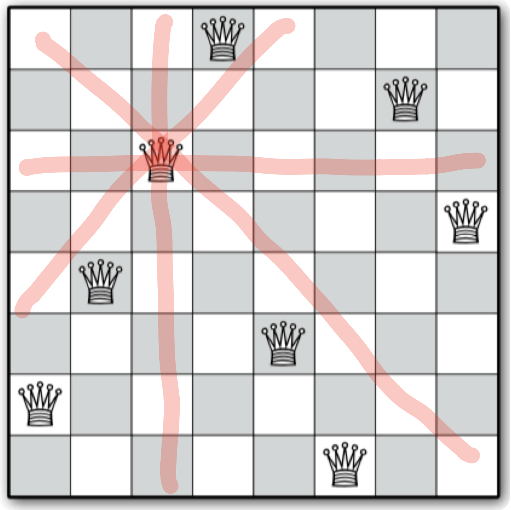
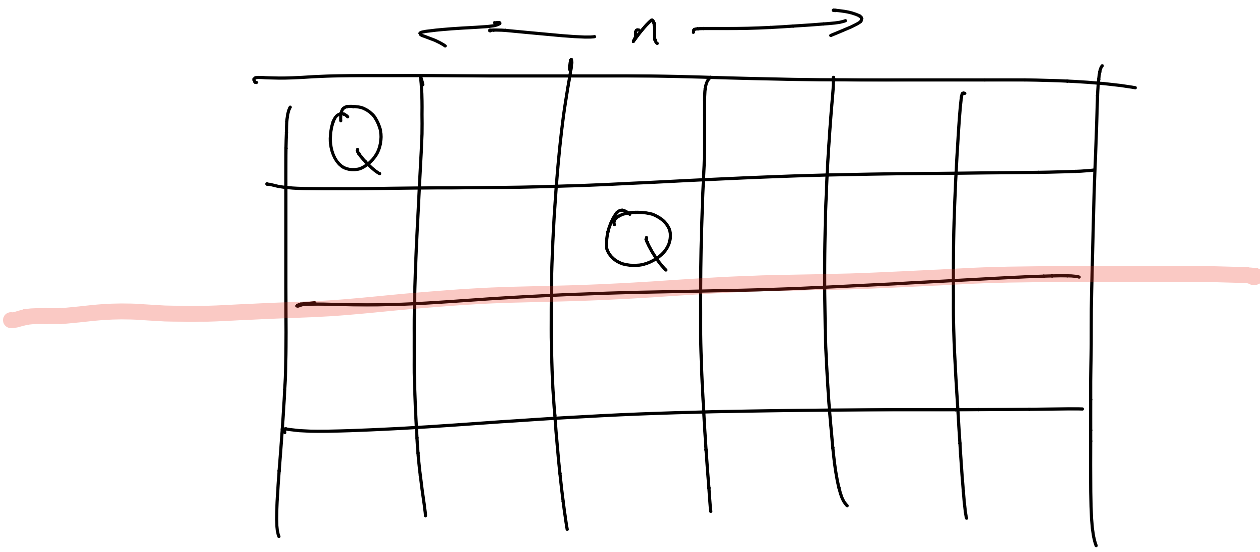


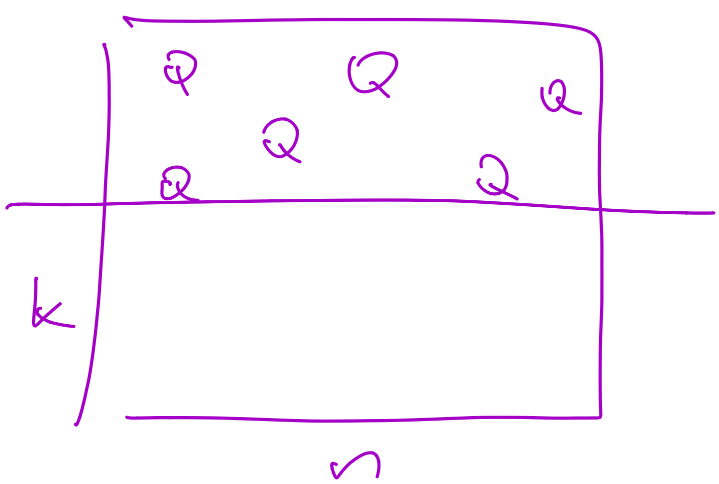
"methodisches Tattonieren"

