Machine Learning Regression method using Hyper Tuning Parameters to find R2 value

1. **Multiple Linear Regression (R2 value)= 0.9358**

2. **Support Vector Machine:**

SI.No	Hyper Parameter	Linear (r value)	Rbf (r value)	Poly (r value)	Sigmoid (r value)
1	C0.01	-0.4320	-0.0574	-0.0574	-0.0574
2	C10	-0.5428	-0.0558	0.0253	-0.0576
3	C100	-0.6076	-0.0302	0.4656	-0.0587
4	C500	0.0367	0.0500	0.6207	-0.0640
5	C1000	0.0650	0.1606	0.6403	-0.0707
6	C1500	0.3904	0.2361	0.6488	-0.0775
7	C2000	0.4587	0.2884	0.6717	-0.0845

 In SVM Regression use Hyper Tuning Parameter (Nonlinear (Poly) Hyper parameter (C2000)) to find R2 Value =**0.6717**

3. **Decision Tree**

SI.No	Criterion	Max Features	Splitter	R Value
1	friedman_mse	sqrt	best	0.7282
2	friedman_mse	Log2	random	0.5562
3	friedman_mse	Log2	best	0.5132
4	friedman_mse	sqrt	random	0.7406
5	friedman_mse	auto	random	0.8995
6	friedman_mse	auto	best	0.9143
7	absolute_error	auto	best	0.9559
8	absolute_error	auto	random	0.8332
9	absolute_error	sqrt	best	-0.1250
10	absolute_error	sqrt	random	0.8013
11	absolute_error	Log2	best	0.4950
12	absolute_error	Log2	random	-0.3502
13	poisson	auto	best	0.9035
14	poisson	auto	random	0.7438
15	poisson	sqrt	best	0.3712
16	poisson	sqrt	random	0.7845
17	poisson	Log2	best	0.4021
18	poisson	Log2	random	0.6911

In Decision Tree use (Hyper tuning
Parameter(criterion='absolute_error',max_features='auto',splitter='best')) to find R2 Value =
0.9559

4.Random Forest Regression

SI.No	Criterion	Max Features	R Value
1	Squard_error	auto	0.9370
2	Squard_error	sqrt	0.7751
3	Squard_error	Log2	0.8121
4	friedman_mse	Log2	0.7768
5	friedman_mse	sqrt	0.8490
6	friedman_mse	auto	0.9243
7	absolute_error	auto	0.9469
8	absolute_error	sqrt	0.8047
9	absolute_error	Log2	0.8048
10	poisson	auto	0.9416
11	poisson	sqrt	0.8564
12	poisson	Log2	0.7626

In Random Forest use (Hyper Tuning
Parameter(criterion='absolute_error',max_features='auto')) to find R2 Value = **0.9469**

The final best model result for Machine Learning Regression :

1. In Decision Tree use (Hyper tuning
   Parameter(criterion='absolute_error',max_features='auto',splitter='best'))
   to find R2 Value = **0.9559**