/* 2. How many nodes are in the network? */
SELECT SDO_NET.GET_NO_OF_NODES('hennepin') FROM DUAL;

/* 3. What is the degree of node 40358? */
SELECT SDO_NET.GET_NODE_DEGREE('hennepin', 40358) FROM DUAL;

/* 4. Find all nodes with an in degree of at least 4 */
SELECT * FROM hennepin_node$ WHERE SDO_NET.GET_NODE_IN_DEGREE('hennepin', hennepin_node$.node_id)>=4;

/* 5. What is the average out degree of all nodes in the network? */
SELECT (SUM(SDO_NET.GET_NODE_OUT_DEGREE('hennepin', node_id))/COUNT(node_id)) AS average_out_degree FROM hennepin_node$;

/* 6. Retrieve the travel times (TRANSIT_TIME) for link 300 with start time and end time occurring between 630 and 1020. Also retrieve the travel times (TRANSIT_TIME) for link 300 with start time and end time occurring between 1230 and 1440. */
SELECT T.TRANSIT_TIME, T.START_TIME, T.END_TIME
FROM hennepin_link$ L, F12C5980G24.hennepin_transit_time T

/* 7. What are the minimum and maximum travel times for link 1000? */
SELECT MAX(T.TRANSIT_TIME) AS MAX_TRANS_TIME, MIN(T.TRANSIT_TIME) AS MIN_TRANS_TIME
FROM hennepin_link$ L, F12C5980G24.hennepin_transit_time T
WHERE L.LINK_ID=1000 AND L.TRANSIT_ID=T.TRANSIT_ID;

/* 8. What is the travel time of the route consisting of links 130, 1476, 1478 and 738 between 705 and 930? What is the travel time on the same route between 0 and 330? Note: For these questions you do not need to take the Lagrangian view. Adding travel times for all edges for the same time-interval is sufficient. */
SELECT SUM(T.TRANSIT_TIME)
FROM hennepin_link$ L, F12C5980G24.hennepin_transit_time T
WHERE ((L.LINK_ID=130) OR (L.LINK_ID=1476) OR (L.LINK_ID=1478) OR (L.LINK_ID=738))
AND L.TRANSIT_ID=T.TRANSIT_ID
AND ((T.START_TIME)>=705 AND T.END_TIME<=930) OR (T.START_TIME)>=0 AND T.END_TIME<=330);
HW4

Q 7.2: Compare and contrast syntactic and semantic barriers to interoperability. Define and illustrate each each barrier. Which barrier to interoperability is addressed by standards and transfer formats? Briefly justify your answer.

Syntactic barriers are differences in encoding formats (file formats or field names, for example). An example of syntactic barriers could include the same data stored in an Oracle database and stored in a PostGIS database. Both contain the same data, but in different formats. Standards and transfer formats can allow interoperability between systems with syntactic barriers.

Semantic barriers are differences in meaning between two systems or groups. To overcome differences in meaning the separate groups must create a data dictionary such as the Spatial Data Transfer Standard and map between each system and the SDTS.

Q 7.6: Consider the taxonomy of location-sensing techniques in Figure 7.18 with categories of active-proximity, active-triangulation, passive-motion-tracking and passive-scene-analysis. Classify the following location-sensing technologies into these categories: global positioning system, rfid, GSM mobile phone tracking, Active Bat, distress radiobeacon, flight data recorder and maritime distress safety system.

<table>
<thead>
<tr>
<th>Active-proximity</th>
<th>Active-triangulation</th>
<th>Passive-motion-tracking</th>
<th>Passive-scene-analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFID</td>
<td>GPS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GSM Mobile Phone Tracking</td>
<td>Active Bat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distress Radiobeacon</td>
<td>Flight Data Recorder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maritime Distress Safety System</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chapter 8: Interfaces

Q 8.2: Briefly describe Geovisualization with novel possibilities (e.g. interactive feedback, animation, 3D, non-visual displays) relative to paper based maps and cartography. Which of these capabilities are used in popular web-based mapping services such as Google Map, mapquest, Google Earth, etc.? Propose possible use-cases for presently unused capabilities of Geovisualization.

