Q3.) Analysis: (Linear Regression)

Algorithms	Linear Regression	RANSC Regression	Ridge	Lasso
R^2 Score: (Train)	-3.295	-3.295	-3.334	0.000
R^2 Score: (Test)	-3.293	-3.293	-3.333	0.000
Time Taken	4.4246	4.4276	4.4306	4.4336

The above table contains the analysis of the Linear Regression algorithms like Linear Regression, RANSAC Regression, Ridge, Lasso. In the analysis as shown in the table we compared their R^2 Scores of their training and testing from the California Housing Dataset and also we compare the time taken for each of the models.

Analysis: (Non-Linear Regression)

Algorithms	Quadratic	Cubic	Decision Tree Regressor
R^2 Score:	1.0	1.0	Train: -2.377 Test: -2.394
Time Taken	3.3945	3.4015	3.4045

The above table consists of the Non-Linear Regression algorithm models like Quadratic, Cubic, and Decision Tree Regressor. In the analysis as shown in the above table, we compared the R^2 scores of the models from the California Housing Dataset and also we compare the time taken for each of the models.

Alpha Values	Ridge	Lasso
1.0	R^2 Train: -3.344 R^2 Test: -3.343 Time Taken: 7.6701	R^2 Train: 0.000 R^2 Test: 0.000 Time Taken: 7.6741
2.0	R^2 Train: -3.395 R^2 Test: -3.393 Time Taken: 4.6800	R^2 Train: 0.000 R^2 Test: 0.000 Time Taken: 4.6800
5.0	R^2 Train: -3.546 R^2 Test: -3.544 Time Taken: 5.7286	R^2 Train: 0.000 R^2 Test: 0.000 Time Taken: 7.6701

In the Linear Regression analysis, I also checked the different alpha values for both the Ridge and Lasso models in which the R^2 score doesn`t have much changes for the Lasso model and where as for the Ridge model the R^2 score decreases for the rise in the alpha value.