

Calculability in Distributed Computing

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Common work with:
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Le cadre

Processus qui communiquent par **mémoire partagée**

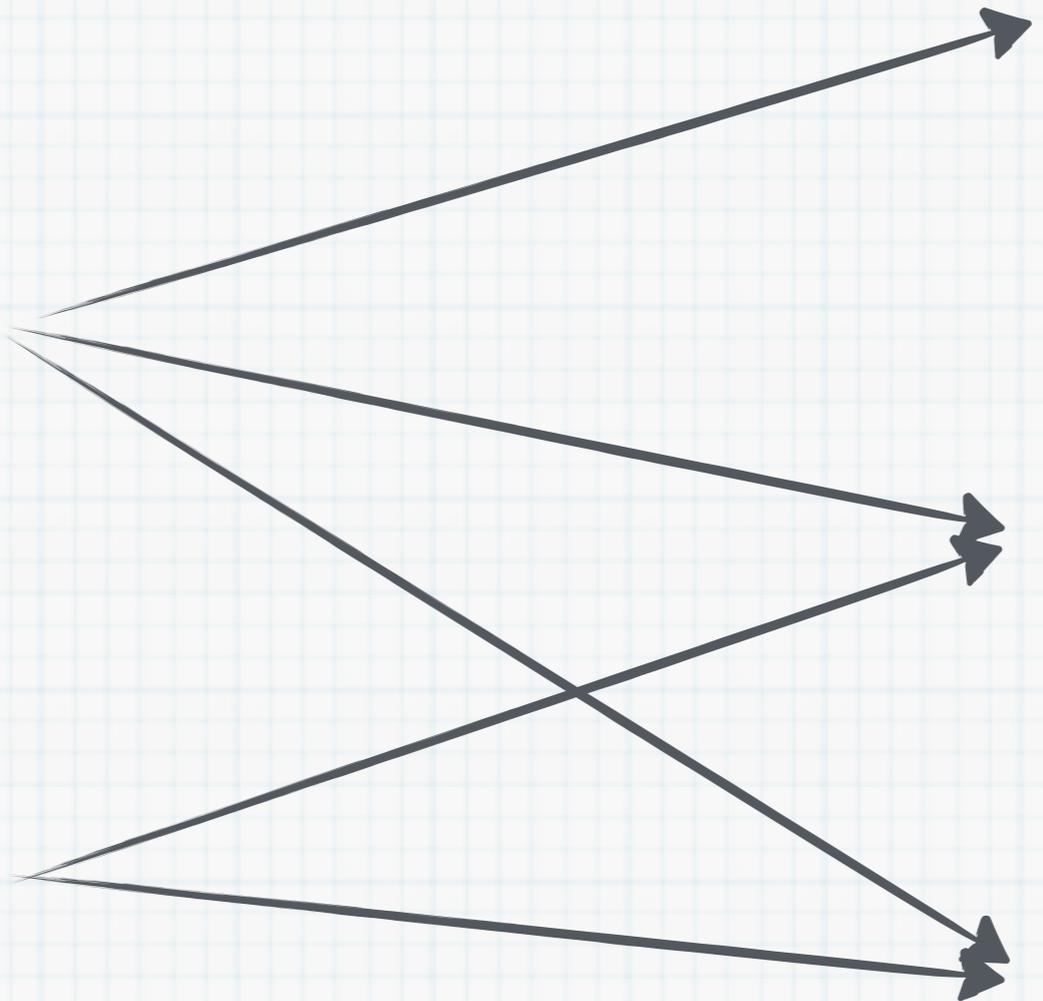
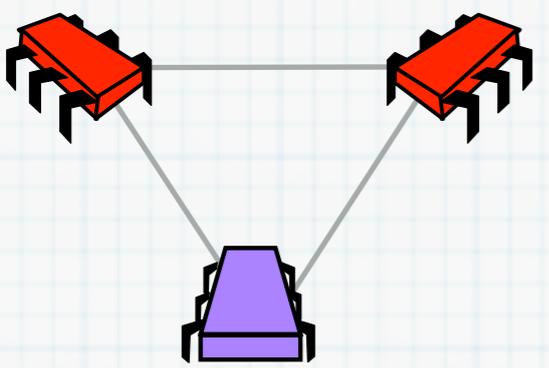
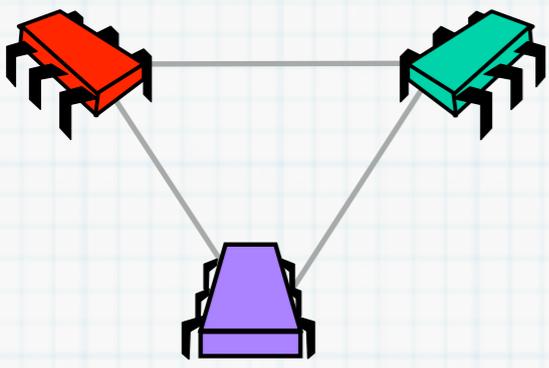
- Asynchrones
- Pannes

?

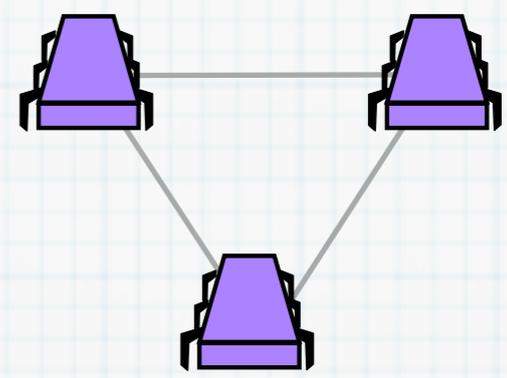
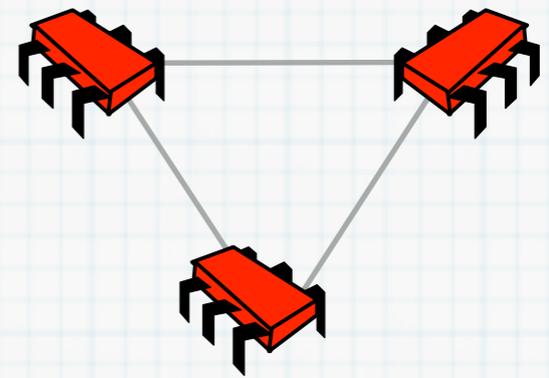
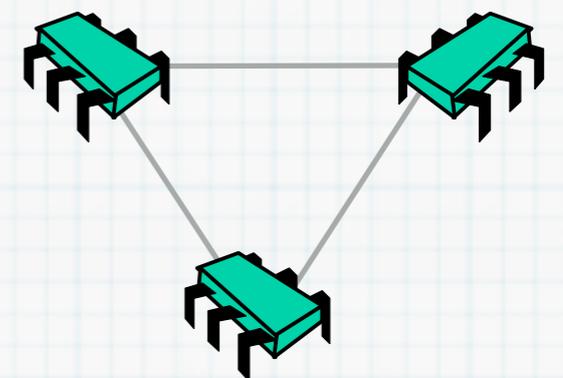
Qu'est ce qu'on **peut** / **ne peut pas**
calculer dans ce modèle

