PART 1

**Model 1**

|--- Interest <= 659.50

| |--- Interest <= 650.50

| | |--- class: F

| |--- Interest > 650.50

| | |--- class: F

|--- Interest > 659.50

| |--- Request\_Amount <= 0.31

| | |--- class: T

| |--- Request\_Amount > 0.31

| | |--- class: F

**Loan\_training data:-**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **count** | **mean** | **std** | **min** | **25%** | **50%** | **75%** | **max** |
| **Debt\_to\_Income\_Ratio** | 150302.0 | 0.18 | 0.14 | 0.0 | 0.09 | 0.16 | 0.24 | 1.03 |
| **FICO\_Score** | 150302.0 | 672.02 | 69.13 | 371.0 | 647.00 | 684.00 | 714.00 | 869.00 |
| **Request\_Amount** | 150302.0 | 13427.08 | 9468.35 | 500.0 | 6000.00 | 11000.00 | 19000.00 | 44000.00 |
| **Interest** | 150302.0 | 6042.19 | 4260.76 | 225.0 | 2700.00 | 4950.00 | 8550.00 | 19800.00 |

Accuracy: 0.8388466336673508

Confusion Matrix: [[18976 5958]

[ 2051 22713]]

**Loan Test Data**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **count** | **mean** | **std** | **min** | **25%** | **50%** | **75%** | **max** |  |
| **Debt\_to\_Income\_Ratio** | 49698.0 | 0.18 | 0.14 | 0.0 | 0.09 | 0.16 | 0.24 | 1.05 |
| **FICO\_Score** | 49698.0 | 672.27 | 69.16 | 372.0 | 647.00 | 684.00 | 714.00 | 866.00 |
| **Request\_Amount** | 49698.0 | 13413.12 | 9466.99 | 500.0 | 6000.00 | 11000.00 | 19000.00 | 42000.00 |
| **Interest** | 49698.0 | 6035.90 | 4260.14 | 225.0 | 2700.00 | 4950.00 | 8550.00 | 18900.00 |

Solution:-2

**Model 2**

Accuracy: 0.8404764779266771

Confusion Matrix: [[18345 6589]

[ 1339 23425]]

**Model Evaluation Table**

|  |  |
| --- | --- |
| Model 1 | Model 2 |
| Accuracy: 0.8388466336673508 | Accuracy: 0.8404764779266771 |
| Confusion Matrix: [[TN=18976 TP=5958]  [ FN=2051 FP=22713]] | Confusion Matrix: [[TN=18345 TP=6589]  [ FN1339 FP23425]] |
| TPN-21027 | TPN-19684 |
| TPP-28671 | TPP-30014 |
| TAN-24934 | TAN-24934 |
| TAP-24764 | TAP-24764 |
| GT-49698 | GT-49698 |