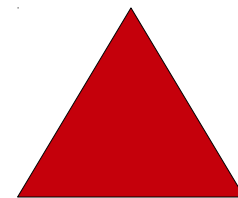
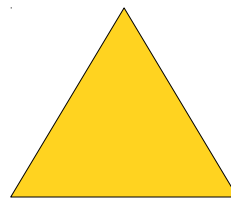
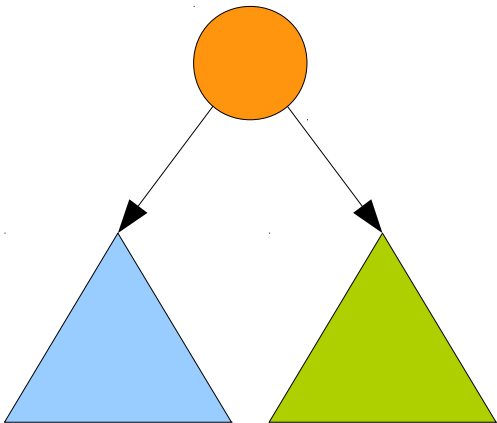
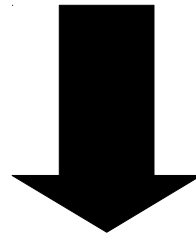
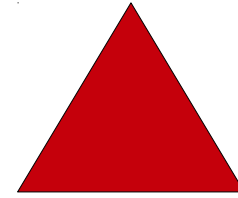
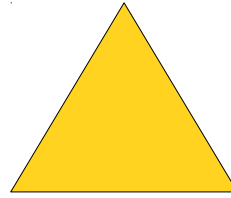
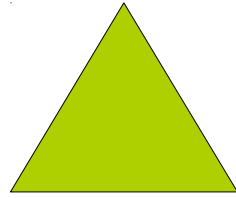
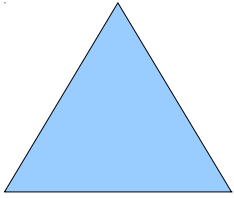