Les fonctions

Entrées



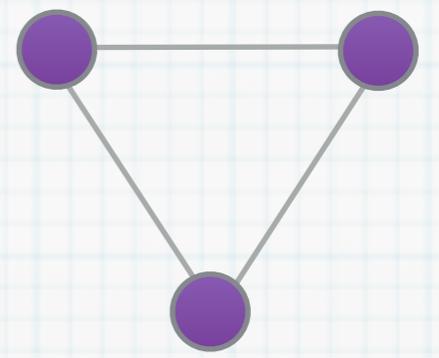
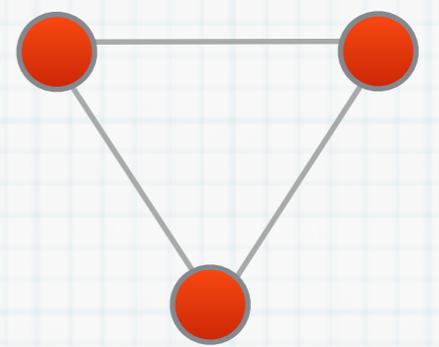
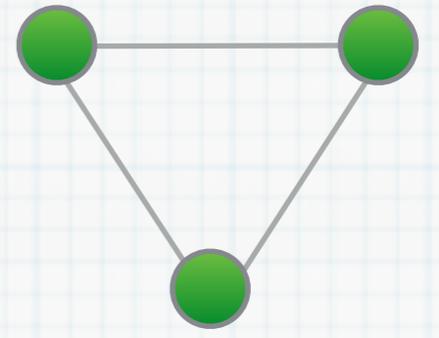
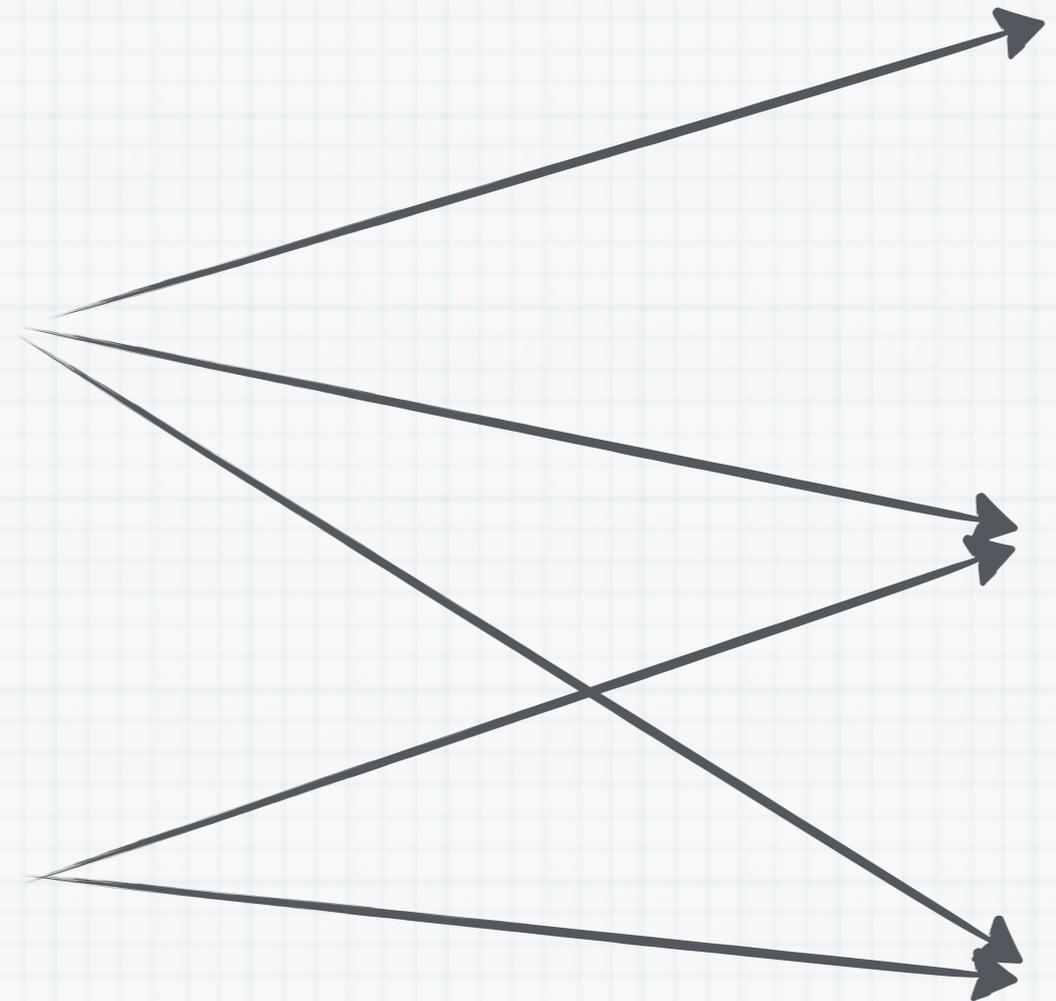
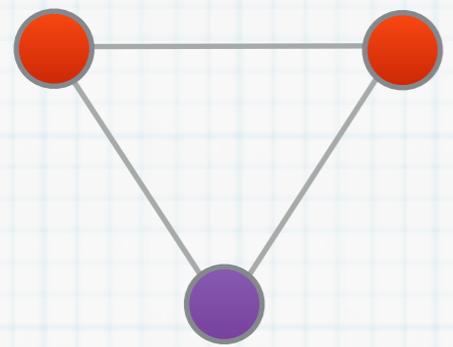
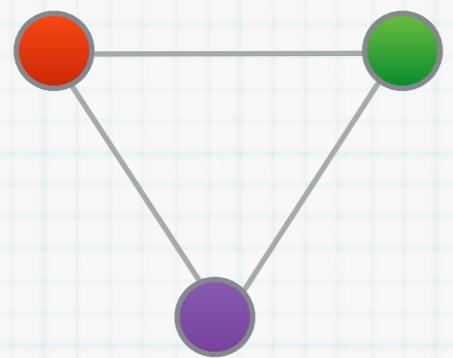
Sorties



