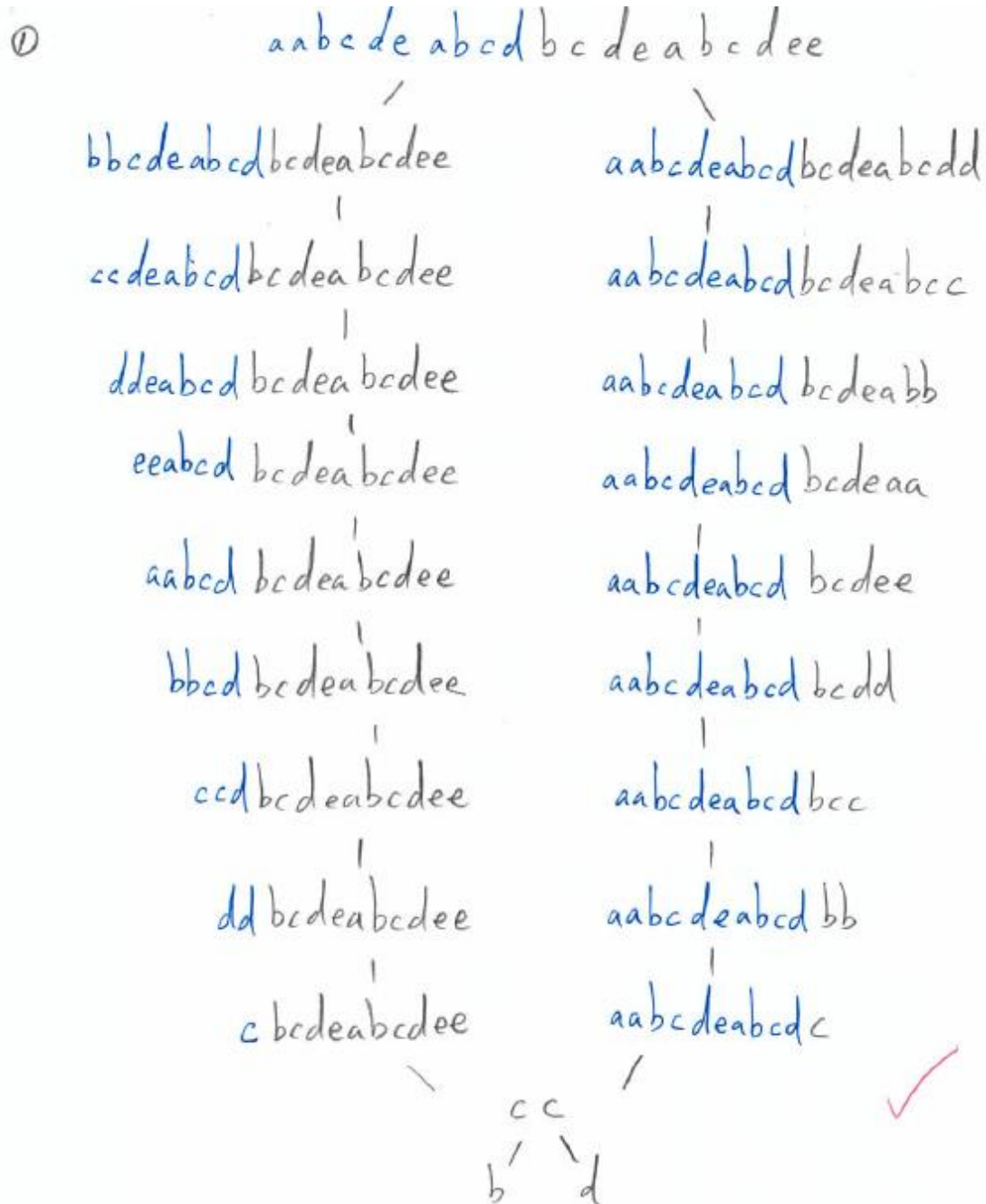Homework #6 of the course: Theory of Computer Games.

1. For DLP game with "aabcdeabcdbcdeabcdee", draw the dependency-based search tree to solve this. Also describe how many nodes to explore, if use the traditional search with and without transposition table respectively.

① aabcde abcd bcdeabcdee

/   \

bbcdeabcdbcdeabcdee   aabcdeabcdbcdeabcdd

| |

ccdeabcdbcdeabcdee   aabcdeabcdbcdeabcc

| |

ddeabcdbcdeabcdee   aabcdeabcdbcdeabb

| |

eeabcdbcdeabcdee   aabcdeabcdbcdeaa

| |

aabcdbcdeabcdee   aabcdeabcdbcdee

| |

bbcdbcdeabcdee   aabcdeabcdbcdd

| |

ccdbcdeabcdee   aabcdeabcdbcc

| |

ddbcdeabcdee   aabcdeabcdbb

| |

cbcdeabcdee   aabcdeabcdc

\   /

cc   ✓

/   \

b   d

② with transposition table: 為 $10 \times 10 = 100$ ✓

without transposition table $6143 = 2^{10} - 1 + 2^9 \cdot 10 \leq$ the numbers of nodes $\leq 2^{20} - 1$

