



Arthur Merlin Games

PythonBrasil[8] Lightning Talk

@fmasanori

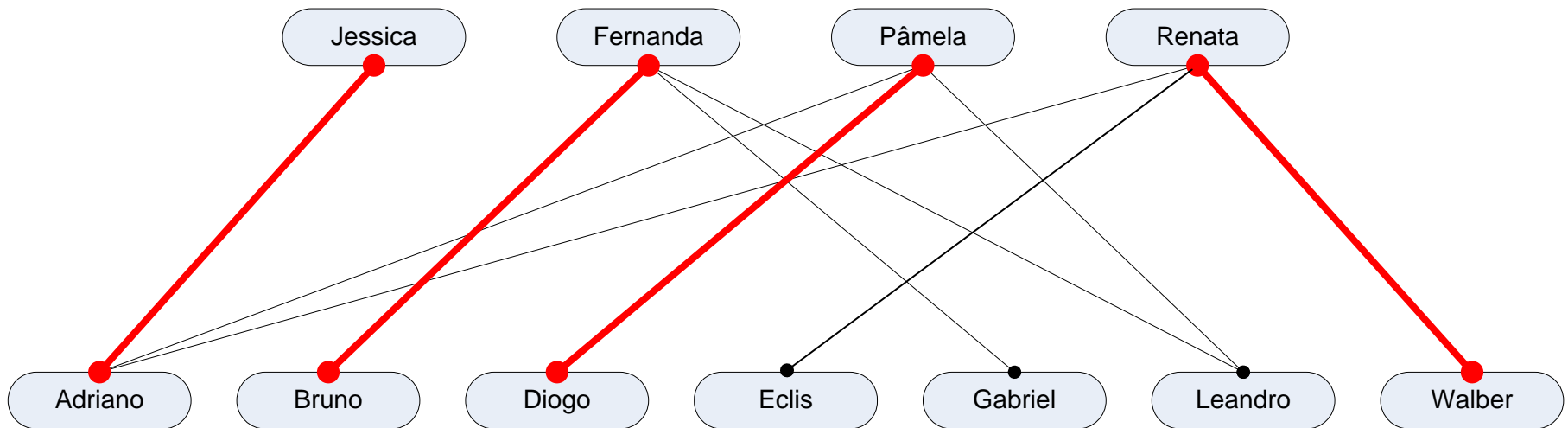
Arthur Merlin Games

- **Computational Complexity classic intro**
- **Casar 150 donzelas com 150 cavaleiros**
- **Colocar os 150 cavaleiros em torno da
Tavola Redonda**
- **Dois problemas passados para Merlin**

Casar 150 donzelas

- Lista de parceiros “queridos”
- $150!$ possibilidades $\approx 10^{262}$
- Verificando uma possibilidade por segundo temos 10^{255} anos
- Idade do universo $\approx 10^{22}$ anos
- 10^{79} protons no mundo
- Merlin vai resolver este problema?

Small sample



No obstruction to the goal in this sample

Merlin win!

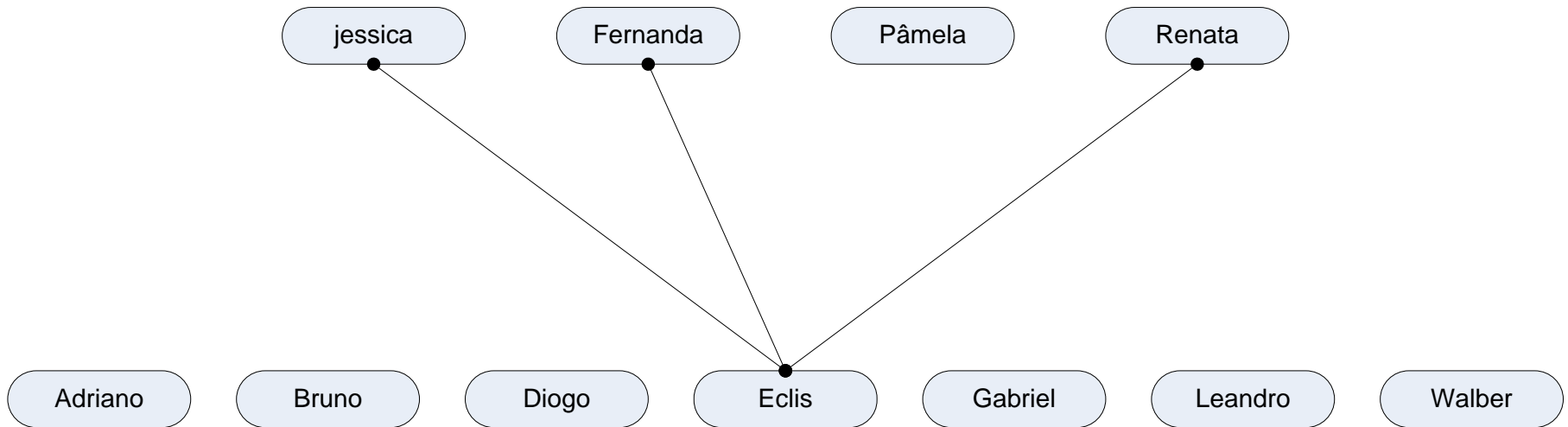


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Proof?



