PROBLEM 0 b (ii)

1. Root node
    a. initial call to **backtrack**() with x={} and w=1
2. Parent = 1
    a. x = {}
    b. w = 1
    c. X1 = {0, 1}
    d. X3 = {0, 1}
    e. X2 = {0, 1}
    f. delta can't be calculated for any value assignments to X1 -> recurse **backtrack**() with X1=0 first then recurse **backtrack**() with X1=1
3. Parent = 2
    a. x = {X1: 0}
    b. w = 1
    c. X1 = {0}
    d. X3 = {0, 1}
    e. X2 = {0, 1}
    f. delta can't be calculated for any value assignments to X3 -> recurse **backtrack**() with X3=0 first then recurse **backtrack**() with X3=1
4. Parent = 3
    a. x = {X1: 0, X3: 0}
    b. w = 1
    c. X1 = {0}
    d. X3 = {0}
    e. X2 = {0, 1}
    f. delta is 0 for X2=0. delta is 1 for X2=1. -> recurse **backtrack**() with X2=1 since it is the only value where delta != 0
5. Parent = 4
    a. x = {X1: 0, X3: 0, X2: 1}
    b. w = 1
    c. X1 = {0}
    d. X3 = {0}
    e. X2 = {1}
    f. Complete assignment for x found. Update best and return answer.
6. Parent = 3
    a. x = {X1: 0, X3: 1}
    b. w = 1
    c. X1 = {0}
    d. X3 = {1}
    e. X2 = {0, 1}
    f. delta is 0 for both assignments to X2. Do not update best. Return.
7. Parent = 2
    a. x = {X1: 1}

   b. w = 1
   c. X1 = {1}
   d. X3 = {0, 1}
   e. X2 = {0, 1}
   f. delta can't be calculated for any value assignments to X3 -> recurse **backtrack**() with X3=0 first then recurse **backtrack**() with X3=1
8. Parent = 7
   a. x = {X1: 1, X3: 0}
   b. w = 1
   c. X1 = {1}
   d. X3 = {0}
   e. X2 = {0, 1}
   f. delta is 0 for both X2=0 and X2=1. Do not update best. Return.
9. Parent = 7
   a. x = {X1: 1, X3: 1}
   b. w = 1
   c. X1 = {1}
   d. X3 = {1}
   e. X2 = {0, 1}
   f. delta is 0 for X2=1 and 1 for X2=0. -> recurse **backtrack**() with X2=0
10. Parent = 9
   a. x = {X1: 1, X3: 1, X2: 0}
   b. w = 1
   c. X1 = {1}
   d. X3 = {1}
   e. X2 = {0}
   f. Complete assignment for x found. Update best and return answer.

backtrack() is called a total of **9 times**.

Note: If backtrack() was designed so that it stopped once it found one consistent assignment to the CSP, backtrack() would only be called 5 times.