CECS 451
Assignment 5
Total: 20 Points

General Instruction

- Submit your work in the Dropbox folder via BeachBoard (Not email or in class).

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1. (10 points) Test a Bayesian network tool on your workstation.
   i. Find `bayes.jar` and run it on your workstation.
   ii. Create nodes and edges to represent Figure 1.
   iii. Set the CPT (conditional probability table) to represent Figure 2.
   iv. Save the result as `Assn5.xml` and submit it.
2. Write answers the following questions. (`pdf` file submission)
   (a) (2 points) $\vec{P}$(Visit to Asia | dyspnoea)
   (b) (2 points) $\vec{P}$(Tuberculosis | positive X-ray, ¬dyspnoea)
   (c) (2 points) P(bronchitis |¬lung cancer)
   (d) (2 points) P(¬lung cancer | tuberculosis, ¬dyspnoea)
   (e) (2 points) $\vec{P}$(Smoking |¬positive X-ray, bronchitis, ¬visit to asia)

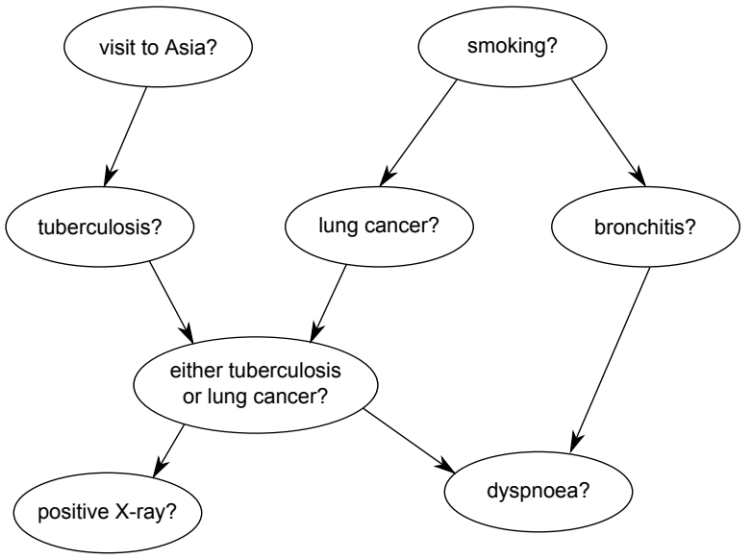
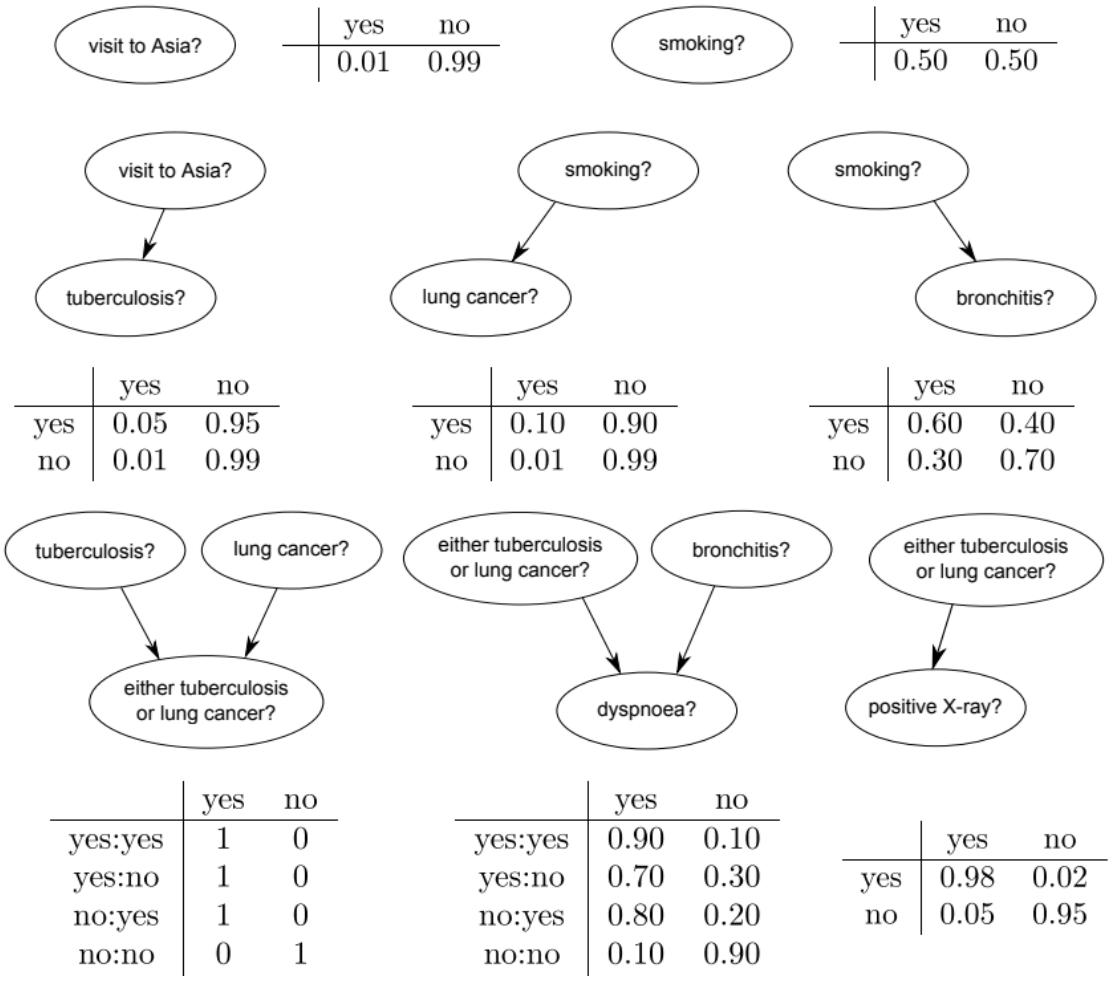


Figure 1: A network for tuberculosis and lung cancer.



	yes	no
	0.01	0.99

	yes	no
	0.50	0.50

	yes	no
yes	0.05	0.95
no	0.01	0.99

	yes	no
yes	0.10	0.90
no	0.01	0.99

	yes	no
yes	0.60	0.40
no	0.30	0.70

	yes	no
yes:yes	1	0
yes:no	1	0
no:yes	1	0
no:no	0	1

	yes	no
yes:yes	0.90	0.10
yes:no	0.70	0.30
no:yes	0.80	0.20
no:no	0.10	0.90

	yes	no
yes	0.98	0.02
no	0.05	0.95

Figure 2: A CPT for tuberculosis and lung cancer.