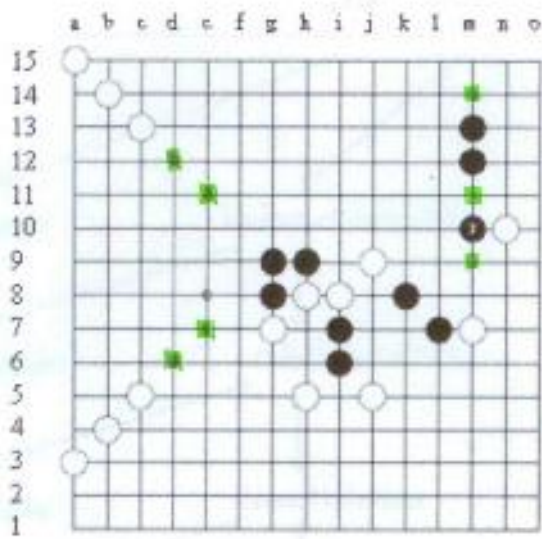$\underset{=}{\overset{||}{1048575}}$
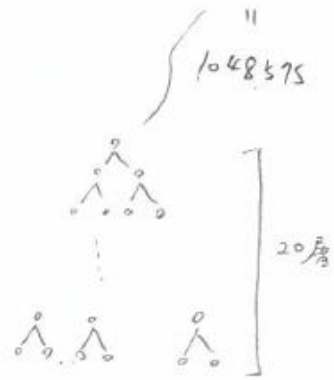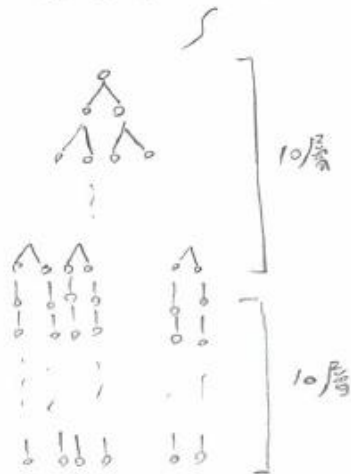
2. Consider the Gomoku game. For the lower left case, where Black to move, depict its λ^1-tree and also evaluate its value. For the lower right case, where Black to move and to win, depict its λ^2-tree.
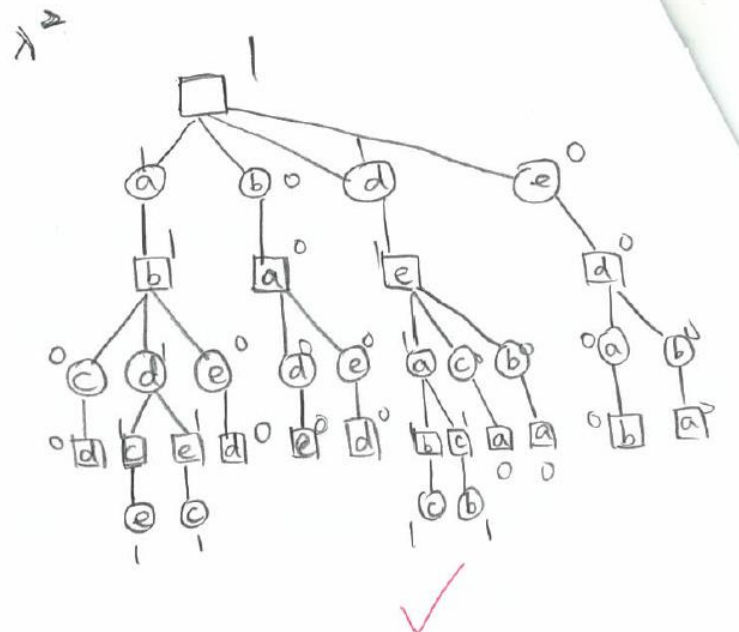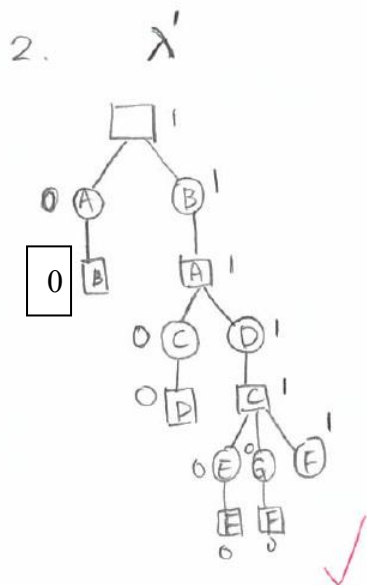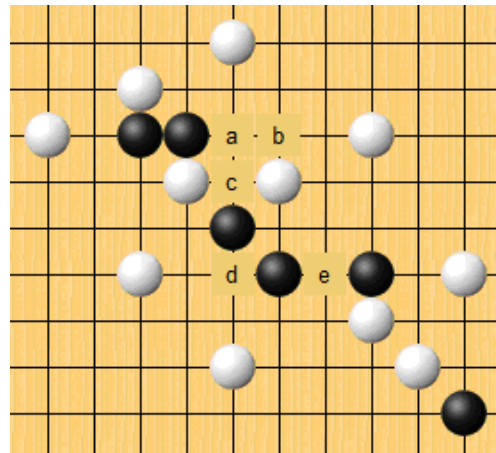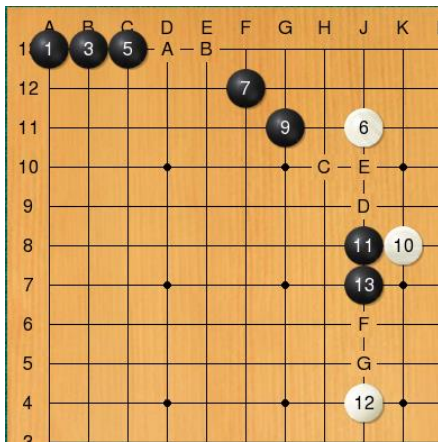
3. If black 1 is played at 7 (m10), describe its relevance zone, that is, all the next $\lambda2$-moves by white. Note: you should take all pieces marked with numbers out and then put a black piece at m10.

3.

d12, d6, c11, c7, m14, m11, m9