WERKOPDRAGSKRYFBLOK – ASSIGNMENT WRITING PAD
Skryf – Write

Dosent se Kommentaar
Tutorial Comments

Question 6

6.1) ~~Rand~~

6.1) Random pieces of queens are placed on the board and each queen can captcha another. Using the objective function we will minimize the amount of queens that can captcha each other. Thus the objective function will be the number of queens that can attack at least one other queen. The state would be the current location of each queen on the board.
Where r = row, C = column, thus (r, C) can be used to represent the whole board, for instance (2, A) where $(2,A)_u$ is one queen and $(3,B)_v$ another. also 4 Queens, 4 Columns ($4^4 = 256$ states)

$$q_{u} = \begin{cases} 1 & \text{if } q_v \text{ is an element of A that } q_u \text{ attacks } q_v \\ 0 & \text{otherwise} \end{cases}$$

objectiveFunction $o(b) = \sum_{4}^{u=1} (q_u) = Q_1(1,A), Q_2(3,B), Q_3(2,C), Q_4(3,D)$

	a	b	c	d
4				
3		Q_2		Q_4
2			Q_3	
1	Q_1			

$h = 3$

6.2) Evaluation: h(n) = number of attacks = $Q_2(3,B)$ attacks $Q_3(2,C)$
= 3
= $Q_3(2,C)$ attacks $Q_4(3,D)$
= $Q_2(3,B)$ attacks $Q_4(3,D)$

6.3)

$h = 1$

	a	b	c	d
4		Q_2		
3				Q_4
2			Q_3	
1	Q_1			

$\longrightarrow$

$h = 2$

	a	b	c	d
4		Q_2		
3				Q_4
2	Q_1		Q_3	
1				

$h = 1$

	a	b	c	d
4		Q_2		Q_4
3				
2	Q_1		Q_3	
1				

$h = 1$

	a	b	c	d
4		Q_2		Q_4
3				
2	Q_1			
1			Q_3	

$h = 0$

	a	b	c	d
4		Q_2		
3				Q_4
2	Q_1			
1			Q_3	

$h = 2$

	a	b	c	d
4		Q_2		
3	Q_1			Q_4
2	$\cancel{Q_1}$			
1			Q_3	

$h = 4$

	a	b	c	d
4		Q_2		
3	Q_1		Q_3	Q_4
2				
1				

$O(b)$ = worst = 4
$O(b)$ = best = 0

6.4 $h = 0$

6.4) $h = 0$

$o(b) = 0$

4		Q_2		
3				Q_4
2	Q_1			
1			Q_3	
	a	b	c	d

$h = \cancel{1}\ 2$

$o(b) = 2$

4				
3				Q_4
2	Q_1			
1		Q_2	Q_3	
	a	b	c	d

$h = 4$

			Q_4
Q_1		Q_3	
	Q_2		

$h = 2$

			Q_4
		Q_3	
Q_1	Q_2		

No improvements

6.5)