DECISION TREE

Dataset:

R&D Spend	Administration	Marketing Spend	State	Profit
165349.2	136897.8	471784.1	New York	192261.83
162597.7	151377.59	443898.53	California	191792.06
153441.51	101145.55	407934.54	Florida	191050.39
144372.41	118671.85	383199.62	New York	182901.99
142107.34	91391.77	366168.42	Florida	166187.94
131876.9	99814.71	362861.36	New York	156991.12
134615.46	147198.87	127716.82	California	156122.51
130298.13	145530.06	323876.68	Florida	155752.6
120542.52	148718.95	311613.29	New York	152211.77
123334.88	108679.17	304981.62	California	149759.96
101913.08	110594.11	229160.95	Florida	146121.95
100671.96	91790.61	249744.55	California	144259.4
93863.75	127320.38	249839.44	Florida	141585.52
91992.39	135495.07	252664.93	California	134307.35
119943.24	156547.42	256512.92	Florida	132602.65
114523.61	122616.84	261776.23	New York	129917.04
78013.11	121597.55	264346.06	California	126992.93
94657.16	145077.58	282574.31	New York	125370.37
91749.16	114175.79	294919.57	Florida	124266.9
86419.7	153514.11	0	New York	122776.86
76253.86	113867.3	298664.47	California	118474.03
78389.47	153773.43	299737.29	New York	111313.02
73994.56	122782.75	303319.26	Florida	110352.25
67532.53	105751.03	304768.73	Florida	108733.99
77044.01	99281.34	140574.81	New York	108552.04
64664.71	139553.16	137962.62	California	107404.34
75328.87	144135.98	134050.07	Florida	105733.54
72107.6	127864.55	353183.81	New York	105008.31
66051.52	182645.56	118148.2	Florida	103282.38
65605.48	153032.06	107138.38	New York	101004.64
61994.48	115641.28	91131.24	Florida	99937.59
61136.38	152701.92	88218.23	New York	97483.56
63408.86	129219.61	46085.25	California	97427.84
55493.95	103057.49	214634.81	Florida	96778.92
46426.07	157693.92	210797.67	California	96712.8
46014.02	85047.44	205517.64	New York	96479.51

R&D Spend	Administration	Marketing Spend	State	Profit
28663.76	127056.21	201126.82	Florida	90708.19
44069.95	51283.14	197029.42	California	89949.14
20229.59	65947.93	185265.1	New York	81229.06
38558.51	82982.09	174999.3	California	81005.76
28754.33	118546.05	172795.67	California	78239.91
27892.92	84710.77	164470.71	Florida	77798.83
23640.93	96189.63	148001.11	California	71498.49
15505.73	127382.3	35534.17	New York	69758.98
22177.74	154806.14	28334.72	California	65200.33
1000.23	124153.04	1903.93	New York	64926.08
1315.46	115816.21	297114.46	Florida	49490.75
0	135426.92	0	California	42559.73
542.05	51743.15	0	New York	35673.41
0	116983.8	45173.06	California	14681.4

Selecting the Best model :

Changing the hyper tuning parameter value and find the best r2 value

Criterion	Splitter	R2 Value
Squared_error	Best	0.91
Squared_error	Random	0.81
Friedman_mse	Best	0.91
Friedman_mse	Random	0.91
Absolute_error	Best	0.96
Absolute_error	Random	0.93
Poisson	Best	0.91
Poisson	Random	0.88

Here Criterion: Absolute_error and Splitter: Best gives the R2 value: 0.96 which is most nearer to 1 so for this Dataset we can take this as a Best model