Les fonctions

Entrées

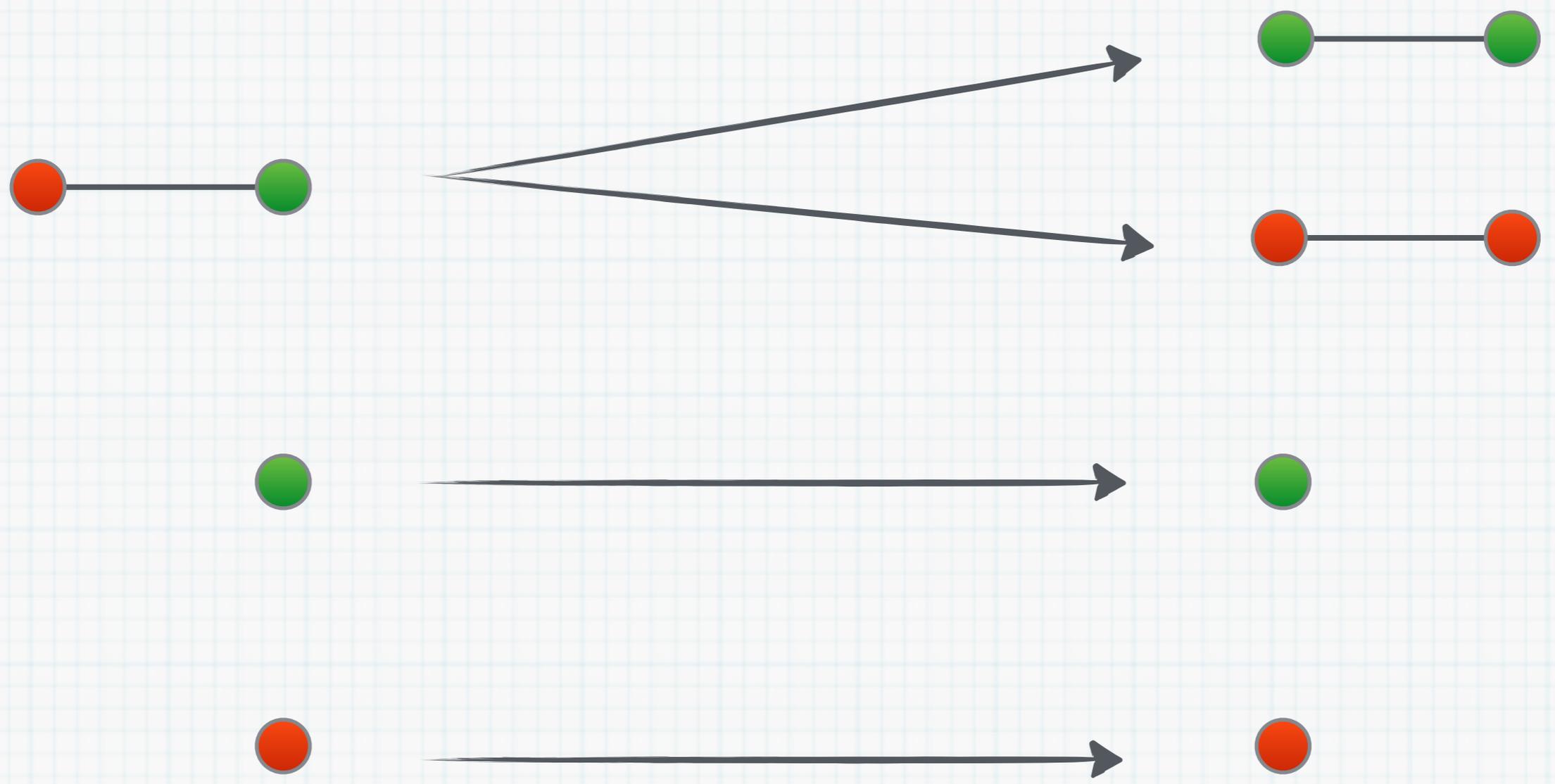
Sorties



Consensus

Entrées

Sorties



La question

Donnée

Une fonction distribuée T

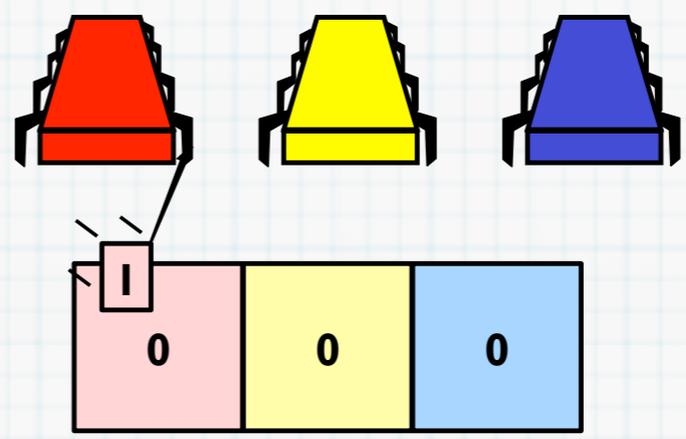
Question

Est-il possible de la calculer ?
(mémoire partagée, async, pannes)

