Machine Learning - Exercise 3 - Oded Golden

Intro:
I need to produce 3 predictions to make:

1. Majority party.
2. Party division of voters.
3. List of voters per party.

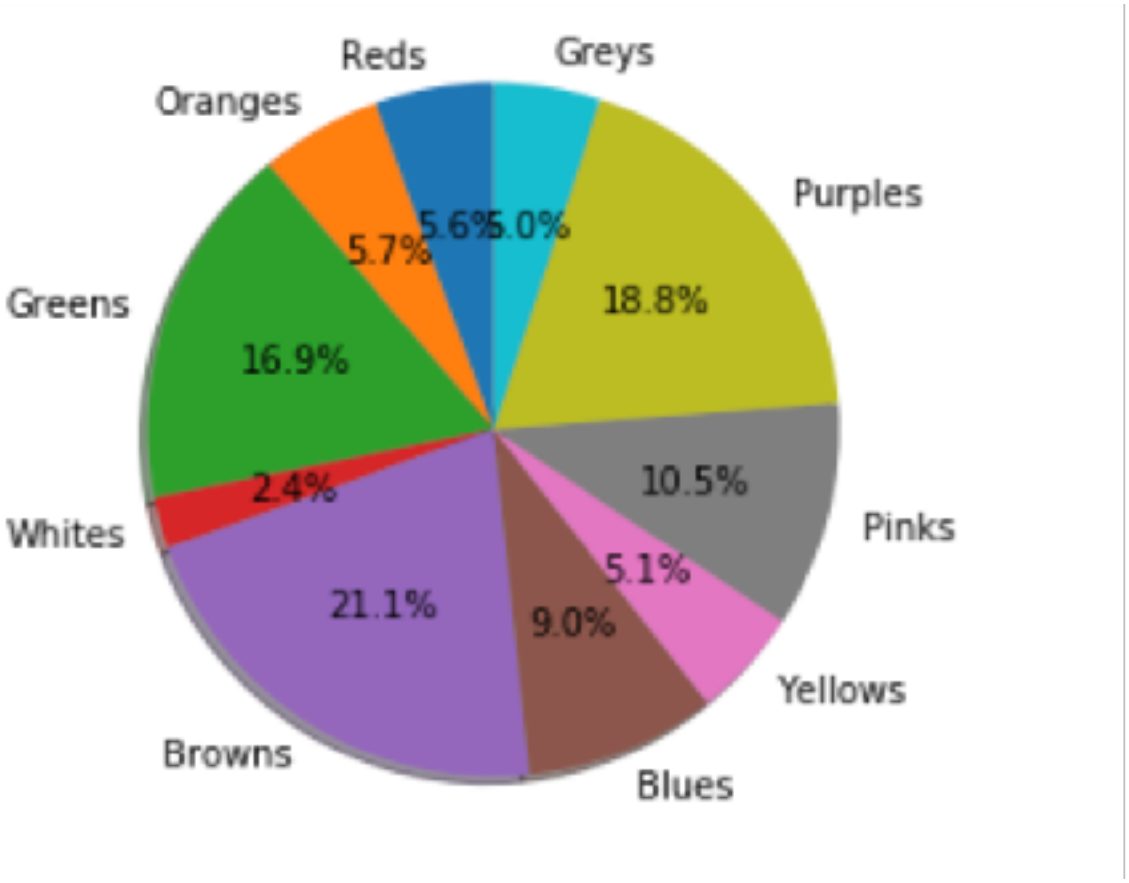
My process:
My process was the following:

1. Data exploration and preparation - similar to the last assignment.
2. Training various models - as shown in class, I chose to try all the models in the example.
3. Measure performance - I used the classifier score, the cross validation and the Confusion matrix.
4. Choose model - I chose the model according to the prediction task:
    1. Majority party - classifier score and cross validation.
    2. Party division of voters - classifier score and cross validation.
    3. List of voters per party - low confusion value, in order to provide the parties the best value (low error rate per party prediction).

In fact - the results showed that the Linear SVM OVO wins all of the measures, maybe because of wrong processing of the results.

My results:

1. Winning party: the Browns, with approximately 20% of the votes.
2. Devision of voters:



3. Confusion Matrix:

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[[161,   0,   0,   0,   0,   0,   0,   0,   0,  11],
 [  0, 343,   0,   0,   0,   4,   4,   0,   3,   0],
 [  0,   1, 334,   0,   0,   2,   0,   0,   0,   0],
 [  0,   1,   0,  95,   9,   0,   0,   2,   0,   0],
 [  0,   0,   0,   3,  95,   0,   0,   3,   0,   0],
 [  0,  32,   2,   0,   0, 181,   6,   0,   2,   0],
 [  0,  29,   2,   0,   0,   7, 358,   0,  14,   0],
 [  0,   0,   0,   2,  10,   0,   1, 106,   0,   0],
 [  0,  16,   0,   0,   0,  15,   7,   0,  28,   0],
 [ 18,   0,   0,   0,   0,   1,   0,   0,   1,  91]]
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