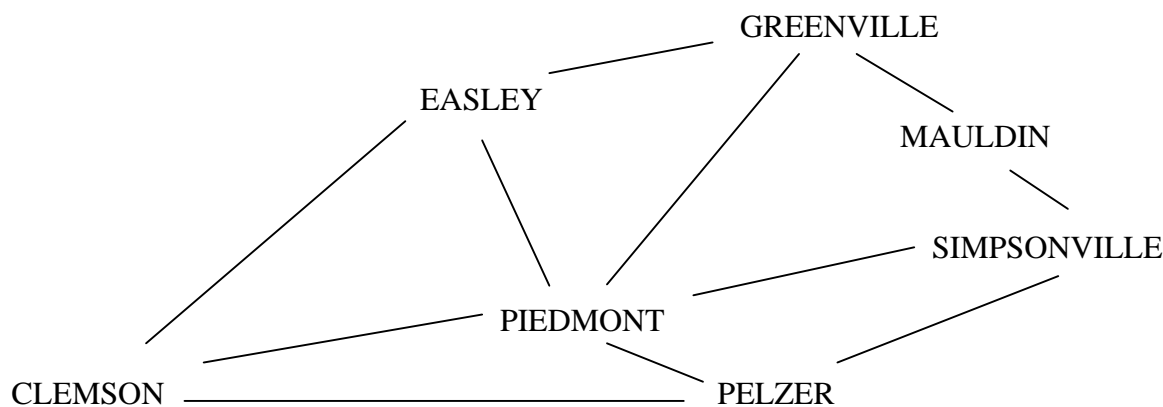


## MATRICES

### ***PROBLEM 4: PLANNING A ROUTE***

Elaine is a graduate student at Clemson University, which is located in Clemson, SC. She lives in Simpsonville and commutes to Clemson each day. Because of construction, she is looking for alternate routes to Clemson. After examining the map, she discovers that there are several alternate routes. Towns along the various routes include Piedmont, Pelzer, Mauldin, Greenville, and Easley.

- Create a determination matrix to display the map information. Use the town names to label the rows and columns. If there is a direct route between two towns, enter a 1 in the appropriate cell. If not, enter a 0.
- In how many ways can Elaine get to Clemson without going through any other town? Explain your reasoning in terms of your determination matrix.
- Use matrix operations to determine the number of ways Elaine can get to Clemson by going through only one other town. Explain your reasoning.
- What do the zero entries in the new matrix represent?
- Use matrix operations to determine the number of ways Elaine can get to Clemson by going through two other towns. Explain your reasoning.
- How many 2-town routes are there among all seven towns? Explain.



### ***EXTENSIONS***

- Use a map of your region to create and explore a determination matrix.
- Use a flight schedule to create determination matrices.