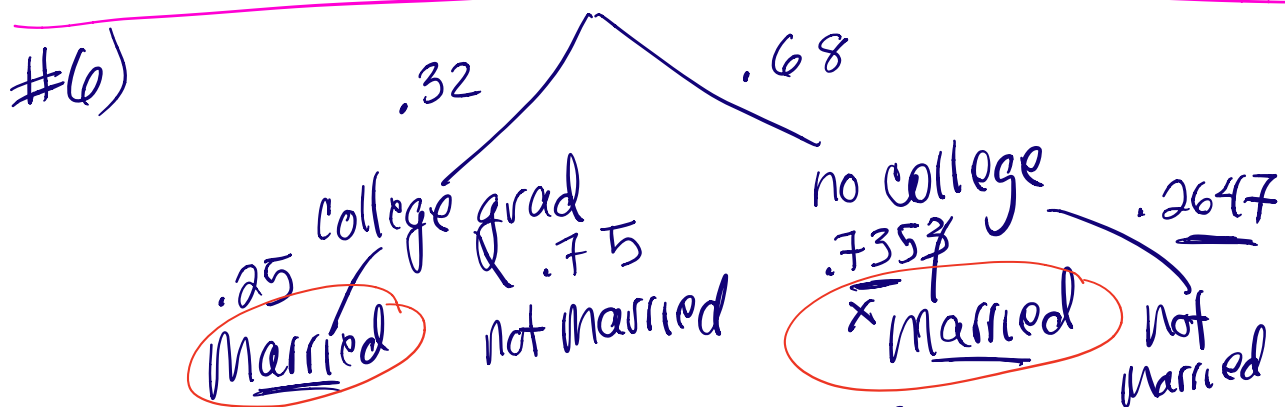


$$P(\text{disease} | \text{detected}) = \frac{P(\text{disease} \cap \text{detected})}{P(\text{detected})} \quad \left| \quad P(B|A) = \frac{P(B \cap A)}{P(A)}$$

$$= \frac{.14 \cdot .86}{(.86 \cdot .08) + (.14 \cdot .86)} = .63636364$$



$$a) P(\text{married}) = .32 \cdot .25 + x \cdot .68 = .58$$

solved for  $x = .7353$

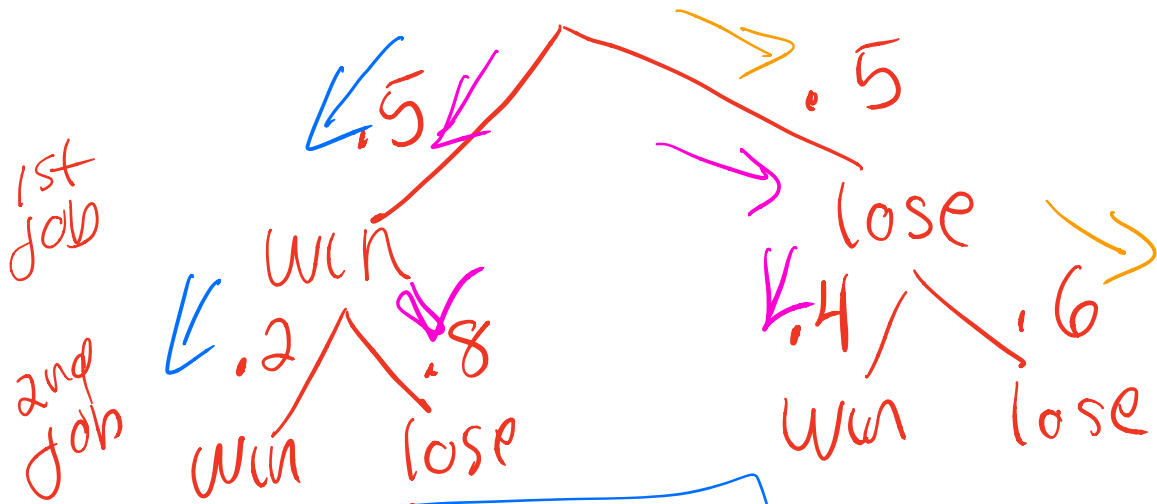
$$P(\text{not married, no college grad}) \approx .18$$

$$b) P(\text{no grad and married}) = .68 \cdot .7353$$

$$c) P(\text{married} \vee \text{college grad}) = .38 + .50 = .88$$

Try redrawing the tree diagram  
level #1 married, not married  
level #2 grad, no grad

For more examples of conditional probability see 4.5 pg 167 in Ross  
Openstax Chapter 3



X	P(X)	
0	$.5 \cdot .6$	$.3$
1	$.5 \cdot .8 + .5 \cdot .4$	$.6$
2	$.5 \cdot .2$	$.1$

check total = 1 ✓