You must complete this programming exam yourself using a computer with Internet connection. You are allowed to search and use all available material. You are not allowed to discuss in any form (chat, email, etc.) during the exam (your instructor is the only exception - use the course Slack). All code and text must be written by yourself. Return ***only*** the requested files and nothing else!

1. Naive Bayes classifier (40p)
   Download the 4-dimensional training data (`X_train.txt`) and labels (`Y_train.txt`) and test data and labels (`X_test.txt` and `Y_test.txt`).

   Write Python code that classifies the data points in X_test using the naive Bayes classifier. Classifier should compute the full a posteriori probabilities $\in [0, 1]$. The code outputs should be:

   - Classification accuracy for X_test
   - Probability histogram of X_test samples from the class 1 (Y_test = 1). Histogram X-axis is probability value from 0 to 1 and y-axis is the number of samples. Plot the histograms of posteriori values of all classes using different colours.

   You must write the classifier code from scratch and you are not allowed to use existing codes or libraries for nearest neighbor classifiers.

   Return your code and a screenshot of your desktop that includes the window where your code runs and prints out the classification accuracy and plots the histogram:

   - `<surname>_<student_number>_bayes.py`
   - `<surname>_<student_number>_bayes.png`