König theorem



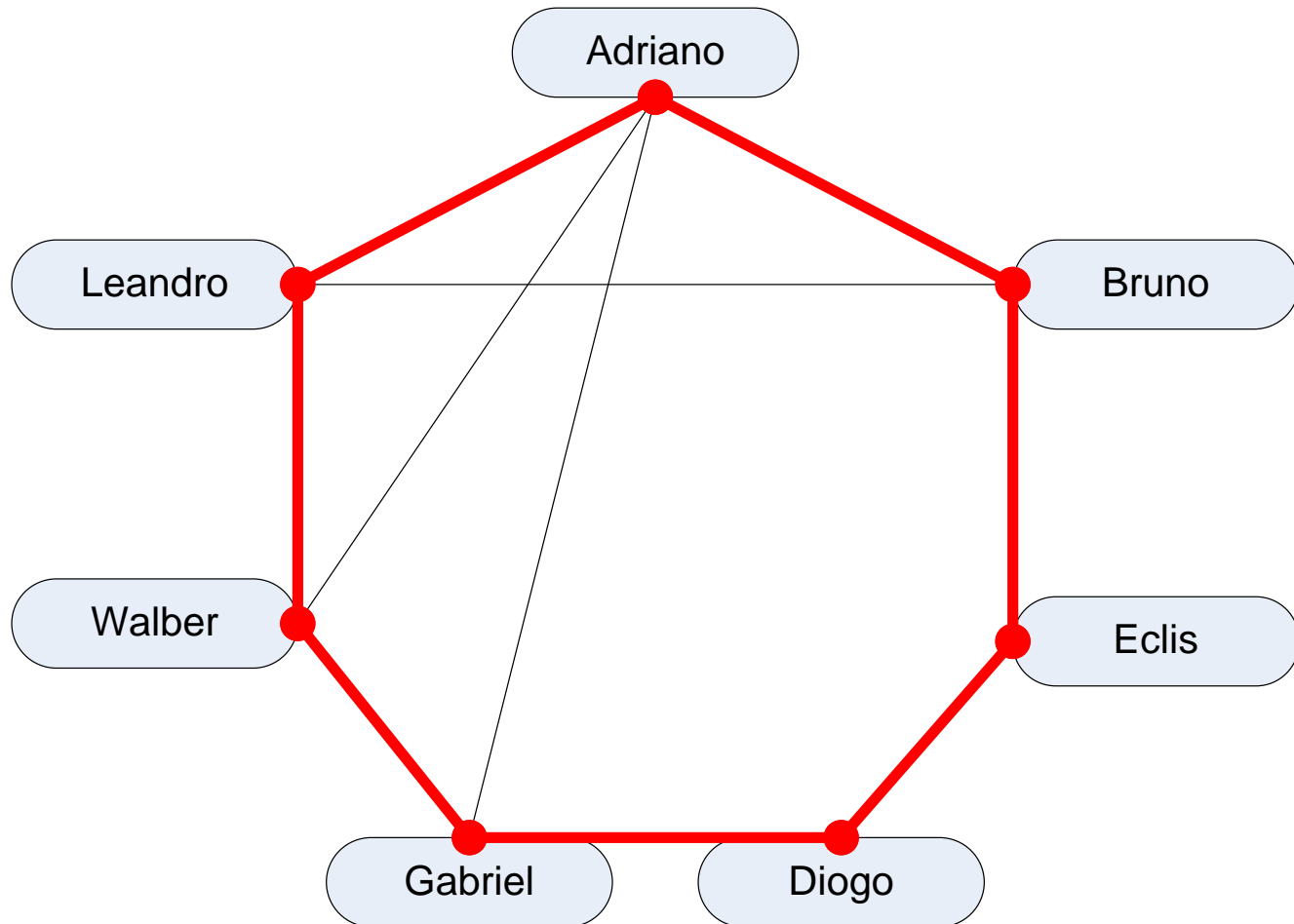
Subconjunto de donzelas com “queridos” menor
Obstruction to the goal == simple certificate

