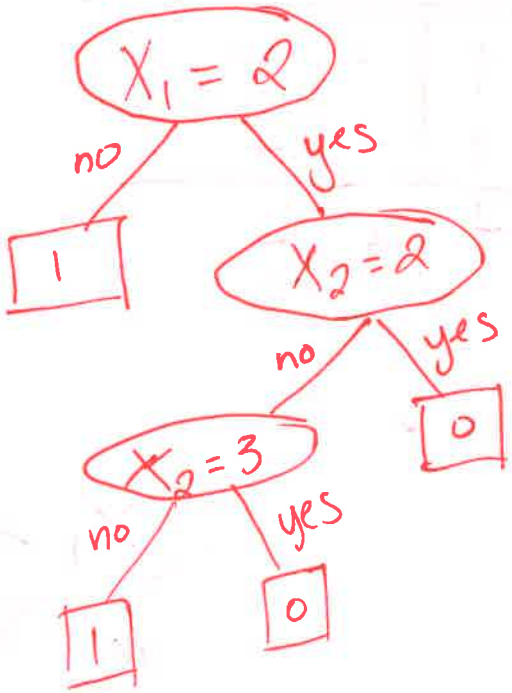
CS 422/622 Quiz 2 Name Solution

1. Draw a decision tree that perfectly classifies (100% accuracy) the training data below. (7 points)

Sample	x_1	x_2	label
s_1	1	1	1
s_2	2	1	1
s_3	3	1	1
s_4	1	2	1
s_5	2	2	0
s_6	3	2	1
s_7	1	3	1
s_8	2	3	0
s_9	3	3	1
s_{10}	1	4	1
s_{11}	2	4	1
s_{11}	3	4	1



There are many variations that will work.

2. How would your tree classify the following point? Did your model get the right answer? If not, how could you modify your tree from above so that it does give the right answer? (No need to draw a new tree, just give an explanation). (3 points)

s_t	1.5	1.5	0

Classifies as 1

Not right answer.

We can change to using $>$ or $<$ rather than equality. e.g. $X_1 > 1$ etc.

I will give full tree. Data looks like this.

+	+	+
+	−	+
+	−	+
+	+	+