Data Science
Ruichun Liu
Problem Set 10

1. **Question 9** As a table in your .tex file, report the optimal values of the tuning parameters for each of the algorithms. How does each algorithm's out-of-sample performance compare with each of the other algorithms?

   From the last table, we can find that Tree Model, Logit Model, and kNN model have similar values for f1. Neural Model and SVM model have the similar values for f1. Naive Model has the lowest value for f1.

   From the last table, we can also find that Tree Model and Logit Model have the similar values for gmean which are lower than the values of other four models.

Model	f1	gmean	minsplit	minbucket	cp
Tree	0.8901134	0.6856084	10	6	0.0269

Model	f1	gmean	lambda	alpha
Logit	0.8971736	0.6620844	0.0263	0.786

Model	f1	gmean	size	decay	maxit
Neural	0.9062491	0.7563870	9	0.19	1000

Model	f1	gmean	k
kNN	0.8975309	0.7467755	27

Model	f1	gmean	kernel	cost	gamma
SVM	0.9056775	0.7350348	radial	1	0.25

Performance	Tree	Logit	Neural	Naive	kNN	SVM
f1	0.8955385	0.8970978	0.9071590	0.8843005	0.8965099	0.9046041
gmean	0.6578865	0.6615253	0.7560003	0.7263803	0.7439890	0.7347130