Linear Regression Model:

On Validating "50_Startups" dataset below is the R2_Score results for different parameters

1. Multiple Linear Regression = R2 Score: 0.952967609542534

2. Support Vector Machine: By Default, R2 Score: -0.031469

s.no	Hyper Parameter	Linear(R_Value)	RBF(Non-Linear-R_value)	Poly(R_Value)	Sigmoid(R_Value)
1	C=0.2	-0.03107	-0.03155	-0.03147	-0.031499
2	C=10	-0.006568	-0.030482	-0.02646	-0.275876
3	C=100	0.17698	-0.02064	0.01881	0.007918
4	C=500	0.720311	0.016172	0.20347	0.13445
5	C=1000	0.87397	0.05072	0.388384	0.274095
6	C=2000	0.908847	0.122968	0.60965	0.502294
7	**C=3000**	**0.92534**	0.19815	0.68563	0.671684

3. Decision Tree Regressor: by Default - R_Value : 0.95372

sl.no	Criterion	Max_Features	Spliter	R_Value
1	squared_error	sqrt	best	0.29461
2	squared_error	sqrt	random	-0.282377
3	squared_error	log2	best	0.6117
4	squared_error	log2	random	0.68205
5	friedman_mse	sqrt	best	0.570552
6	friedman_mse	sqrt	random	0.061363
7	**friedman_mse**	**log2**	**best**	**0.88325**
8	friedman_mse	log2	random	0.50146
9	absolute_error	sqrt	best	0.714122
10	absolute_error	sqrt	random	-0.648624
11	absolute_error	log2	best	0.36825
12	absolute_error	log2	random	0.770408
13	poisson	sqrt	best	0.701664
14	poisson	sqrt	random	0.857057
15	poisson	log2	best	0.157047
16	poisson	log2	random	0.862611

Decision Tree best R2_Value after hyper tuning : friedman_mse with log2 and best splitter = 0.88325

4. **Random Forest Regression** :
   By Default parameters Model gives good prediction
   R2_Score : 0.945524

s.no	n_estimators	criterion	max_features	random_state	R2_Value
1	50	squared_error	sqrt	0	0.683
2	100	absolute_error	log2	0	0.785748
3	200	friedman_mse	sqrt	0	0.76405
4	250	poisson	log2	0	0.768813
5	300	absolute_error	sqrt	0	0.80126
6	350	friedman_mse	log2	0	0.768738
7	400	poisson	sqrt	0	0.7684105
8	500	squared_error	log2	0	0.791074