Round Table

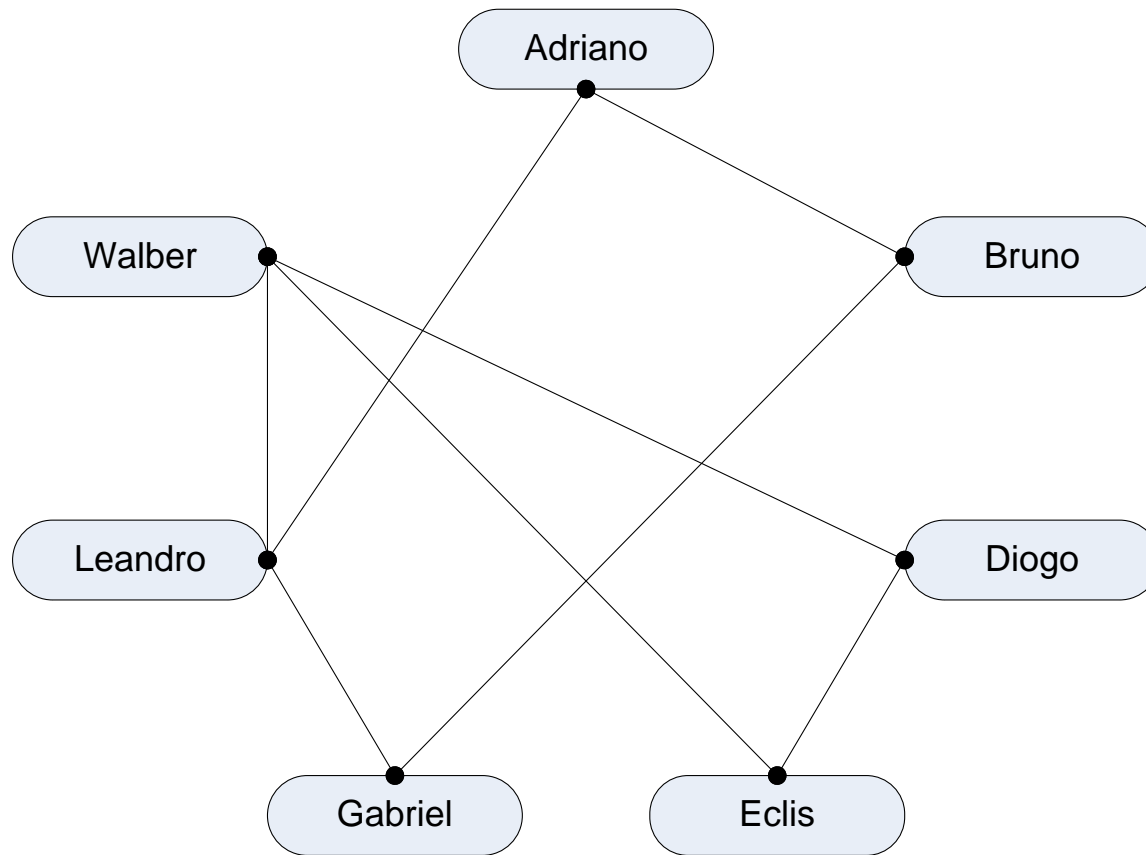
- 150 cavaleiros
- Somente vizinhos amigos
- Novamente 150! possibilidades
- Merlin vai resolver este problema?



Round Table with no fight



Problematic Round Table



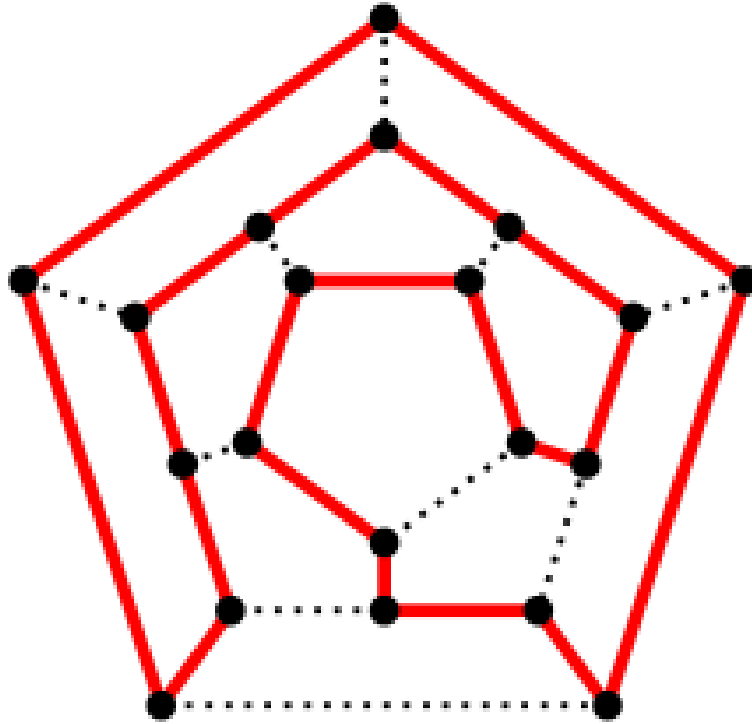
Proof?



Simple obstruction is hard



Hamiltonian Circuit



Probably no good characterization

Enumeration Algorithms

- Enumerar == fazer uma lista de objetos de um determinado tipo
- Algoritmos “ruins”
- Mas melhor que nada
- No generators in C enumeration algorithms
- But Python have generators 😊

Demo

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