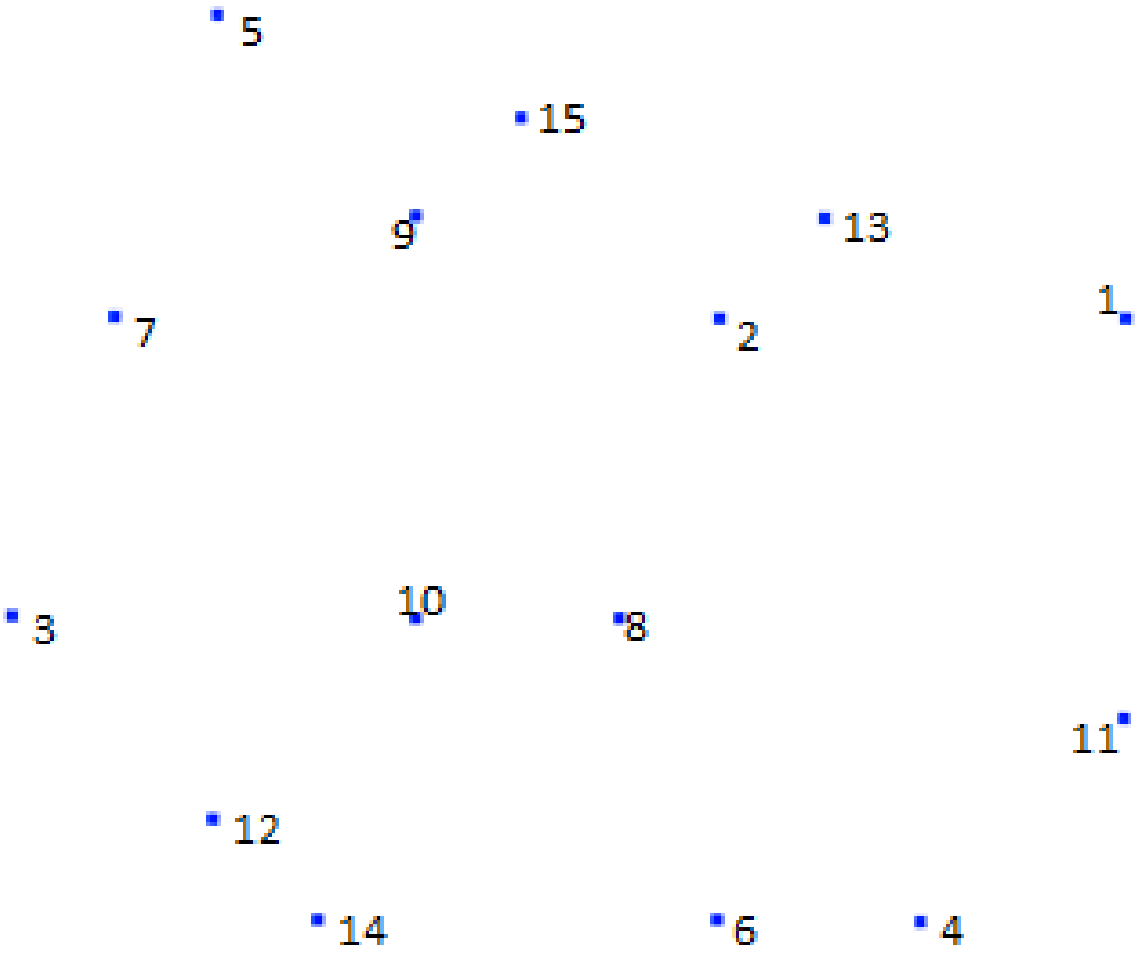
Homework 8 – TSP and stock selection

1. Open Homework 8 data on Canvas--you'll find a 15 city-to-city distance matrix, visually represented below. Find the shortest path to visit every city. Careful in the setup—it doesn't matter where you start, just that you then end at the same location. On Thursday we forced a "SEA" start and finish, but notice Seattle was not included in the variables. "Alldifferent" will always start at 1, and can't be constrained. This problem is easier to set up with a generic start and using the whole matrix with a single Index command. I expect you to work on this awhile, but you have all the tools you need to solve it. The total distance for the loop is under 300 and makes sense, visually.



2. Construct your own stock portfolio consisting of at least 5 stocks. Use the site below for data. Please select from the ten most popular historical data pages listed, as these are the only ones that allow you to download the data:

https://www.nasdaq.com/market-activity/quotes/historical

Choose a stock, say SBUX, click on "5Y" to get the last 5 years of data, then click "download data." First expand Column A to see the date. The only other column we want is column B, the daily close/last price so delete all of columns CDEF. I want you to look at the data every quarter, so delete the first 28+ rows so that your first data point is 10/3/2022 and $85.62. Copy A2 and B2 over to C2 and D2.

Now we'll grab the price every 63 days in the past, so that we are *approximately* grabbing every quarter. Why 63? There are 252 trading days a year and 252/4 = 63.

In cell C3 enter the formula: =OFFSET(A2,(ROW(A2)-1)*63,0) [you should get the ludacris number 44747, which we will need to reformat as a "short date"—it should turn into 7/5/2022.] Once you've fixed the formatting, copy it down till the dates don't make sense (the last date should be 12/29/2017).

> Note: The OFFSET command needs a reference, row, column. For the dates, our reference is always A2. We want to gather data every 63rd row, to do this we use the command "(Row(A2)-1)*63". "Row(A2)" outputs a "2", we then subtract 1 to get a 1 and then multiply by 63 to get the 63rd row from row 2. The next command would then take Row(A3)-1, which is 2, multiplies it by 63 to get 126, and the next data point is 126 rows down from the reference of row 2. Finally, the formula ends in "0" because we are staying in the same column.

You'll need to set up a similar formula in column D to get the resulting price at closing.

Finally column E will display the percent change for each quarter. Divide the current quarter by the previous quarter and subtract 1. E2 should be 7.7%.

I've included SBUX for a reference, but you don't have to use it in your stocks. It is tied for worst, only beating the market 8 of 19 quarters.