1. **Multiple linear Regression ( value)** =0.9386
2. **Support vector Machine:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.no | Hyper Parameter | Linear  (R-value) | RBF (Non- Linear Value) | POLY  (r- value) | Sigmoid  (r -value) |
| 1 | C10 | 0.4320 | -0.0480 | 0.0270 | 0.0193 |
| 2 | C100 | 0.6162 | 0.2913 | 0.6041 | 0.5056 |
| 3 | C500 | 0.6803 | 0.6397 | 0.8156 | 0.4638 |
| 4 | C1000 | 0.7594 | 0.7915 | 0.8519 | 0.1842 |
| 5 | C2000 | 0.7613 | 0.8460 | 0.8573 | -0.5786 |
| 6 | C3000 | 0.7612 | 0.8609 | 0.8577 | -2.0119 |

The SVM Regression Use value(RBF (Non- Linear Value)parameter (C3000) )= 0.8609

**3.Decision Tree**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SL .No | CRITERION | MAX FEATURES | SPLITTER | R VALUE |
| 1 | Mse | auto | best | 0.6985 |
| 2 | Mse | auto | random | 0.7120 |
| 3 | Mse | sqrt | best | 0.7323 |
| 4 | Mse | sqrt | random | 0.6539 |
| 5 | Mse | Log2 | best | 0.5960 |
| 6 | Mse | Log2 | random | 0.7379 |
| 7 | Mae | auto | best | 0.6752 |
| 8 | Mae | auto | random | 0.7186 |
| 9 | Mae | sqrt | best | 0.7217 |
| 10 | Mae | sqrt | random | 0.5872 |
| 11 | Mae | Log2 | best | 0.6969 |
| 12 | Mae | Log2 | random | 0.7699 |
| 13 | friedman\_mse | auto | best | 0.6908 |
| 14 | friedman\_mse | auto | random | 0.7328 |
| 15 | friedman\_mse | sqrt | best | 0.7346 |
| 16 | friedman\_mse | sqrt | random | 0.6659 |
| 17 | friedman\_mse | Log2 | best | 0.6821 |
| 18 | friedman\_mse | Log2 | random | 0.6758 |

The DECISION TREE Use Value is (Mae, Log2, random) : 0.7699

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

1. **Random forest**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SL .No | CRITERION | MAX FEATURES | n\_estimators | R VALUE |
| 1 | Mse | auto | 10 | 0.8477 |
| 2 | Mse | auto | 100 | 0.8543 |
| 3 | Mse | sqrt | 10 | 0.8455 |
| 4 | Mse | sqrt | 100 | 0.8715 |
| 5 | Mse | Log2 | 10 | 0.8673 |
| 6 | Mse | Log2 | 100 | 0.8708 |

The Random Forest Use Value is (Mse, Log2, 100) =0.8708