

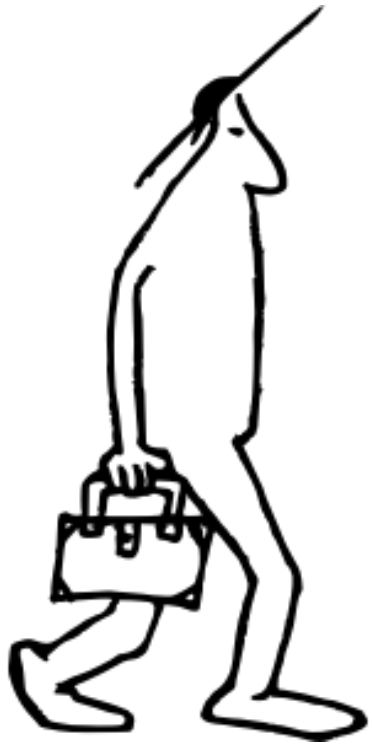
# Traveling Salesperson Problem (TSP)

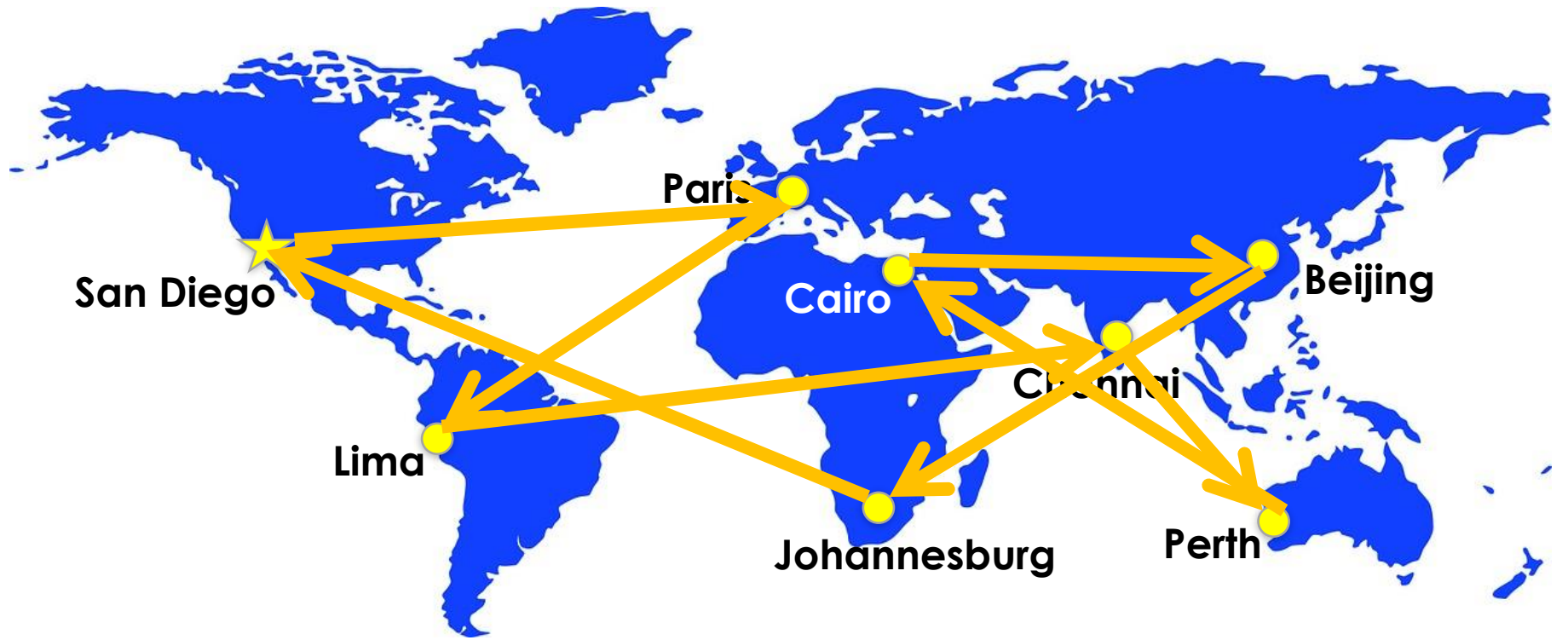
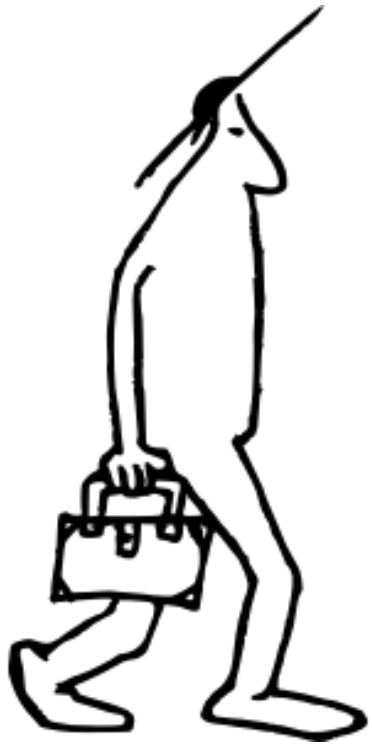


