Jon Organ

CS667

Homework 3

**Question 1.2**

The probability that the first day of year 4 for Chipotle will be an up day is 54.51%

The probability that the first day of year 4 for Spy will be an up day is 56.9%

**Question 1.3**

For the Chipotle down day patterns, k = 1, there is a 52.8% probability the following day will be an up day

For the Chipotle down day patterns, k = 2, there is a 53.46% probability the following day will be an up day

For the Chipotle down day patterns, k = 3, there is a 50.86% probability the following day will be an up day

For the Spy down day patterns, k = 1, there is a 57.24% probability the following day will be an up day

For the Spy down day patterns, k = 2, there is a 56.73% probability the following day will be an up day

For the Spy down day patterns, k = 3, there is a 51.8% probability the following day will be an up day

**Question 1.4**

For the Chipotle up day patterns, k = 1, there is a 56.27% probability the following day will be an up day

For the Chipotle up day patterns, k = 2, there is a 64.0% probability the following day will be an up day

For the Chipotle up day patterns, k = 3, there is a 55.56% probability the following day will be an up day

For the Spy up day patterns, k = 1, there is a 56.13% probability the following day will be an up day

For the Spy up day patterns, k = 2, there is a 58.74% probability the following day will be an up day

For the Spy up day patterns, k = 3, there is a 58.62% probability the following day will be an up day

**Question 2.2**

For the Chipotle stock, W = 2 predicted the label correctly 52.78% of the time

For the Chipotle stock, W = 3 predicted the label correctly 50.4% of the time

For the Chipotle stock, W = 4 predicted the label correctly 49.6% of the time

For the Spy stock, W = 2 predicted the label correctly 57.74% of the time

For the Spy stock, W = 3 predicted the label correctly 56.35% of the time

For the Spy stock, W = 4 predicted the label correctly 56.35% of the time

**Question 2.3**

For Chipotle, W = 2 gave the highest accuracy

For Spy, W = 2 gave the highest accuracy

**Question 3.1**

Ensemble labels computed for Chipotle and Spy stock.

**Question 3.2**

For the Chipotle stock, the Ensemble Label predicted the correct output 50.4% of the time

For the Spy stock, the Ensemble Label predicted the correct output 57.14% of the time

**Question 3.3**

For the Chipotle stock, the Ensemble Label was less accurate (2.1%) for "-" labels than W = 2 (0.0%), W = 3 (6.72%), and W = 4 (15.13%)

For the Spy stock, the Ensemble Label was less accurate (1.88%) for "-" labels than W = 2 (0.0%), W = 3 (4.23%), and W = 4 (15.49%)

**Question 3.4**

For the Chipotle stock, the Ensemble Label was less accurate (93.61%) for "+" labels than W = 2 (100.0%), W = 3 (89.47%), and W = 4 (80.45%)

For the Spy stock, the Ensemble Label was less accurate (97.59%) for "+" labels than W = 2 (100.0%), W = 3 (94.5%), and W = 4 (86.25%)

**Question 4.8**

Although there was a high amount of false positives for both Spy and Chipotle for W = 2, the true positive rate was very good. On the flipside the true negative rate would be a very poor indicator to work off of.

**Question 5.2**

Saving graph for question 5.2, this may take some time ......

There aren't any particular patterns that emerge from W = 2 or the ensemble label. Once again buy and hold results in the highest account value.

**Question 6**

Answer: C, Pinocchio plagiarized and violated academic code