NP-COMPLETE PROBLEMS

BACKTRACKING

Backtracking

- N-queens problem → exponential running time with backtracking
- Coloring problem → exponential running time
- Sudoku problem → exponential running time
- Usually **NP-complete** and **NP-hard problems** are very slow to solve
- Solution: we do not want to get the exact solution, just an approximation will be fine !!!

Meta-heuristics

- Usually for **NP-hard** problems we are looking for an approximate solution instead of the exact one
- Methods: ant-colony optimization, genetic algorithms, simulated annealing
- Not always find the optimal solution (global minimum) BUT the algorithm will be fast
- **THIS IS WHY ARTIFICIAL INTELLIGENCE IS IMPORTANT !!!**