CS1571
Fall 2019
11/4 In-Class Worksheet

Name: Simran Gidwani
Where were you sitting in class today: Back right

A. Pre-Reflection

On a scale of 1-5, with 5 being most confident, how well do you think you could execute these learning objectives:

15.1 Explain a backward planning approach. _____
17.1 Describe key elements of probability theory. _____
17.2 Make inferences about the world from a joint distribution. _____
17.3 Explain the complexity of inferences from a joint distribution. _____

B. Inferences from Joint Distributions

Answer the following questions given this joint distribution.

		WBCCount		
		high	**medium**	**low**
Pneumonia	**True**	.08	.04	.01
	False	.22	.56	.09

1. What is P(*Pneumonia*=True, *WBCCount* = high)?

.08

2. What is P(*Pneumonia*=False)?

.87

3. What is P(*WBCCount* = Medium)?

.60

Answer the following questions given this joint distribution

	Paleness		~Paleness	
	Fever	*~Fever*	*Fever*	*~Fever*
Pneumonia	.15	.04	.10	.01
~Pneumonia	.10	.20	.15	.25

4. What is *P(Pneumonia* = True*)*?

   .30

5. What is P(*Fever* = True, *Pneumonia* = True)?

   .25

6. What is P(*Pneumonia*=True | Fever=True)

   .25/.50 == .50

7. What is P(*Pneumonia*=True | *Fever*=True, *Paleness*=True)

   .15/.25 == .6 ---- consider pneumonia conditioned on fever and paleness at the same time not separately

8. How many probabilities are there in the joint distribution for P(Pneumonia, Fever, Paleness, WBCCount)?

   24

9. How many values need to be stored?

   23

10. What is the time complexity to calculate P(Pneumonia=True)?
    Hint: how many summations are you doing?

    Total number of values in table / possible values in domain of pneumonia == 12 – exponential (grows with the number of variables you have)

C. Post-Reflection

On a scale of 1-5, with 5 being most confident, how well do you think you could execute these learning objectives:

15.1 Explain a backward planning approach. _____

17.1 Describe key elements of probability theory. _____

17.2 Make inferences about the world from a joint distribution. _____

17.3 Explain the complexity of inferences from a joint distribution. _____