CS445 Fall 2011 In Class Normalization Exercises

1. Find all the keys in the relation: { A, B, C, D, E, F, I} FD: {A} \rightarrow {B, C} ; {C, D} \rightarrow {F, C} ; {B} \rightarrow {E} ; { I } \rightarrow {C, B} ; {E} \rightarrow {I}

2. How many super keys exist for the above relation?

3. Put the above relation into BCNF.

4. Put the above relation into 3NF.

Hourly Forecast for Sunday

orecast data	a from the Natio	nal Digital Forec	ast Database				
Saturday	Sunday	Monday Tue	sday Wedn	esday Thursday Friday		Saturday	
2 AM	5 AM	8 AM	11 AM	2 PM	5 PM	8 PM	11 PM
emperature /	Dew Point (°F):						
47 / 47	47 / 47	47 / 47	54 / 50	63 / 50	61 / 49	54 / 49	49 / 47
lumidity (%):							
96%	99%	99%	86%	65%	67%	80%	89%
Vind (mph):							
9 1 mph WNW (290°)	1 mph West (270°)) 1 mph WNW (290°)	0 mph NNW (340°)	9 4 mph West (270°)	4 mph NNW (330°)	0 mph NW (320°)	● 0 mph West (270°)
Conditions:							
Rain	Chance of Rain	Chance of Rain	Chance of Rain	Chance of Rain	Mostly Cloudy	Mostly Cloudy	Chance of Rai
Probability of P	recipitation (%):						
80%	80%	30%	30%	30%	30%	20%	20%
Cloud Cover (?	%):						
96%	96%	96%	83%	83%	79%	79%	86%

5. The Weather Underground (wunderground.com) website contains a good deal of data. Above is a screenshot of the hourly forecast for Sunday, Oct 9, 2011. Build an E-R diagram for this data. Build a database schema as well. Show that the schema is in 3NF. Note: Cloud and arrow images are stored in the database as URLs. Temperature bars are dynamically generated from three integers (temperature, dew point, and max of all the numbers currently displayed [for scaling]). Hourly forecasts are produced every twelve hours (12:01 am and 12:01 pm).