Machine Learning
Assignment #2
Due: Wednesday, February 15th

Implement a genetic algorithm for the Traveling Salesman Problem for the following distance matrix.

Bakersfield	Barstow	Carlsbad	Eureka	Fresno	Lake Tahoe, So.	Las Vegas	Long Beach	Los Angeles	Merced	Modesto	Monterey	Oakland	Palm Springs	Redding	Sacramento	San Bernardino	San Diego	San Francisco	San Jose	San Luis Obispo	Santa Barbara	San Cruz	Santa Rosa	Sequoia Park	Stockton	City
																										Bakersfield
129																										Barstow
206	153																									Carlsbad
569	696	777																								Eureka
107	236	315	462																							Fresno
360	395	780	398	388																						Lake Tahoe, So.
284	155	312	797	408	466																					Las Vegas
144	139	82	713	251	479	314																				Long Beach
115	130	93	694	222	456	302	29																			Los Angeles
162	291	370	407	55	194	446	306	277																		Merced
200	329	406	369	93	156	484	344	315	37																	Modesto
231	360	428	388	152	266	504	364	335	118	153																Monterey
288	417	496	291	181	195	567	432	403	126	88	111															Oakland
226	123	116	795	333	435	276	112	111	388	426	446	514														Palm Springs
436	565	644	150	329	249	640	580	551	274	236	325	214	682													Redding
272	401	480	314	185	107	587	416	387	110	72	185	87	498	164												Sacramento
174	71	827	43	281	436	228	68	59	336	374	394	462	52	610	446											San Bernardino
231	176	23	800	338	542	332	105	116	393	431	451	519	139	667	503	105										San Diego
297	426	505	272	190	192	568	441	412	135	97	116	9	523	223	87	471	528									San Francisco
252	381	460	317	145	197	524	396	367	114	82	71	40	478	254	114	426	483	45								San Jose
118	247	293	504	137	197	414	229	200	192	230	135	227	311	411	301	259	316	232	187							San Luis Obispo
146	225	188	609	242	492	354	124	95	297	335	240	332	206	546	406	254	211	337	292	105						Santa Barbara
258	387	466	349	151	229	524	402	373	118	114	45	72	484	286	146	432	489	77	32	180	285					San Cruz
347	476	565	222	240	199	610	491	462	185	147	166	59	573	251	103	521	578	50	95	282	387	127				Santa Rosa
121	250	329	544	82	335	408	265	236	137	175	234	263	347	411	247	295	352	272	227	174	287	233	322			Sequoia Park
227	356	435	356	120	131	510	371	342	65	27	140	75	453	209	45	401	458	84	69	256	361	101	134	202		Stockton
200	329	408	488	93	133	435	344	315	81	119	199	207	426	355	191	374	431	216	195	230	335	199	266	175	146	Yosemite

You must author your own code using either the C++, Java or Python programming language and without the use of external software packages. Your project submission will be run through a source code verifier to check for plagiarism. Any evidence of cheating (code NOT written solely by you) will result in a failing grade for this course.

Your program should create an output file containing the best tour generating during each generation. When submitting your assignment include:

- the output file
- your input data file containing the distance matrix
- a copy or your source code
- a README file containing any information required to run your program.

This project is worth 25 points. 4 points of this score will be based on how good of a solution your GA is able to find. Strong solutions (lowest cost tours) will receive the full 4

points, weak solutions will receive 0 points, and solutions in between will receive 1-3 points. Take your time with this project and investigate different selection, recombination and mutation operators -- and different rates at which to apply them -- in order to find the best answer that you can!