Note Title 1/21/2009

~~HW 1: due Wed 1/28~~
1.7, 1.11, 1.12, 1.13 [J ⊄ 7]

$P(D_1 | S) = \frac{P(S|D_1) P(D_1)}{\alpha} \propto 0.9 \times 0.5$

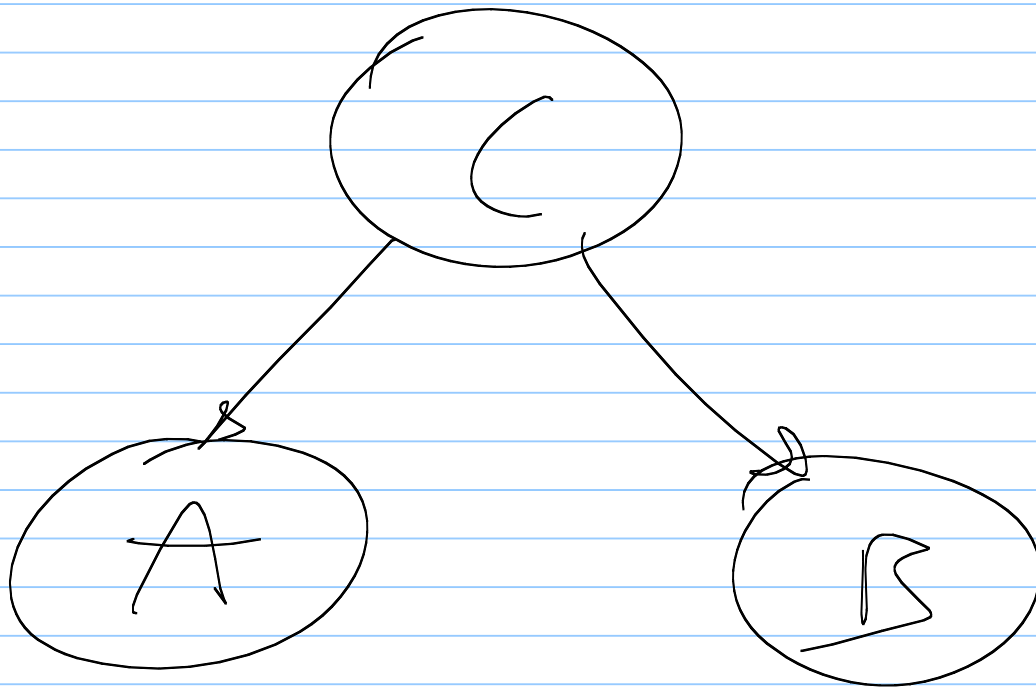
$P(D_2 | S) = \frac{P(S|D_2) P(D_2)}{\alpha} \propto 0.3 \times 0.5$

D_1 is 3 times as likely as D_2

$P(D_1 | S) = .75$ $P(D_2 | S) = .25$, since

they are the only possible diseases

$\begin{cases} P(D_1 | S) + P(D_2 | S) = 1 \\ P(D_1 | S) = 3 P(D_2 | S) \end{cases} \Rightarrow$



C d-separates A from B

$\implies$ A is independent of B given C

(in a Bayesian network)

A is (unconditionally) independent of B

if $P(A|B) = P(A)$.

Thm: if $P(A|B) = P(A)$

then $P(A,B) \left(= P(A \cap B) = P(A \& B)\right) = P(A)P(B)$