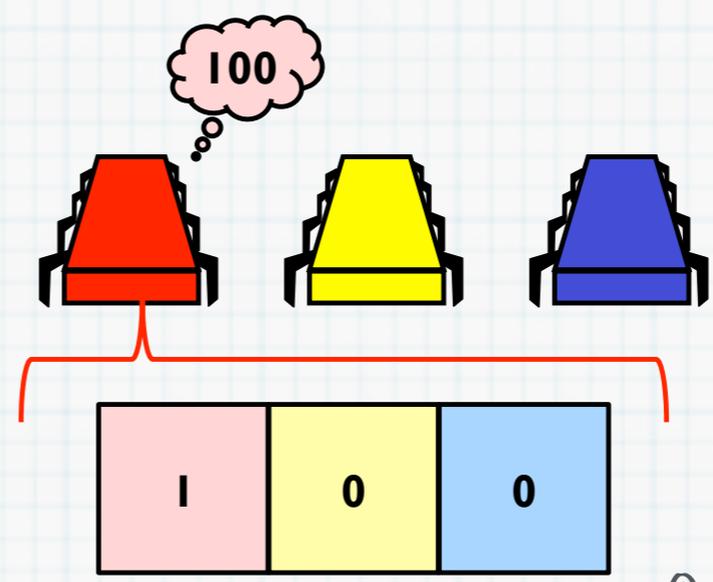
La mémoire

Immediate Snapshots

écriture

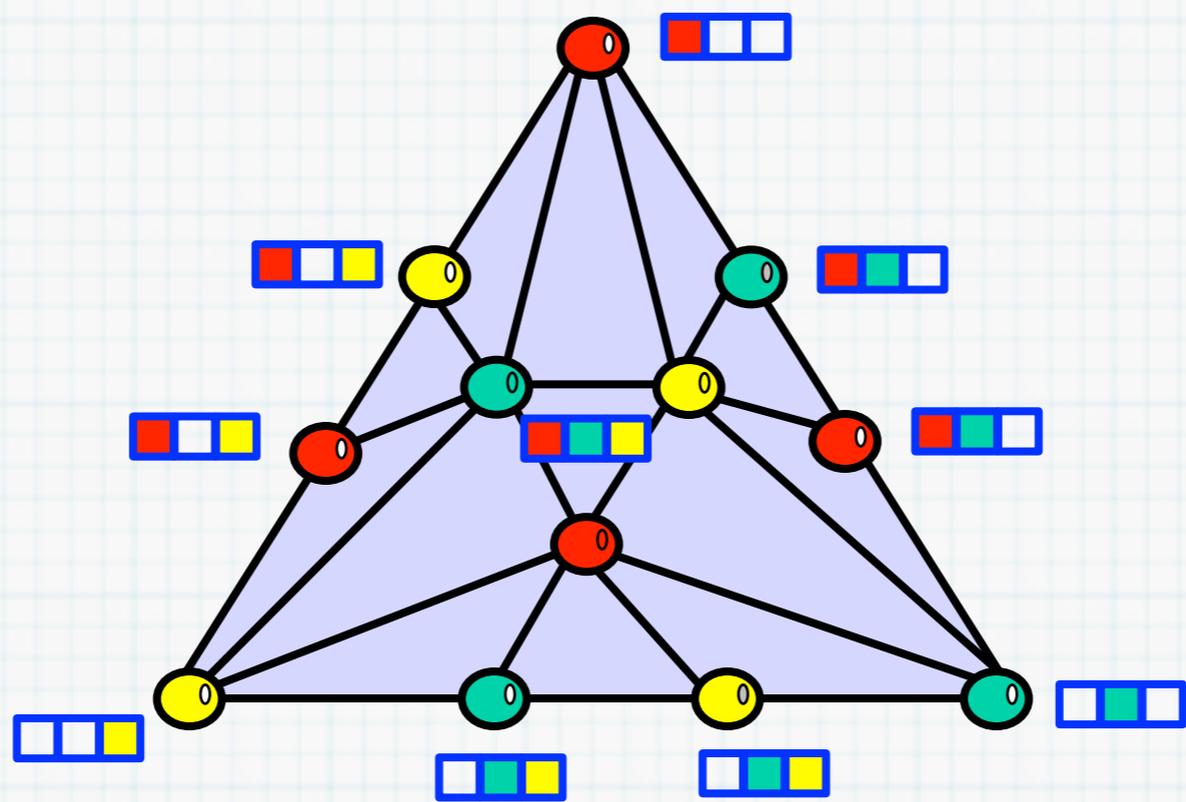


snapshot



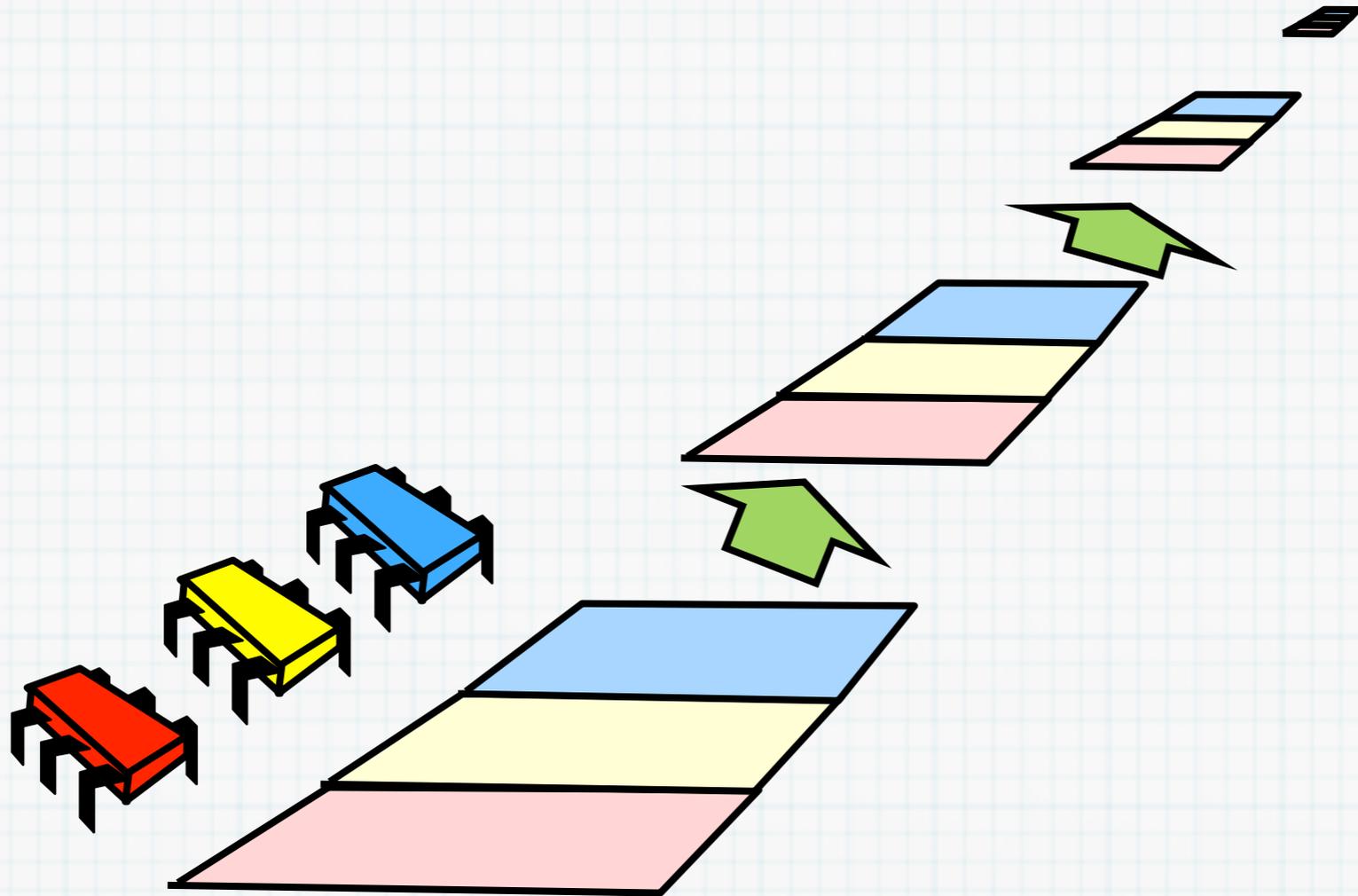
© dessin de Maurice Herlihy

Interprétation géométrique

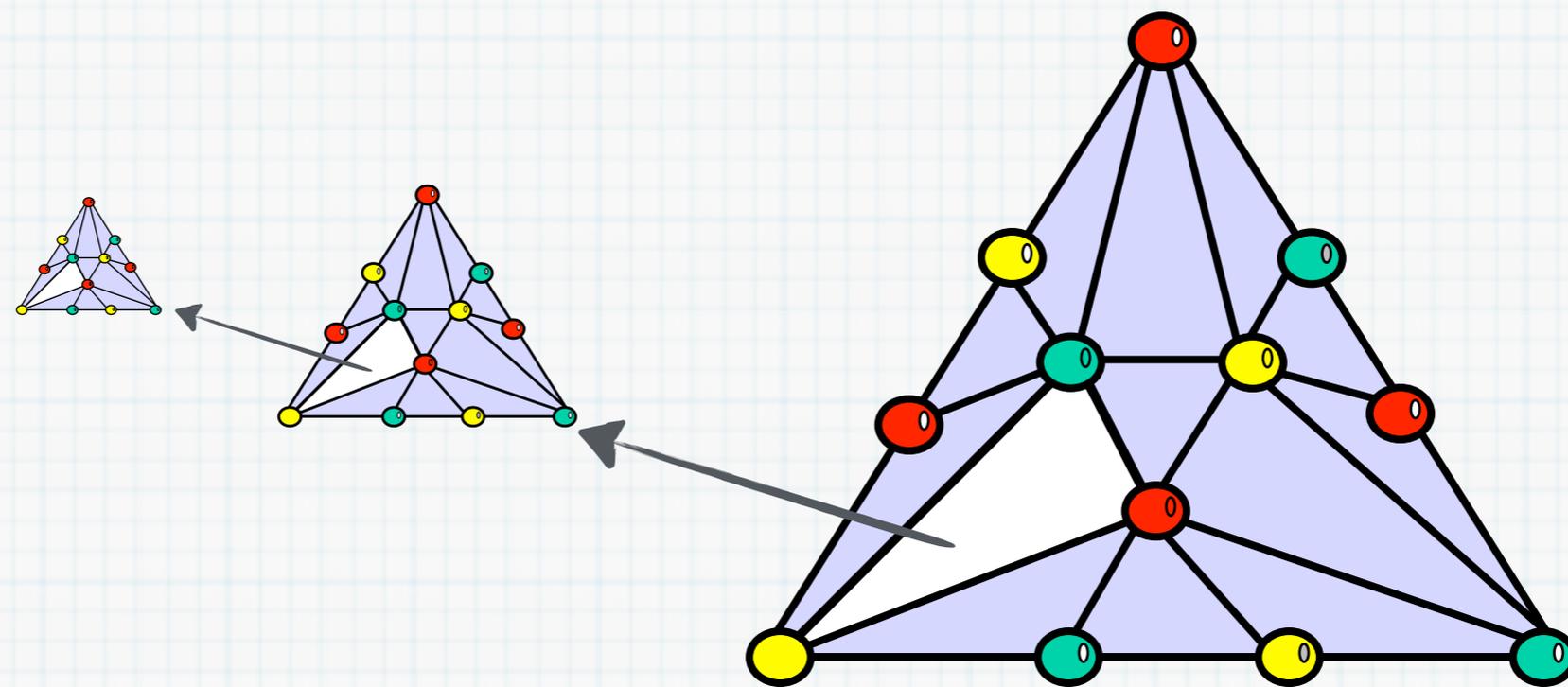