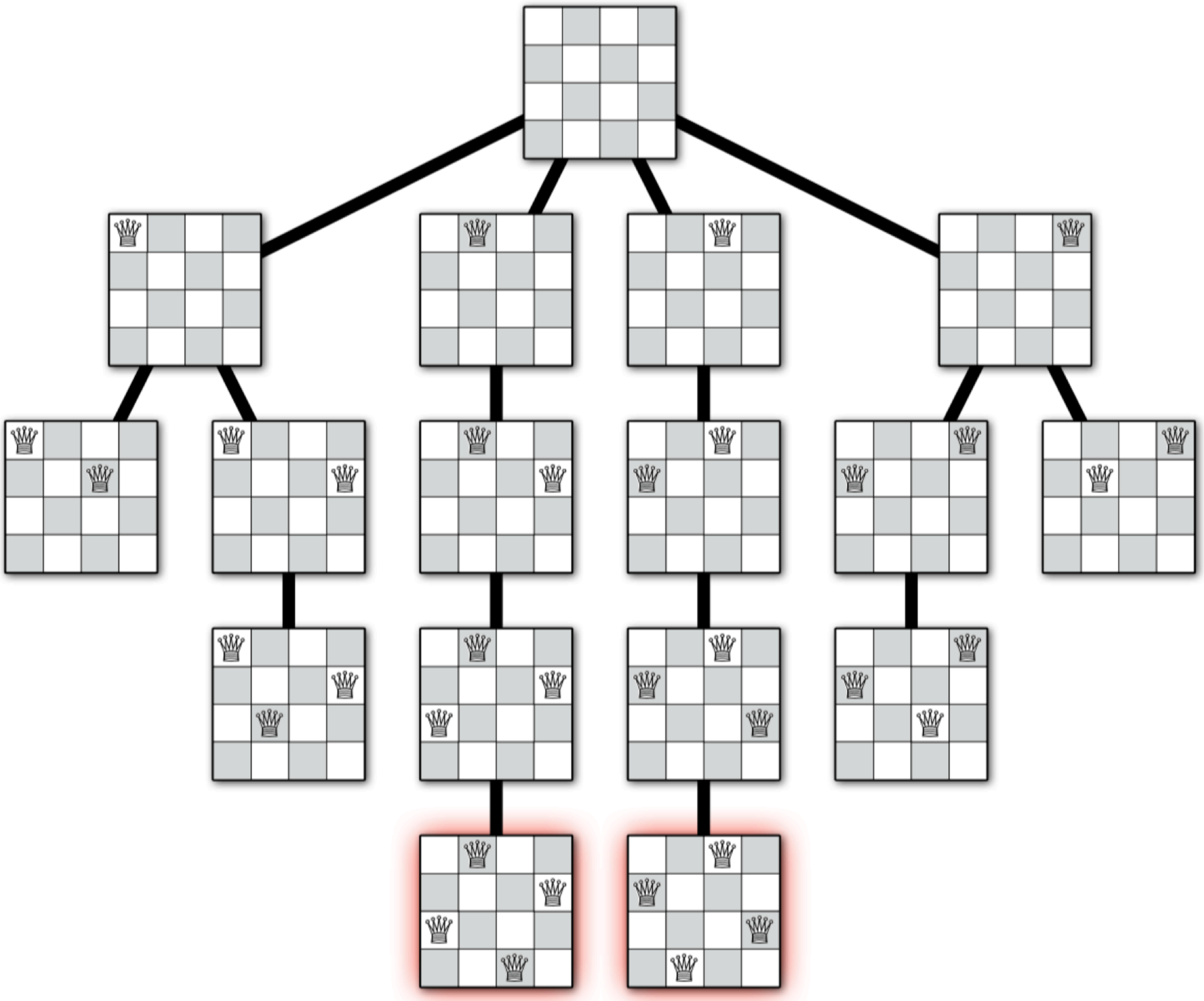


Try all possibilities for next decision

Recursively make remaining decisions

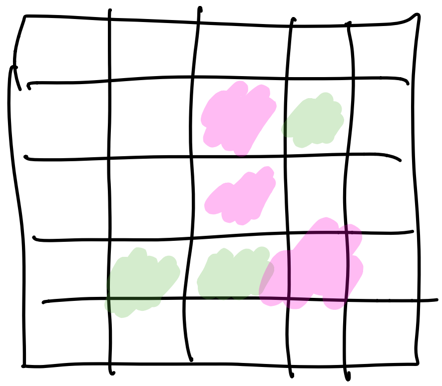
n Queens

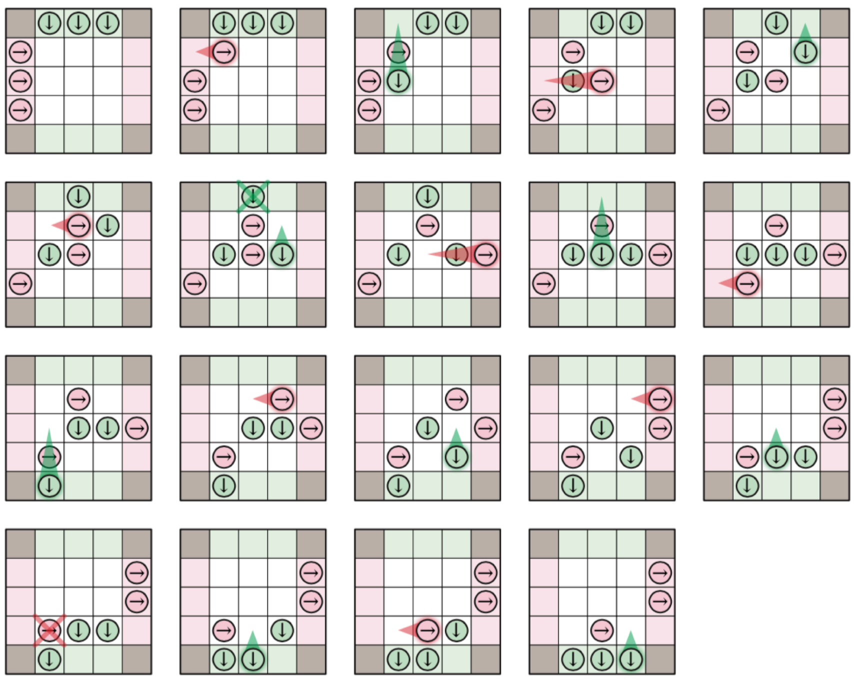


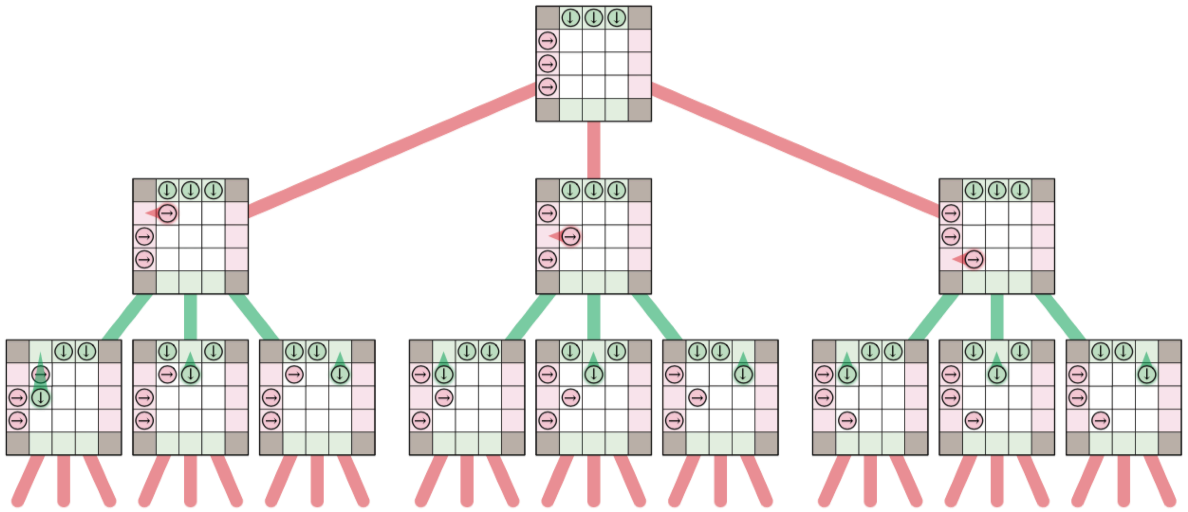


```
RecursiveNQueens(Q[1..n], r):
  if r = n + 1
      print Q
  else
      for j ← 1 to n
          legal ← True
          for i ← 1 to r − 1
              if (Q[i] = j) or (Q[i] = j + r − i) or (Q[i] = j − r + i)
                  legal ← False
          if legal
              Q[r] ← j
              RecursiveNQueens(Q[1..n], r + 1)
```

Figure 2.1. Laquière's backtracking algorithm for the n-queens problem.







The first two levels of the fake-sugar-packet game tree.

```
PlayAnyGame(X, player):
  if player has already won in state X
      return Good
  if player has already lost in state X
      return Bad
  for all legal moves X ⇝ Y
      if PlayAnyGame(Y, ¬player) = Bad
          return Good
  return Bad
```

Figure 2.4. How to play any game perfectly.

