To find the Machine Learning Regression r2_score values

1. Best Model in Multiple Linear Regression = **0.7894790349867009**

2. **Support Vector Machine:**

S.No	Hyperparameter	linear	rbf	poly	sigmoid
1	C=10	0.4624684142339679	-0.032273293906[redacted]	0.038716222[redacted]	0.0393071437827434[redacted]
2	C=100	0.6288792857320359	0.3200317832050[redacted]	0.617956962[redacted]	0.5276103546510407[redacted]
3	C=500	0.7631057975975359	0.6642984611986[redacted]	0.826368354[redacted]	0.4446061033869466[redacted]
4	C=1000	0.7649311738709138	0.8102064874808[redacted]	0.856648767[redacted]	0.2874706948697562
5		0.010102665316081394	-0.083382385936[redacted]	-0.07569965[redacted]	-0.075429242811071[redacted]

Best model in SVM is **(poly, c=1000)** = **0.856648767594655**.

3. **Decision Tree:**

S.No	criterion	splitter	max_features	Model_score
1	squared_error	best	sqrt	0.7150737164500445
2	squared_error	random	log2	0.6863685475583305
3	squared_error	random	*None*	0.7307337706182768
4	squared_error	best	*None*	0.7016761659015546
5	squared_error	best	log2	0.7249499549628392
6	squared_error	random	sqrt	0.6834592588478123
7	friedman_mse	random	sqrt	0.6209065105384693
8	friedman_mse	best	log2	0.7405127269735132

9	**friedman_mse**	**random**	*None*	**0.7430550949569956**
10	**friedman_mse**	**best**	*None*	**0.6964657606330 72**
11	**friedman_mse**	**best**	**sqrt**	**0.6599658726727005**
12	**friedman_mse**	**random**	**log2**	**0.6000600401562 14**
13	**absolute_error**	**random**	**sqrt**	**0.7447936030752611**
14	**absolute_error**	**best**	**log2**	**0.7189548988004486**
15	**absolute_error**	**random**	*None*	**0.6623634729365939**
16	**absolute_error**	**best**	*None*	**0.6884975661216344**
17	**absolute_error**	**best**	**sqrt**	**0.7289283315753496**
18	**absolute_error**	**random**	**log2**	**0.6944263707183833**

19	**poisson**	**random**	**sqrt**	0.7121004601183376
20	**poisson**	**best**	**log2**	0.6976700591116282
21	**poisson**	**random**	*None*	0.7033906776245388
22	**poisson**	**best**	*None*	0.7320280530507992
23	**poisson**	**best**	**sqrt**	0.7052931884434356
24	**poisson**	**random**	**log2**	0.7225695713498921

Best model in Decision Tree is **(absolute_error best log2)** = 0.7447936030752611

4. Random Forest:

S.No	criterion	n_estimators	max_featuresint	Model_score
1	squared_error	10	None	0.8337510994851461
2	squared_error	50	None	0.8507236843374123
3	squared_error	100	None	0.8548501891692674
4	squared_error	10	sqrt	0.8529790384841727
5	squared_error	50	sqrt	0.869865269281725
6	squared_error	100	sqrt	0.8710347444809037
7	squared_error	10	log2	0.8529790384841727
8	squared_error	50	log2	0.869865269281725
9	squared_error	100	log2	0.8710347444809037
10	absolute_error	10	None	0.8364683541197588
11	absolute_error	50	None	0.8549814912785151
12	absolute_error	100	None	0.8535432298569978
13	absolute_error	10	sqrt	0.856346304167249
14	absolute_error	50	sqrt	0.8739050938167566
15	absolute_error	100	sqrt	0.872367602580061
16	absolute_error	10	log2	0.856346304167249
17	absolute_error	50	log2	0.8739050938167566
18	absolute_error	100	log2	0.872367602580061
19	friedman_mse	10	None	0.8338972367336034
20	friedman_mse	50	None	0.8509561763395341
21	friedman_mse	100	None	0.8552112600358718

22	friedman_mse	10	sqrt	0.8509362431318176
23	friedman_mse	50	sqrt	0.8698796659800991
24	friedman_mse	100	sqrt	0.8711686791850466
25	friedman_mse	10	log2	0.8509362431318176
26	friedman_mse	50	log2	0.8698796659800991
27	friedman_mse	100	log2	0.8711686791850466
28	poisson	10	None	0.8322198745248255
29	poisson	50	None	0.8503290840463882
30	poisson	100	None	0.8535894347475623
31	poisson	10	sqrt	0.8541284453765396
32	poisson	50	sqrt	0.8633970723735684
33	poisson	100	sqrt	0.8678421034659123
34	poisson	10	log2	0.8541284453765396
35	poisson	50	log2	0.8633970723735684
36	poisson	100	log2	0.8678421034659123

The Best Model in Random Forest is **(absolute_error 50 sqrt) =** (0.8739050938167566)

Best Model for (MLR, SVM, DT, RF)

1.The best Multiple Linear Regression model has an accuracy of = 0.7894790349867009.
2.The best SVM model **(with a polynomial kernel and C = 1000**) has an accuracy of = 0.856648767594655.
3.The best Decision Tree model **(using absolute error and log2)** has an accuracy of = 0.7447936030752611.

4.The best Random Forest model **(using absolute error, 50 estimators, and sqrt)** has an accuracy of = 0.8739050938167566.

“The final best model is Random Forest with an accuracy of 0.8739050938167566, which is about 87 percent. Currently, I have only tested its prediction accuracy, not what the model learned. I tried four models in total, and the best one is Random Forest.”