TSP example in SAS

This example imports from an Excel file a complete graph with 10 vertices (hence, 45 edges) where each vertex represents a city. The weight associated with each edge is the distance, in miles, between the pair of cities. This graph is undirected but still requires 'from' and 'to' commands to create.

```
 /* Generated Code (IMPORT) */
/* Source File: city_mileage_TSP.xlsx */
/* Source Path: /gpfs/user_home/jdemaio/MATH 8020 */
/* Code generated on: 1/11/18, 11:17 AM */

%web_drop_table(WORK.IMPORT);


FILENAME REFFILE '/gpfs/user_home/jdemaio/MATH
8020/city_mileage_TSP.xlsx';

PROC IMPORT DATAFILE=REFFILE
     DBMS=XLSX
     OUT=WORK.IMPORT;
     GETNAMES=YES;
RUN;

PROC CONTENTS DATA=WORK.IMPORT; RUN;
PROC print DATA=WORK.IMPORT (obs=5); RUN;

proc optgraph
data_links = WORK.IMPORT;
*create graph from variables;
data_links_var
from = home
to = next
weight=miles;
* write optimal cycle to file city_mileage_TSPTour;
tsp out = city_mileage_TSPTour;
run;

%web_open_table(WORK.IMPORT);
```

Running this code creates the file city_mileage_TSPTour which contains the following table.

Obs	home	next	miles
1	Atlanta	Miami	604
2	Houston	Miami	968
3	Houston	Los Angeles	1374
4	Los Angeles	San Francisco	347
5	San Francisco	Seattle	678
6	Denver	Seattle	1021
7	Chicago	Denver	920
8	Chicago	New York	713
9	New York	Washington D.C.	205
10	Atlanta	Washington D.C.	543

The weight of this cycle is 7373 miles. This value appears in the OPTGRAPH Solution Summary section of results.