100

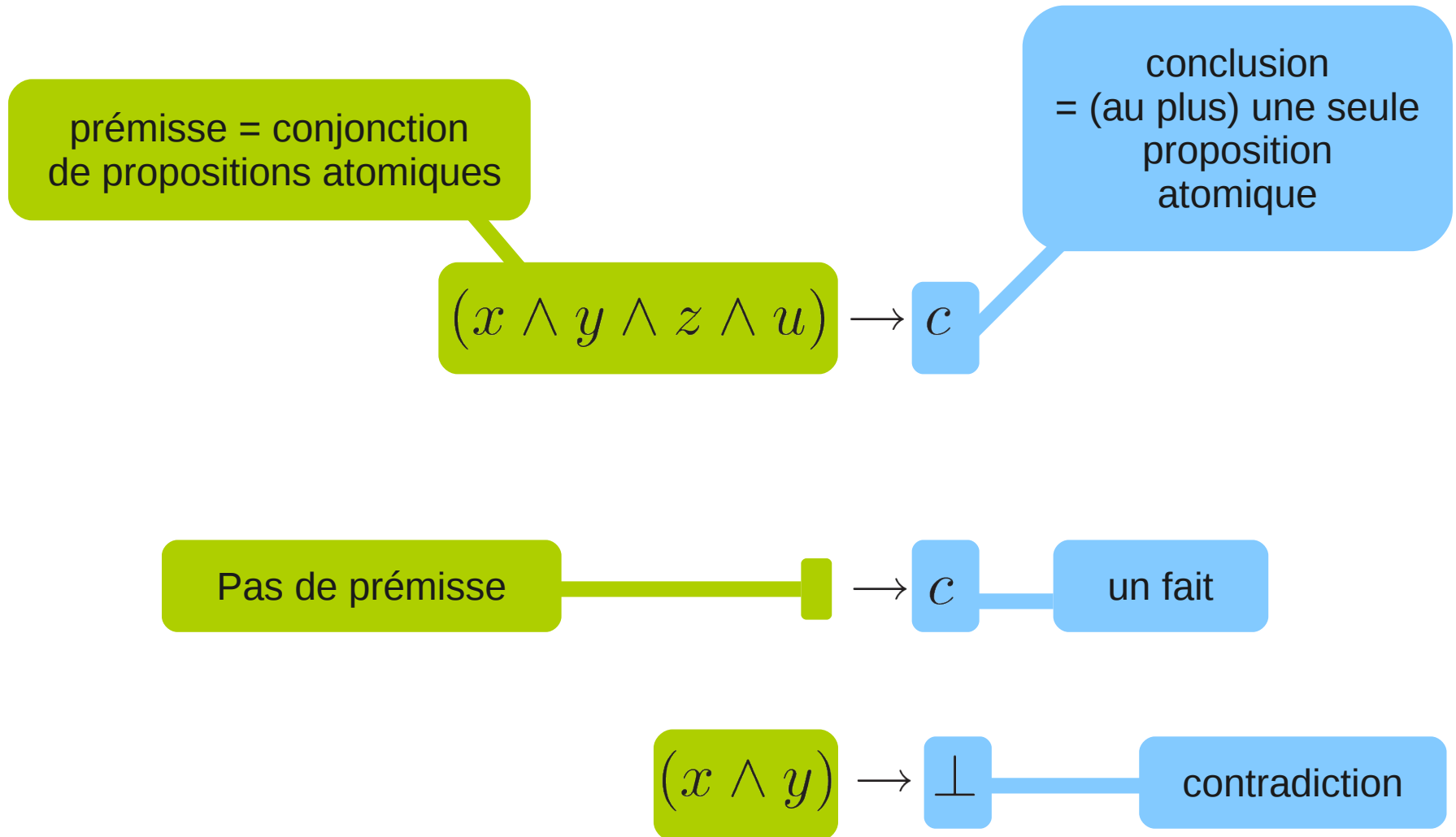
Au début



Calcul



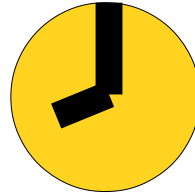
Horn-SAT



Un fait divers



x



w



z



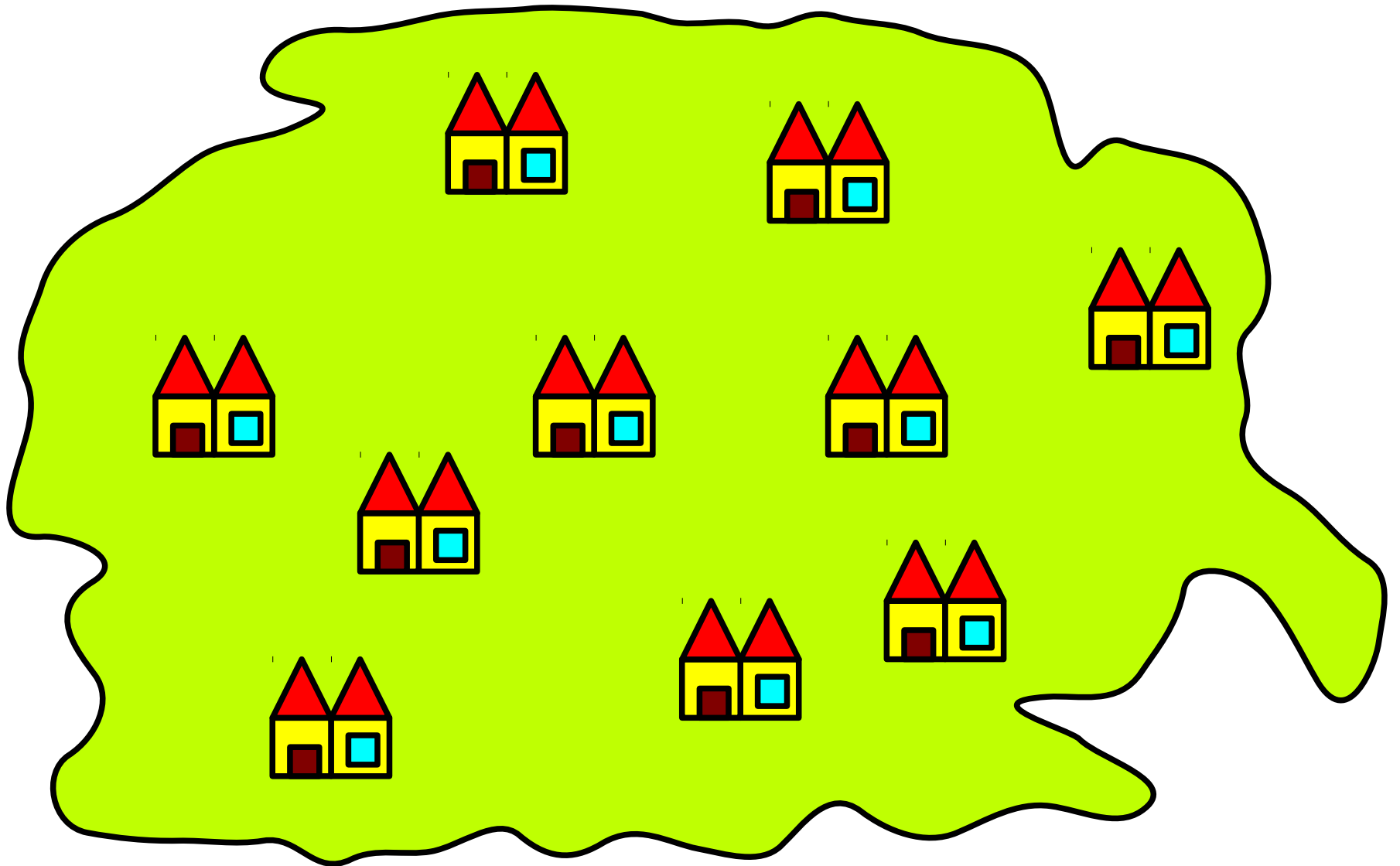
