Assignment 6
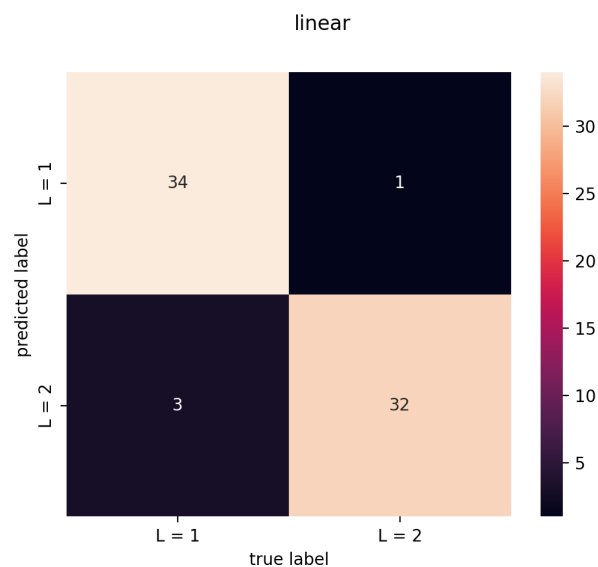## -Return of the Wheat Varieties-

Question 1:
svm.py contains the function applySVM which implements a linear, Gaussian, and polynomial SVM on the data, then calculates the accuracy and displays the confusion matrix.
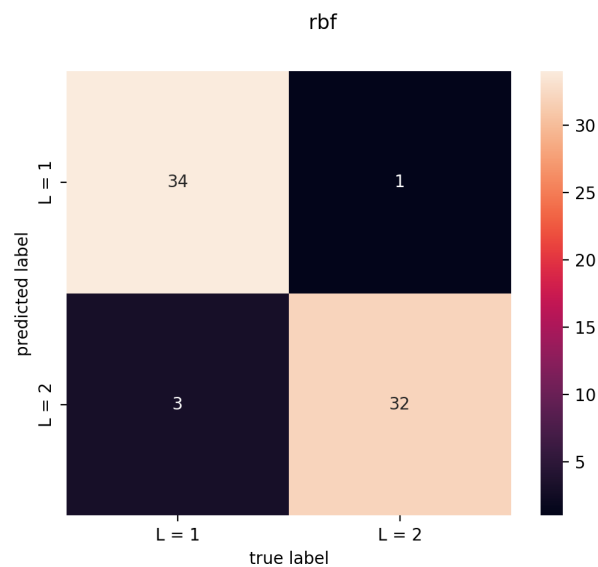
Part 1 - The linear kernel SVM has an accuracy of 94.29%.
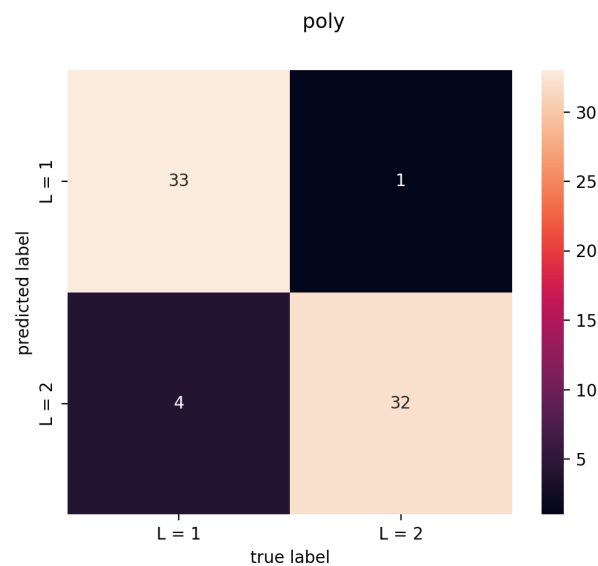Confusion matrix-

Part 2 - The Gaussian kernel SVM has an accuracy of 94.29%.
Confusion matrix-

Part 3 - The polynomial SVM has an accuracy of 92.86%.
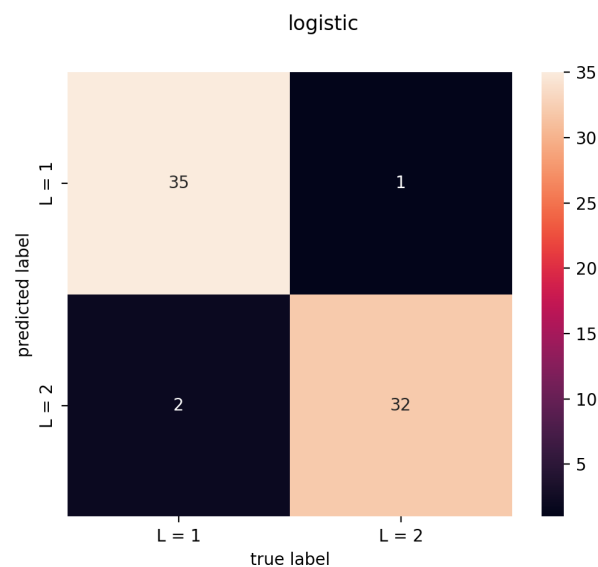Confusion matrix-

poly

Question 2:
I chose the logistic regression classifier for supervised learning.

Part 1 - The logistic regression classifier has an accuracy of 95.71%.
Confusion matrix-

logistic

Part 2 -

Model	TP (L2)	FP	TN (L1)	FN	Accuracy	TPR	TNR
Linear SVM	32	1	34	3	94.29%	91.43%	97.14%
Gaussian SVM	32	1	34	3	94.29%	91.43%	97.14%
Polynomial SVM	32	1	33	4	92.86%	88.89%	97.06%
Logistic Regression	32	1	35	2	95.71%	94.12%	97.22%

Question 3:

Part 1 - findBestK in kmeans.py finds the best k value for k-means clustering by computing and plotting distortion vs k.
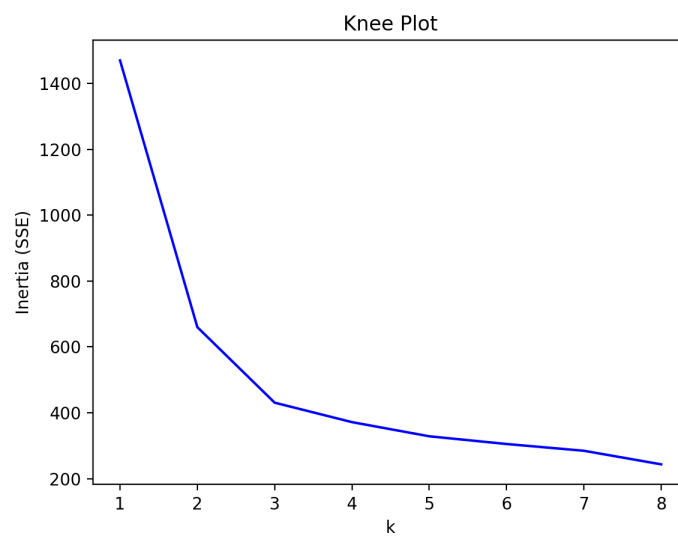
After plotting the points, it can be determined that k = 3 is the best value of k for the dataset.