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Rounds



Interprétation géométrique

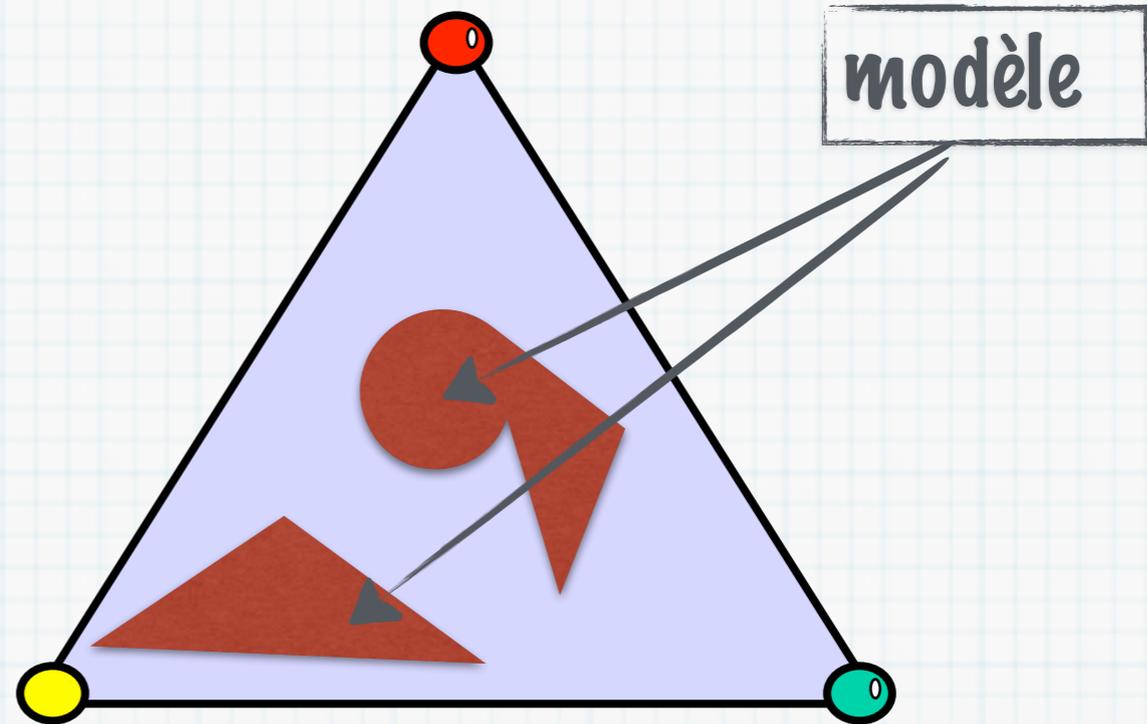


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Modèles

Exécution

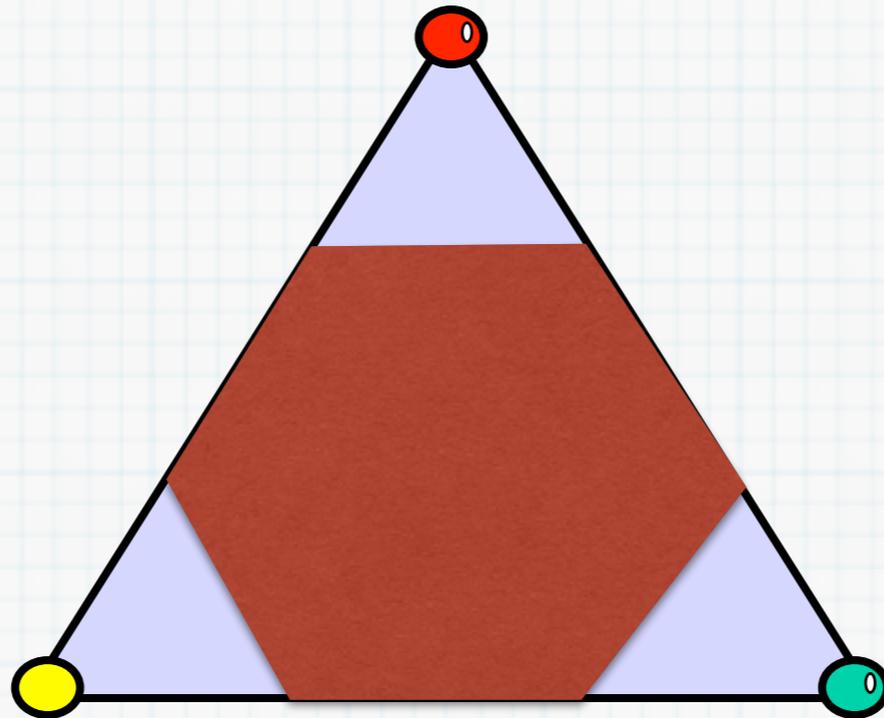
un point



