Part 1

Setup:

The program runs for 10 k-folds with 5 iterations for each hyperparameter. K values chosen are 5, 10, 30, and the distance metrics chosen are Cosine, Mahalanobis, and Minkowski. The mean showed are the accuracy mean.

Hyperparameters and their Result:

Distance Metrics	K-Value	Mean	Std	Confidence Interval	
Cosine	5	93.20	0.88	92.65	93.75
Cosine	30	94.80	0.50	94.49	95.11
Cosine	10	94.67	0.42	94.41	94.93
Minkowski	5	93.73	0.90	93.17	94.29
Minkowski	**10**	**96.00**	**0.42**	**95.74**	**96.26**
Minkowski	30	93.73	0.33	93.53	93.94
Mahalanobis	5	87.87	0.88	87.32	88.41
Mahalanobis	10	89.07	0.80	88.57	89.56
Mahalanobis	30	83.47	1.15	82.76	84.18

The best Hyperparameter (bold) in the search was concluded as :

Distance Metrics: Minkowski

K-Value: 10

Mean: 96.00

Standard Deviation: 0.42

Confidence Interval: [95.74, 96.26]

Comments: This hyperparameter was chosen because of its best mean accuracy.