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| Subject: | Machine Learning 381 |
| Assessment: | Assignment 2 |
| Due date: | 2024-03-17 |
| Total: | 35 Marks |

## Outline

You are required to show all your workings with all steps visible.

**Question 1**

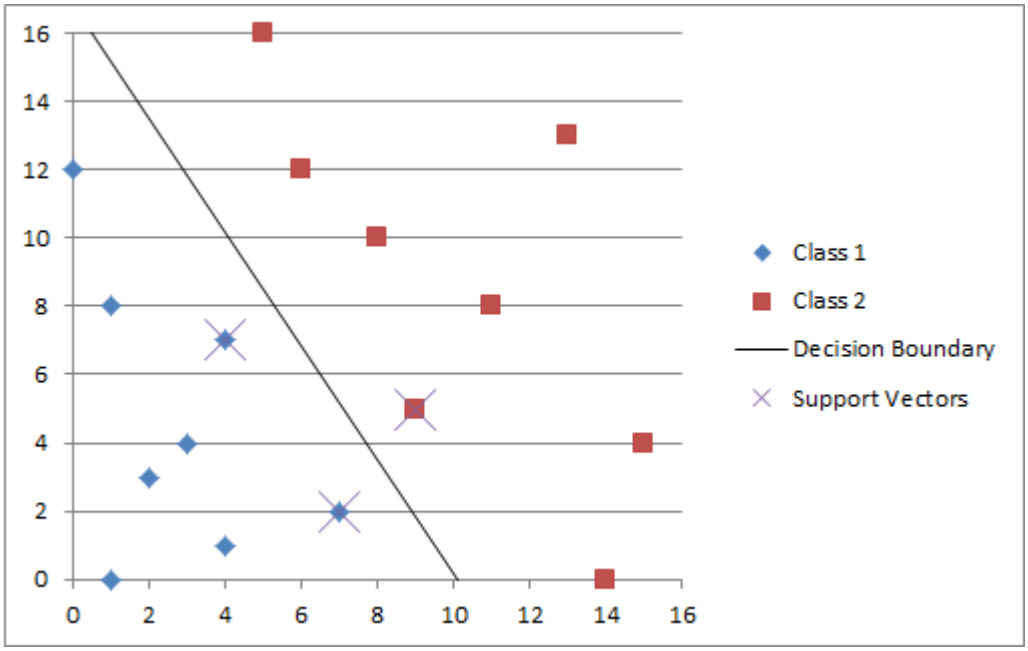
Given the training data in the table below (Golf data with some numerical attributes), predict the class of the following new example using naive Bayes classification:

| Outlook | Temperature | Humidity | Windy | Play |
|---|---|---|---|---|
| Sunny | 29 | 85 | False | No |
| Sunny | 27 | 90 | True | No |
| Overcast | 28 | 86 | False | Yes |
| Rainy | 21 | 96 | False | Yes |
| Rainy | 20 | 80 | False | Yes |
| Rainy | 18 | 70 | True | No |
| Overcast | 18 | 65 | True | Yes |
| Sunny | 22 | 95 | False | No |
| Sunny | 21 | 70 | False | Yes |
| Rainy | 24 | 80 | False | Yes |
| Sunny | 24 | 70 | True | Yes |
| Overcast | 22 | 90 | True | Yes |
| Overcast | 27 | 75 | False | Yes |
| Rainy | 22 | 91 | True | No |

Indicate whether a player will play golf if it was sunny, the temperature was 20, humidity 81% and it is not windy.
**(You may use excel to calculate the mean and standard deviation.)**

**Question 2**

Using the graph provided answer the following questions:




a) Calculate what the weight vector value would be.
b) Indicate what the hyperplane equation would be.
**(Show all the steps as marks will be awarded for all calculations.)**

## Mark Allocation

| Criteria | Weight |
|---|---|
| Question 1 | 20 |
| Question 2 | 15 |
| **Total** | **35** |

## Additional Information

- All work must be done in groups of 3 or 4 that have been assigned to you.
- One member can make a submission on behalf of the group.
- Belgium Campus have software that can **scan for plagiarism** and a student caught doing this will get 0 for this assignment.
- Late assignments will not be accepted; missing the deadline is an automatic 0.
- Round off to 4 significant figures (4.s.f).