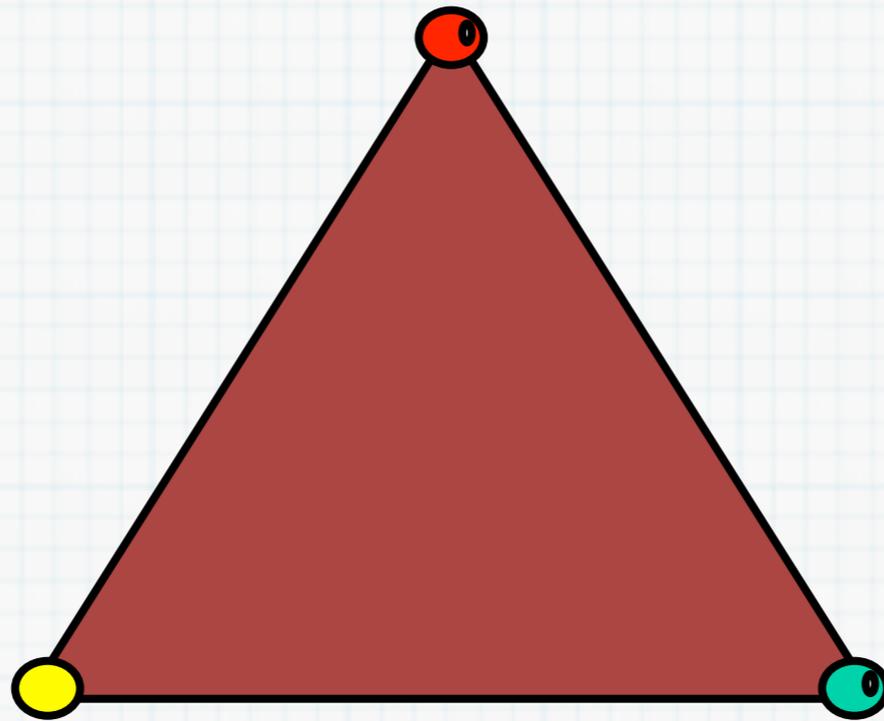
Modèle

ensemble d'exécutions possibles

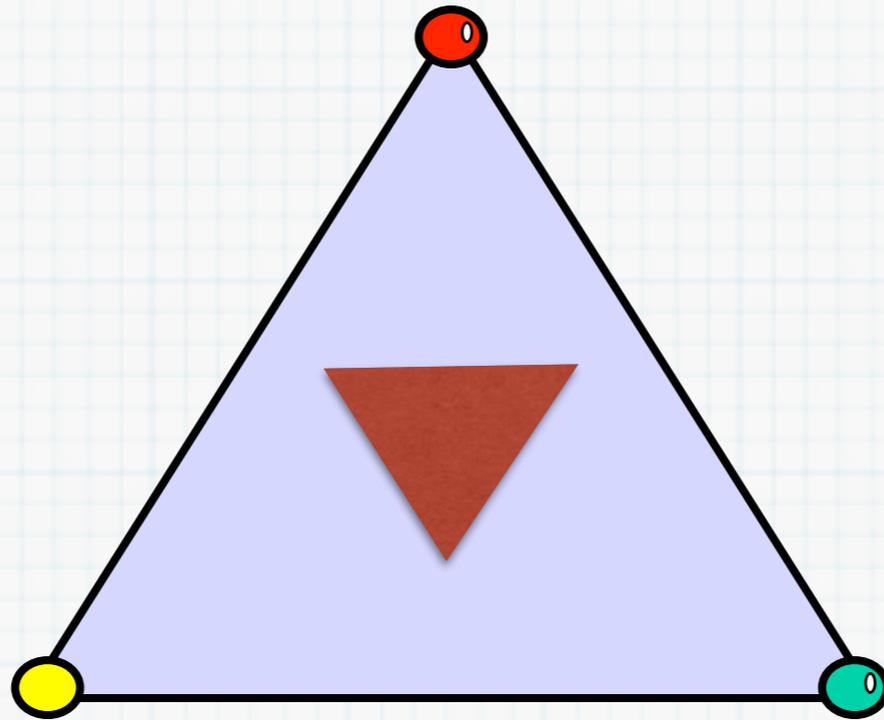
Exemple



Exemple

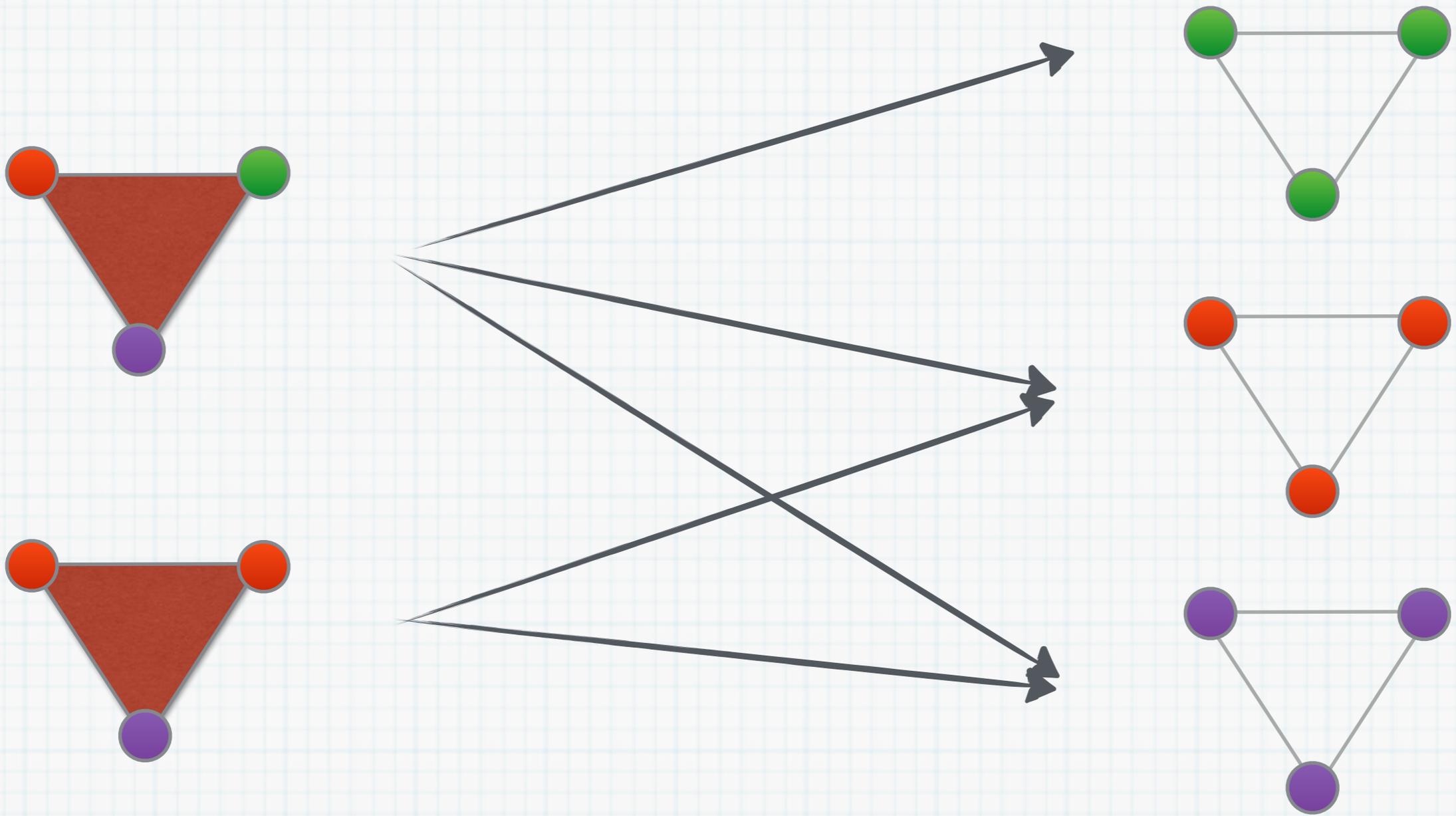


Exemple



Calculabilité WF

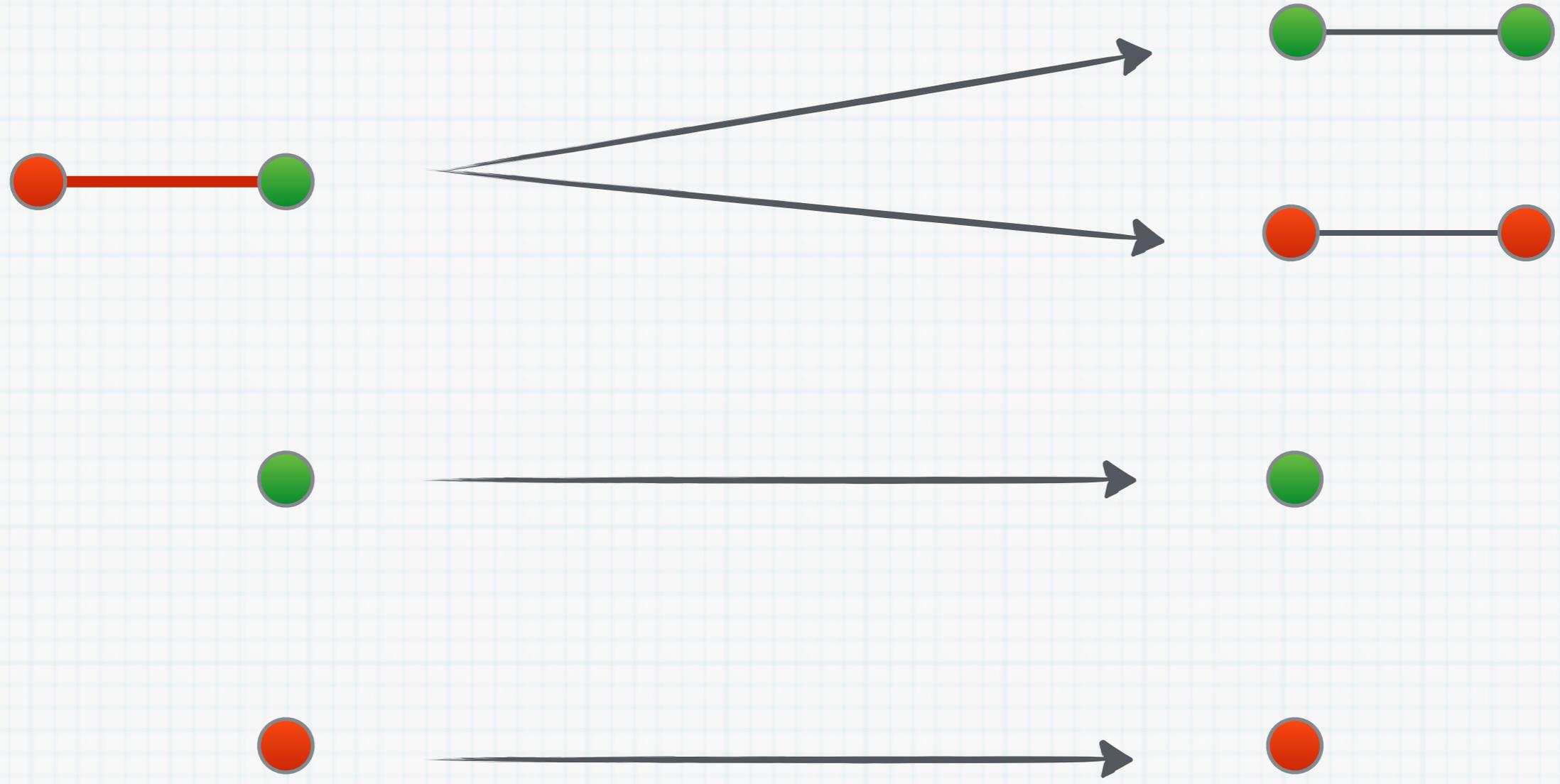
Borowsky-Gafni 1997



Consensus