PRIMVSDIGNITASINTAMTENVISCIENTIANONPOTESTESSERESENIMSVNTPARVAE
PROPEINSINGVLISLITTERISATQVEINTERPVNCTIONIBUSVERBORVMOCCVPATAE

PRIMVS·DIGNITAS·IN·TAM·

HEARTHANDSATURNSPIN

Next word?

BLUESTEMUNITROBOTHEARTHANDSATURNSPIN

BLUESTEMUNITROBOTHEARTHANDSATURNSPIN

BLUESTEMUNITROBOTHEARTHANDSATURNSPIN

BLUESTEMUNITROBOTHEARTHANDSATURNSPIN

Split(17)

How do we describe subproblem?

Fix original input as "global" variable

Specify subproblem using indices

Specification:

Let $\text{SPLITTABLE}(k) = \begin{cases} \text{TRUE} & \text{iff } A[k..n] \text{ can be split into English words} \\ \text{FALSE} & \text{o/w} \end{cases}$

```
SPLITTABLE(k):
    if k > n
        return TRUE
    for all j ← k to n          //end of first word
        if ISWORD(k, j)
            if SPLITTABLE(j+1)
                return TRUE
    return FALSE
```

$$\textsc{Splittable}(k) = \begin{cases} \cancel{\text{TRUE} \quad \text{if } k > n} \\ \text{TRUE} \quad \text{if } \textsc{IsWord}(k,j) \text{ and } \textsc{Splittable}(j+1) \text{ for some } j \geq k \\ \text{FALSE} \quad \text{o/w} \end{cases}$$