

## CS 182 Homework 5

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1.

a)

$C = \text{Coughing}$

$K = \text{KidneyFailure}$

$H = \text{HeartProblems}$

$F = \text{Fever}$

$N = \text{NeurologicalSystemFailure}$

$B = \text{BloodFlowProblems}$

$B_c = \text{BloodClot}$

$L = \text{LiverFailure}$

$S = \text{StomachAche}$

$B_p = \text{HighBloodPressure}$

$H_a = \text{Headache}$

b)

If a patient is coughing, his kidneys, his heart, or both, are failing.

$$(K \vee H) \rightarrow C$$

Patient will have a fever when the neurological system fails or when there is a problem of blood flow.

$$F \rightarrow (N \vee B)$$

A blood clot forms when there is a failure in blood flow or when there is liver failure.

$$B_c \rightarrow (B \vee L)$$

A patient has a stomachache if and only if the kidneys fail.

$$S \leftrightarrow K$$

High blood pressure is caused when the kidneys fail or when there is a blood flow problem.

$$B_p \rightarrow (K \vee B)$$

Finally, headache presents when one or more of these three systems fails  
the neurological system, the heart or the kidneys.

$$H_a \rightarrow (N \vee H \vee K)$$