Gedächtnisprotokoll GDKI WS18/19

vorläufige Version 15.03.2019

Verweise auf erstes Auftreten der Aufgaben

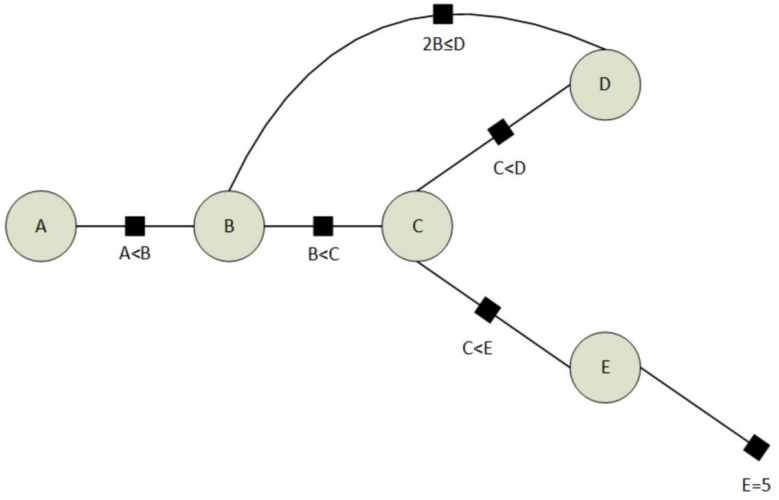
Alle Aufgaben bis auf die erste sind exakt gleich schon in älteren Klausuren aufgetreten, der Vollständigkeit halber sind sie unten trotzdem nochmal aufgeführt.

Hier	Klausur	
A1	neu	
A2	WS16/17	A3
A3	WS14/15	A2
A4	WS14/15	A3
A5	SS16	A2
A6	SS16	A6

Aufgabe 1: Diverses

1. Please state Bayes Theorem for two random variables `X,Y`.
2. Given 3 random variables `X,Y,Z`, how is `P(X|Y)` defined in termes of `P(X,Y,Z)`?
3. Which properties does a heuristic have to fulfill to be admissible?

Aufgabe 2: Constraints = WS16/17-A3



Domain for `A, B, C, D, E: {1, 2, 3, 4, 5}`

! Please note „≤“ at $B \leq D$

E is set as `5`

a) Wende bis zur Konvergenz Constraint Propagation an und gib für A, B, C, D die übrig gebliebenen Domains an

b) Wie viele verschiedene Lösungen/ Belegungsmöglichkeiten gibt es?

Aufgabe 3: CSP, Backtracking = WS14/15-A2

Backtracking is a basic method to solve a CSP. We discussed three heuristics to speed up backtracking.

1. Choice of variable: Assume variable X has more remaining values than variable Y. Which variable would you pick for the next assignment? Answer: [X/Y]
2. Choice of variable: Assume X and Y have equal remaining values, but X is involved in more constraints. Which is the variable for the next assignment? Answer: [X/Y]
3. Choice of value: Assume the value assignment X = 1 constraints the 'neighbours' of X more than X = 2. Which value assignment would you pick next? Answer: [1/2]

Aufgabe 4: Bandits = WS14/15-A3

Assume you have 3 bandits. You have already collected a few data form these bandits:

- From bandit 1: `2 5 1 4`
- From bandit 2: `1 5`
- From bandit 3: `1 3`

Provide the UCB scores for each of the three bandits. Replace the ln by log_2 for simpler calculation. Assume β = 1. Write the solution in the box (expressions with $\sqrt{}$ are ok):

- UCB score for bandit 1: **___**
- UCB score for bandit 2: **___**
- UCB score for bandit 3: **___**

Aufgabe 5: Value-Iteration = SS16-A2

Aufgabe 6: Message Passing = SS16-A6