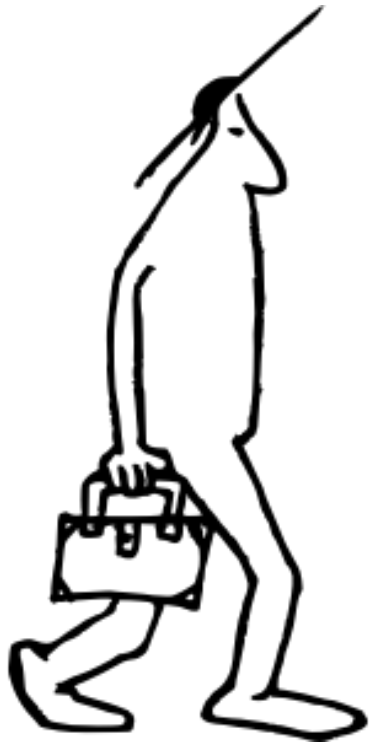
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by Christine Alvarado, Mia Minnes, and Leo Porter, 2015.

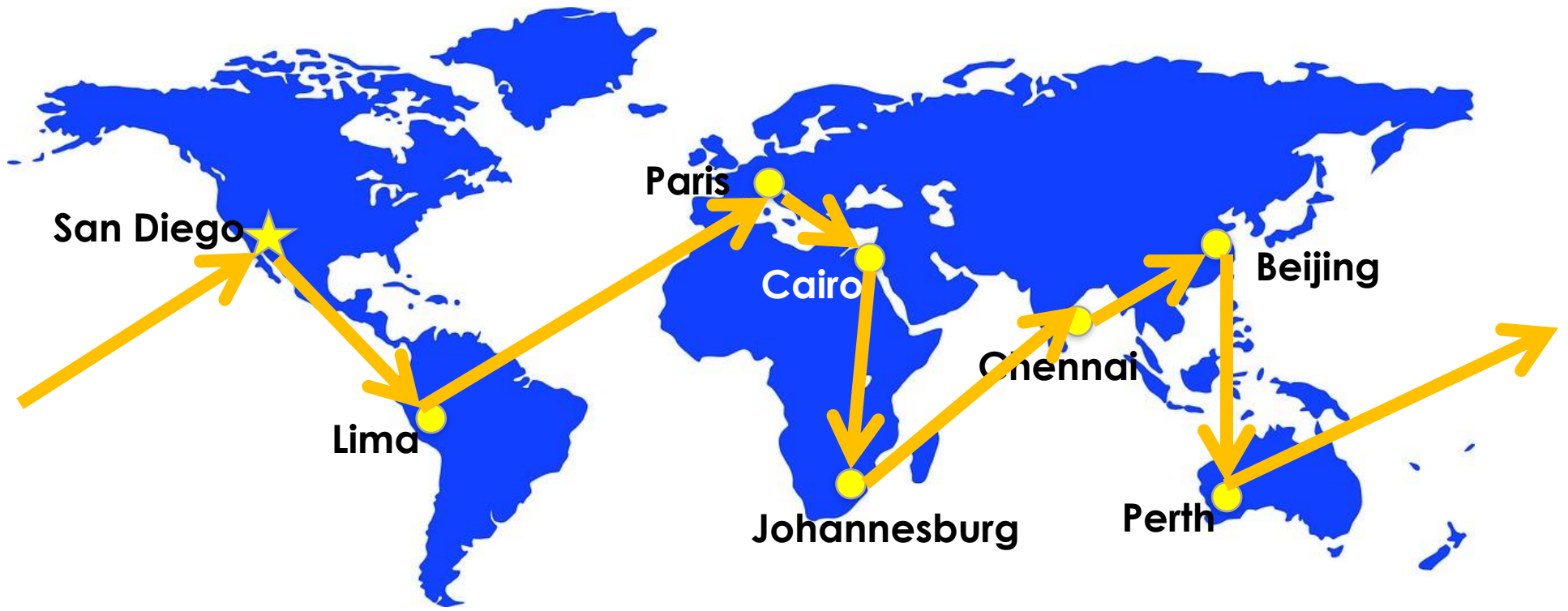
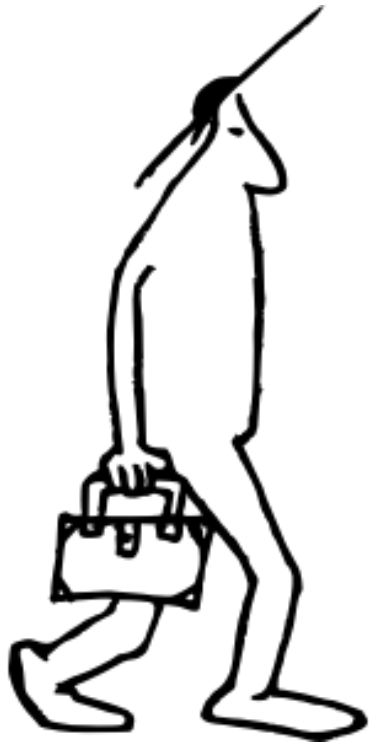
**By the end of this video you will be able to...**