y



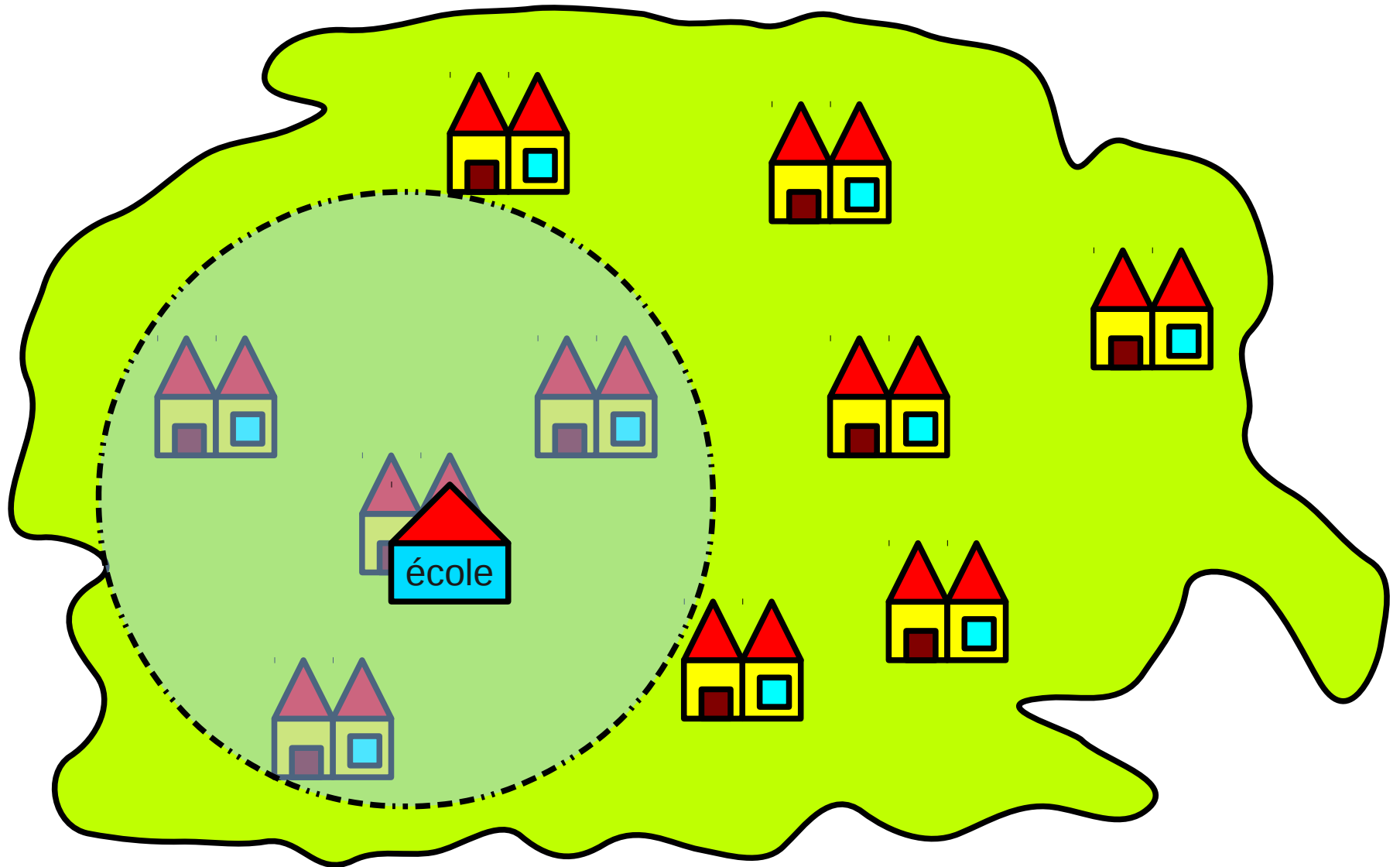
u

Couverture d'ensemble

Motivation : l'éducation !



Motivation : l'éducation !



Motivation : l'éducation !

