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7.2 a)

the customer would be classified as 0, i.e., he would refuse the loan.

7.2 b)

the value of k that makes the model more accurate is 3, that is, the model will look at the 3 values closest to the point we have set to predict whether its value will be 0 or 1.

7.2 c)

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The accuracy of the model is 0.959

7.2 d)

If we chose a k = 3, the result is 0, so we can say the customer would refuse the loan

7.2 e)

Training set

|  |  |  |
| --- | --- | --- |
| Reference\Predicition | 0 | 1 |
| 0 | 2260 | 60 |
| 1 | 8 | 172 |

Accuracy: 0.9728

Validation Set

|  |  |  |
| --- | --- | --- |
| Reference\Predicition | 0 | 1 |
| 0 | 1358 | 44 |
| 1 | 6 | 92 |

Accuracy: 0.9667

Test Set

|  |  |  |
| --- | --- | --- |
| Reference\Predicition | 0 | 1 |
| 0 | 882 | 40 |
| 1 | 6 | 72 |

Accuracy: 0.954

As we can see, as the amount of data decreases, the accuracy of the model decreases.

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10.1 a)

NA

10.1 b)

1. Logit = 0.18

Odds = 1.20

Probability = 0.55

Classification = weak Because the probability is 0.55 and the cutoff is 0.5.

10.1 e)

The cutoff value is used to determine whether a bank should be categorized as strong or weak. The logistic regression method's output ranges from 0 to 1, and it expresses the likelihood that the bank is weak. If the cutoff value is 0.5, the bank will be categorized as strong if the model's result is lower than 0.5 and as weak if it is greater.

The cutoff value should decrease in order to prevent the possibility of assessing a bank as strong when it is weak. In contrast to the situation with a cutoff value of 0.5, more banks would be labeled as weak in this scenario. For instance, if we select a cutoff value of 0.2, all banks that were previously classified as strong but now have a probability of being weak between 0.2 and 0.5 are now classified as weak.