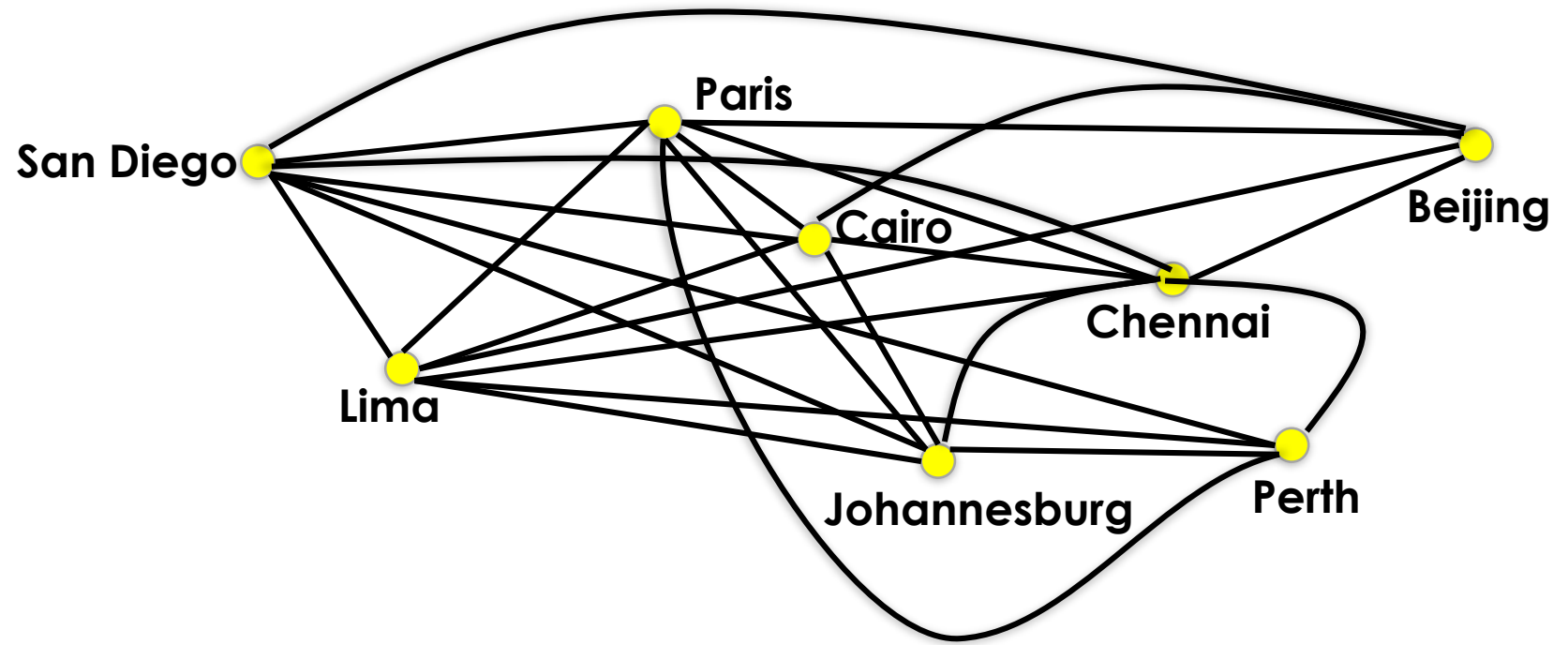
- Describe the traveling salesperson problem











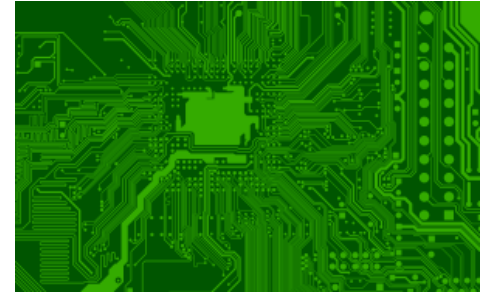
	<b>SD</b>	<b>Lima</b>	<b>Paris</b>	<b>Chen.</b>	<b>Cairo</b>	<b>Perth</b>	<b>Beij.</b>	<b>J'berg</b>
<b>SD</b>	0	6,091	9,144	14,587	12,276	15,078	10,234	16,575
<b>Lima</b>	6,091	0	10,248	17,540	12,414	14,924	16,637	10,872
<b>Paris</b>	9,144	10,248	0	8,031	3210	14,269	8,212	8,295
<b>Chen.</b>	14,587	17,540	8,031	0	5,360	6,276	4,615	7,133
<b>Cairo</b>	12,276	12,414	3210	5,360	0	11,258	7,540	6,260
<b>Perth</b>	15,078	14,924	14,269	6,276	11,258	0	7,985	8,308
<b>Beij.</b>	10,234	16,637	8,212	4,615	7,540	7,985	0	11,699
<b>J'berg</b>	16,575	10,872	8,295	7,133	6,260	8,308	11,699	0

**In TSP, given n cities with one Hometown and all pairwise distances, plan a tour starting and ending at Hometown that visits every city exactly once and has minimum distance.**



**In TSP, given  $n$  cities with one Hometown and all pairwise distances, plan a tour starting and ending at Hometown that visits every city exactly once and has minimum distance.**

**Lots of applications!**



<http://www.math.uwaterloo.ca/tsp/index.html>