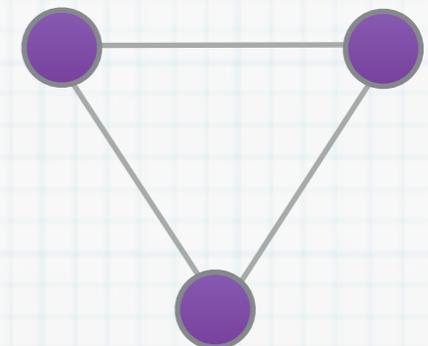
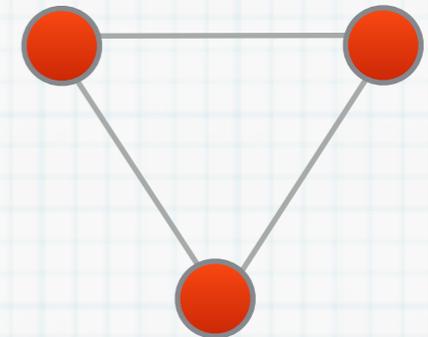
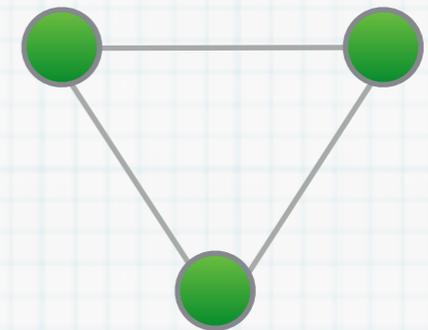
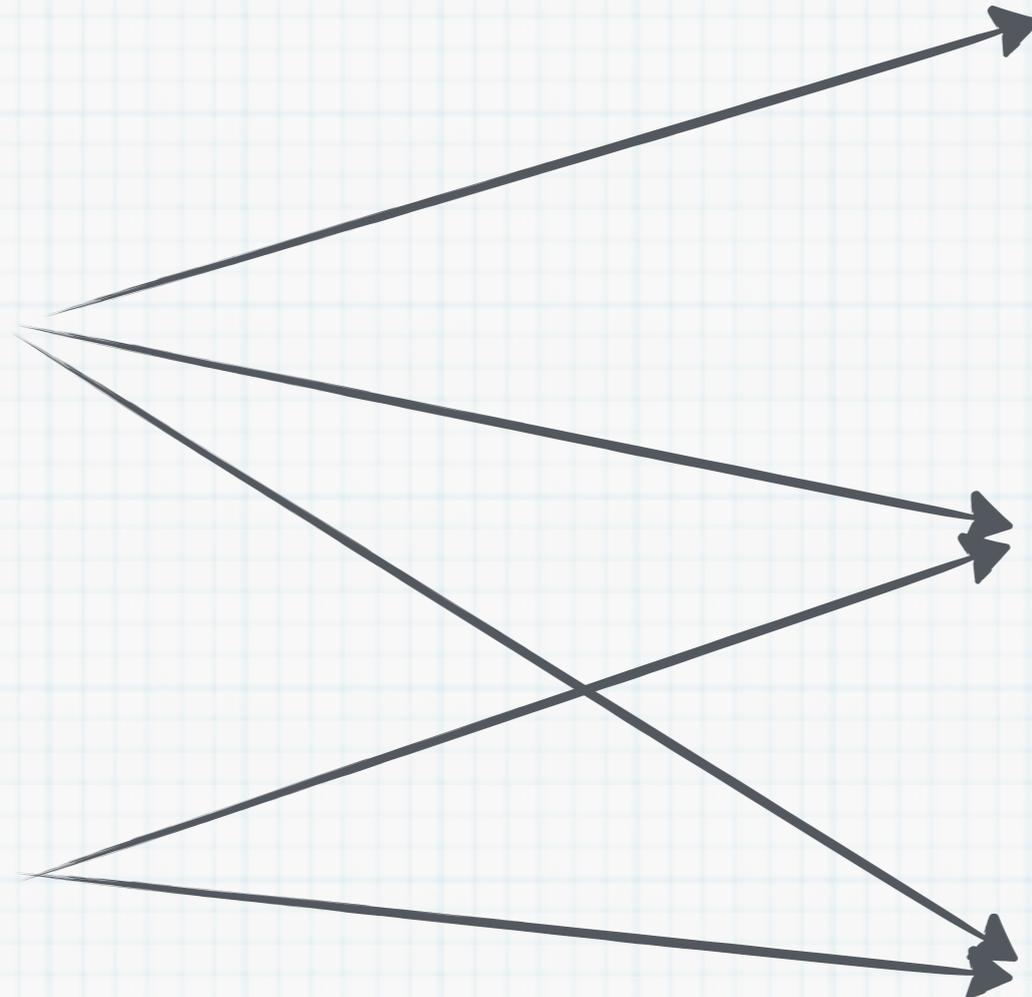
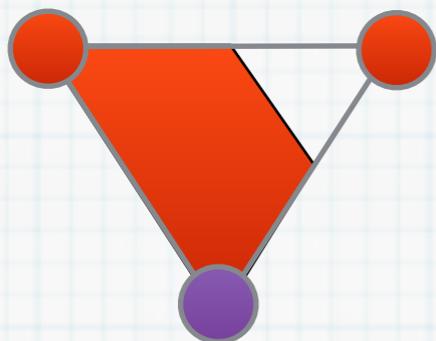
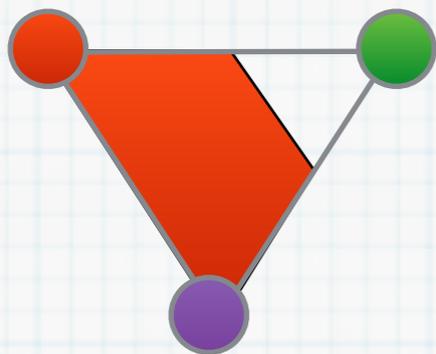
Entrées

Sorties



Modèle général

Gafni-Kuznetsov-Manolescu 2014



Modèle non-itéré

- Borowsky-Gafni 1997
- Gafni-Kuznetsov-Manolescu 2014

 **Modèle itéré**

Valides pour des modèles non-itérés ?

Equivalence

itéré ↔ non-itéré

Wait-free

OUI : Borowsky-Gafni 1997

En général

OUI : Bouzid-Gafni-Kuznetsov 2014