This interactive design assignment concerns the retrieval of information from a two-table external database. One table provides the geographic layout of a 10x10 grid of city streets, while the other table provides a list of businesses that reside within this 81-square block region. Your application will provide the user with block-by-block directions from a user-specified address within the region to a user-specified business, using an optimal (i.e., minimum length) path. In addition, the application should provide full information about the business in question (i.e., its name, address, and operating hours).

The existing database and a folder of logo images corresponding to the businesses are on the course Web site (http://www.cs.siue.edu/wwhite/CS275/Syllabus.htm). Note that the database has the form defined below, with a relationship defined between the StreetName field in the Streets table and the Street field in the Businesses table. Essentially, new businesses could not be created if their addresses were not on one of the twenty streets defined in the Streets table's data.

Several assumptions may be made about the businesses and streets:

- No addresses are missing between the start of a block and the end of that block. For example, since Lexington Lane’s Block300Last value is 317, every address between 300 Lexington Lane and 317 Lexington Lane exists.
- On north-south roads, even-numbered addresses are on the west side and odd-numbered addresses are on the east side. On east-west roads, even-numbered addresses are on the north side and odd-numbered addresses are on the south side.
- The rank of a north-south street indicates the first digit of the numbers of all buildings on the block to the east of the street, while the rank of an east-west street indicates the first digit of the numbers of all buildings on the block to the south of the street.
- Some roads are one-way streets, so any routes from a user-specified address to a particular business destination must account for traveling the correct way down such streets.
- Businesses with null open or close times are assumed not to be open at all on the designated days.

Keep in mind that other features might be added to this application at a later date, so make sure that your design and implementation accommodate these potential enhancements (some of which you may be asked to implement on a future assignment!):
- Providing business-based instructions (e.g., “turn right at the McDonald’s”, “across the street from Target") instead of just street-by-street instructions.
- Providing an overhead map that routes the journey from the origin to the destination, similar to the “map” below, which illustrates where all of the businesses in the database are.

<table>
<thead>
<tr>
<th>Albuquerque Avenue</th>
<th>Boston Boulevard</th>
<th>Cleveland Causeway</th>
<th>Denver Drive</th>
<th>El Paso Expressway</th>
<th>Fresno Freeway</th>
<th>Galveston Gully</th>
<th>Honolulu Highway</th>
<th>Indianapolis Interstate</th>
<th>Jackson Junction</th>
</tr>
</thead>
</table>
- Allowing users to enter additional businesses into the database, including error-checking to ensure that the user-specified addresses of these new businesses make sense.

As always, you are strongly encouraged to bring early versions of your design to the instructor for feedback. You may also feel free to discuss your early design ideas with your classmates, but remember that showing your actual code or final design to anyone besides the instructor is considered academic misconduct and will be dealt with as such. Also, remember to fully document your program, explaining your design as needed.

Zip-compress your entire project file and copy it to your dropbox by Thursday, March 25, 2010, at Noon. Late assignments are not accepted without verifiable medical documentation. You must write your own code, and no one but the instructor may see your code.