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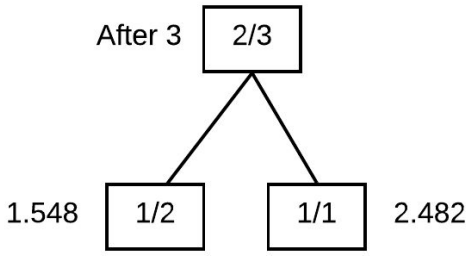
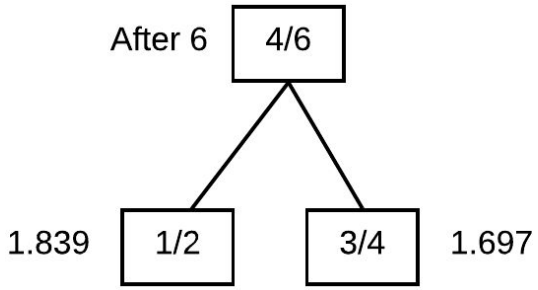
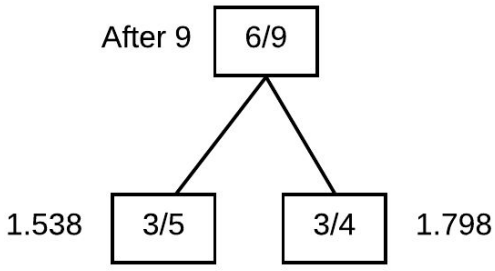
CSCI 4511W
Assignment 3
3/11/18



Problem 1





Problem 2

1. None
2. Player 1 picks action 1, 7/8 of the time. Player 2 picks action 1 3/8 of the time
    a. (4.625, 2.75)

3. (9, 1), (2,8)
4. All/none

Problem 3

1. M_i is the value of time mark i*10
    a. 0M = 0
    b. 120M = 0
    c. 10M...110M > 0
    d. $M_i < 16000$
    e. $M_i<M_{i-1}+4000$
    f. $M_i>M_{i-1}-4000$
2.
    a. 50M <= 12000
    b. 60M <= 12000
    c. M_i != M_{i+2} iff $M_i<M_{i+1}$
3.

Time Mark (applied rule)	{Domain}
0M (1a):	{0}
10M (1cd)	{4000, 8000, 12000, 16000}
20M (1cd)	{4000, 8000, 12000, 16000}
30M (1cd)	{4000, 8000, 12000, 16000}
40M (1cd)	{4000, 8000, 12000, 16000}
50M (2a1c):	{4000, 8000, 12000}
60M (2b1c):	{4000, 8000, 12000}
70M (1cd)	{4000, 8000, 12000, 16000}
80M (1cd)	{4000, 8000, 12000, 16000}
90M (1cd)	{4000, 8000, 12000, 16000}
100M (1cd)	{4000, 8000, 12000, 16000}
110M (1cd)	{4000, 8000, 12000, 16000}
120M (1b)	{0}

4.

Time Mark (applied rule)	{Domain}
0M:	{0}
10M (1f)	{4000}
20M (1f)	{4000, 8000}
30M (1f)	{4000, 8000, 12000}
40M	{4000, 8000, 12000, 16000}
50M:	{4000, 8000, 12000}
60M:	{4000, 8000, 12000}
70M	{4000, 8000, 12000, 16000}
80M	{4000, 8000, 12000, 16000}
90M (1e)	{4000, 8000, 12000}
100M (1e)	{4000, 8000}
110M (1e)	{4000}
120M	{0}

5.

Time Mark (applied rule)	{Domain}
0M:	{0}
10M	{4000}
20M	{4000, 8000}
30M	{4000, 8000, 12000}
40M (2c)	{4000, 8000, 12000}
50M:	{4000, 8000, 12000}
60M:	{4000, 8000, 12000}
70M	{4000, 8000, 12000, 16000}
80M	{4000, 8000, 12000, 16000}

90M	{4000, 8000, 12000}
100M	{4000, 8000}
110M	{4000}
120M	{0}

6. {0, 4000, 8000, 12000, 12000, 12000, 12000, 16000, 16000, 12000, 8000, 4000, 0}

Problem 4.

fib = Fibonacci sequence

$$searched = \sum_{n=2}^{d+2} fib[n]$$

$$\text{prunes} = 2^d - searched$$

Problem 5.

1. 10 Cheaters, 15 Simpletons
2. 0%, 5%, 50% Simpleton 10%-45% Cheater

Problem 6.

1. Backtracking Search
    a. 11: 3.993s
    b. 20: 8.656s
2. Min Conflicts
    a. 11: 4.734s
    b. 20: 4.924s
    c. 40: 5.120s
3. 2000 queens gives me a 10.023 second run-time