Homework 1

Yuan Li, N19728558

Part II: Programming and Questions

The estimated μ_0 and Σ_0 of the Gaussian for the Alaskan salmon are:

$$\mu_0 = \begin{bmatrix} 99.22222222 \\ 428.64444444 \end{bmatrix}$$

$$\Sigma_0 = \begin{bmatrix} 270.35858586 & -217.37373737 \\ -217.37373737 & 1417.73434343 \end{bmatrix}$$

The estimated μ_1 and Σ_1 of the Gaussian for the Alaskan salmon are:

$$\mu_1 = \begin{bmatrix} 136.93333333 \\ 366.64444444 \end{bmatrix}$$

$$\Sigma_1 = \begin{bmatrix} 345.92727273 & 166.52121212 \\ 166.52121212 & 729.05252525 \end{bmatrix}$$

The predicted classes (Alaskan or Canadian) of the fish in the table are:
['Canadian', 'Alaskan', 'Alaskan', 'Canadian', 'Alaskan', 'Canadian', 'Alaskan', 'Canadian', 'Alaskan', 'Alaskan']

Notice: The way I calculate Σ_0 and Σ_1 is based on "numpy.cov()", which calculates the Sample Covariance, not Population Covariance.