Homework 2 assignment for ECE597/697SI
Posted: 10/01/2013
Due: 10/10/2013

Note: In all written assignments, please show as much of your work as you can. Even if you get a wrong answer, you can get partial credit if you show your work. If you make a mistake, it will also help the grader show you where you made a mistake. For this specific homework it is important that you clearly identify the sources you obtained the information for your answers from (using appropriate sources on the web is okay!)

In this homework we focus on Kansas City, Missouri and NOT Kansas City, KC!

Problem 1 (25 Points): Kansas City - Weather

In this problem, we will start focusing on the city that your final projects will be concerned about. In your final project, the goal is to define the requirements for a CASA-type network in Kansas City. To prepare for this task we have to gather some background information. Answering the following question will help you gather that information.

a. How many severe thunderstorms occurred in Kansas City in the past 10 years?
b. How many hail storms occurred in Kansas City in the past 10 years?
c. How many tornadoes occurred in Kansas City in the past 10 years? How many people were injured by these tornados? How many were killed?
d. How many flash flood events occurred in Kansas City in the past 10 years?
e. Have there been any reports on severe winter weather in Kansas City in the past 10 years?

Solution:

Problem 2 (25 Points): Kansas City – Demographics

In this problem, we focus on how much of the public will be impacted by a CASA system in Kansas City.

a. How many people live in Kansas City? How many people live in the greater Kansas City area?
b. What was the population growth in Kansas City over the past 10 years?
c. Are there any arenas for large events where many people at a relatively small space come together?
d. How important is the Kansas City airport? How many passengers per year? Is it impacted by severe weather?
e. Are there any other important infrastructures that could be significantly impacted by severe weather?
Solution:

Problem 3 (25 Points): Kansas City – Geography
As we have learned in class, the geography of the area in which a CASA radar network is supposed to be deployed has a significant impact on the topology of the network.

a. How many counties are encompassed by Kansas City? Which counties are these?
b. How many square miles are covered by the city area? How does this compare to the DFW metroplex?
c. What National Weather Service Forecast Office is responsible for forecasts, watches and warnings in Kansas City? Where is it located?
d. Who is responsible for emergency management in Kansas City? Which organization performs emergency management in the greater Kansas City region?

Problem 4 (25 Points): Communications
a. Name several options via which data might be transmitted from radars that would be installed in the greater Kansas City area to a control center located in the downtown area.
b. Can you explain why any kind of asymmetric service (DSL, Cable) would not meet the requirements for the data transport from a radar to the control center?

Problem 5 (25 Points): Stakeholder Requirements