Digital geovisualization techniques used by Google Maps and other online mapping sites include an infinite map, changeable zoom levels, changeable layers, street-view, 3D views of the earth and integration of 3rd-party data sources not originally included by the map creators.
Animation is currently unused or under used, as is spatiotemporal data. Dynamic generalization could be used more to show the user a larger quantity of relevant information. Non-visual displays are currently unused in mapping.

- Q 8.4 : Review the notion of LineDrive maps from Rendering Effective Route Maps: Improving Usability Through Generalization. Compare and contrast LineDrive maps with route maps provided by common web-services (e.g. mapquest, Google Map) for driving under normal conditions as well as unusual conditions (e.g. unpredictable traffic congestions). Use Figure 14 in the Siggraph 2001 paper to illustrate your answer if appropriate.

In normal conditions LineDrive maps provide much more human-readable directions and may be more usable for most users. The simplified map is less distracting than the busy, colorful web maps, and includes only the important information.

There are a couple of scenarios where the LineDrive map might fall short. One case is when the user wishes to display traffic conditions. Since a long road may be compressed into a short straight line it would be difficult to show where along the line varying traffic conditions exist. Another case where LineDrive wouldn't work as well is when the router is determined by non-addressed landmarks – For example if the user needs to follow dirt roads past a certain lake or tall tree or cliff. Since those features wouldn't have addresses, LineDrive may not be able to distinguish them from the other less human-noticeable features along the route.

Group 11 Project Review

Peer-review assigned group's project report. Briefly summarize the project (50 words). Describe what new information you learned from this work (50 words). Make constructive suggestions to improve the work listing 3 to 4 specific action-able suggestions (50 words).

Group 11 used the Twitter API to find geospatial tweets and to try to predict the political leanings of counties in the United States. They used spatialite, QGIS, Scipy, numpy, tweepy and pyspatialite to bring the data from twitter, to store, analyze and visualize it.

I learned that there are actually a large quantity of geotagged tweets, and I learned about some new tools which can be used to handle them. I had assumed that not many people geotagged their tweets because of the privacy issues related to sharing your location. I also learned about the existence of spatialite.

The toolchain used in this project was new to me. It would be valuable to the reader to understand how popular these tools are. Not because popularity makes a better tool, but because better tools tend to be more popular, tend to have better support communities and better documentation. The use of twitter posts is essentially an online poll. The downfall of many online polls is that they aren't usually a representative sample of the real population. It would be beneficial to the reader to know more about the demographics of twitter users, and if possible about twitter users who geotag their posts so that they can make informed decisions about how to interpret the data.
**Group 3 Project Review**

Project Summary:

A limited access website system based on the users' geo-location in UMN area, which can control the resource acquisition and administrative privileges through coordination computation and location judgment. The system will improve the performance of resource sharing in certain regions as well the security by denying invalid access requests.

New information and Innovations:

Many techniques are used in the project:

- HTML 5 geo-location (user position retrieval)
- KML files (stored the shape-files information of buildings)
- KMLLayer and jQuery (GoogleMap presentation and area coordination extraction)
- Dropbox’s public folder (develop the website on a local machine which can still be reached by Google)

Suggestions:

The idea of applying the limited access control in geo-location base web service is very good. Here are some advices:

1. There should be a overall view of the resource acquisition policy that illustrates the capability of access with respect to locations. Besides the buildings selected by users, the resources(printers, lab machines, e-library files etc) should also be displayed in the Google Map.
2. Sometimes, the user(for example a freshman) may have the privilege to access the resource, but unfortunately, he selects the wrong buildings or stands in some places which results in access failure. Then we should provide some routing functions to help him to reach the right location.
3. The IP addresses of web browsers can seldomly accurately represent the current location of users, so we may only accept the requests with precise GPS location
information or combine with some other verification approaches (for example user identity verification) to ensure the system security.