### To find the following the machine learning regression method using r2 valueD:

**1. Multiple Linear Regression:** (R2 Value) = 0.935856

2. **Support Vector Machine:**

| **Sl.no** | **Hyper**  **Parameter** | **Linear**  **(**R2 **value)** | **RBF (Non linear - R2 value)** | **Poly (R2 value)** | **Sigmoid (R2 value)** |
| --- | --- | --- | --- | --- | --- |
| **1** | **C=0.1** | **-0.0573** | **-0.0574** | **-0.0574** | **-0.0574** |
| **2** | **C=1.0** | **-0.0556** | **-0.0574** | **-0.0571** | **-0.0572** |
| **3** | **C=10** | **-0.0396** | **-0.0568** | **-0.0536** | **-0.0547** |
| **4** | **C=100** | **0.1064** | **-0.0507** | **-0.0198** | **-0.0304** |
| **5** | **C=500** | **0.5928** | **-0.0243** | **0.1146** | **0.0705** |
| **6** | **C=1000** | **0.7802** | **0.0067** | **0.2661** | **0.1850** |
| **7** | **C=2000** | **0.8767** | **0.0675** | **0.4810** | **0.3970** |
| **8** | **C=3000** | **0.8956** | **0.1232** | **0.6370** | **0.5913** |
| **9** | **C=5000** | **0.9003** | **0.2124** | **0.7936** | **0.7306** |
| **10** | **C=10000** | **0.9239** | **0.3718** | **0.8129** | **0.8535** |

**The SVM Regression parameters used best R**2 **value**

**(Linear and hyper parameter(c10000))=0.9239**

**Decision Tree:**

| **Sl.no** | **criterion** | **splitter** | **max\_features** | **R2 value** |
| --- | --- | --- | --- | --- |
| **1** | **squared\_error** | **best** | **none** | **0.91112** |
| **2** | **squared\_error** | **best** | **sqrt** | **0.55378** |
| **3** | **squared\_error** | **best** | **log2** | **0.45621** |
| **4** | **squared\_error** | **random** | **none** | **0.95330** |
| **5** | **squared\_error** | **random** | **sqrt** | **0.26525** |
| **6** | **squared\_error** | **random** | **log2** | **0.86073** |
| **7** | **friedman\_mse** | **best** | **none** | **0.90147** |
| **8** | **friedman\_mse** | **best** | **sqrt** | **0.72436** |
| **9** | **friedman\_mse** | **best** | **log2** | **0.74958** |
| **10** | **friedman\_mse** | **random** | **none** | **0.81100** |
| **11** | **friedman\_mse** | **random** | **sqrt** | **0.65062** |
| **12** | **friedman\_mse** | **random** | **log2** | **0.86999** |
| **13** | **absolute\_error** | **best** | **none** | **0.96435** |
| **14** | **absolute\_error** | **best** | **sqrt** | **0.20147** |
| **15** | **absolute\_error** | **best** | **log2** | **0.72403** |
| **16** | **absolute\_error** | **random** | **none** | **0.85333** |
| **17** | **absolute\_error** | **random** | **sqrt** | **0.56771** |
| **18** | **absolute\_error** | **random** | **log2** | **0.68825** |
| **19** | **poisson** | **best** | **none** | **0.92309** |
| **20** | **poisson** | **best** | **sqrt** | **0.05179** |
| **21** | **poisson** | **best** | **log2** | **0.54294** |
| **22** | **poisson** | **random** | **none** | **0.90524** |
| **23** | **poisson** | **random** | **sqrt** | **0.67094** |
| **24** | **poisson** | **random** | **log2** | **-0.65301** |

**The Decision Tree Regression parameters used best R**2 **value, (Criterion, Splitter, max\_features)**

1. **Absolute\_error, Best, None = 0.96435**
2. **Squared\_error, Random, None = 0.95330**