UNIVERSITY OF WOLVERHAMPTON
FACULTY OF SCIENCE AND ENGINEERING
6CS012 AI AND MACHINE LEARNING
WORKSHOP # 7

This workshop includes marked tasks that comprise 20% of your final mark in this module. Task P7.2 should be completed in the next week's workshop (i.e. week #8).

Theoretical Task

T7.1- Assume six data points with two binary attributes, X_1 and X_2, are given as listed in Table 1. These data points belong to three classes, $Y \in \{1,2,3\}$, and our purpose is to classify these data points using a decision tree classifier with only one split.

Calculate the information gain values when the data points are split using X_1 and X_2. Explain which split is better and why. Draw the decision tree using the best split, label the branches, and determine what the predicted class label in each leaf is. **[5%]**

Table 1

X_1	X_2	Y
1	1	1
1	1	1
1	1	2
1	0	3
0	0	2
0	0	3

Practical Task

Open the Notebook Workshop #7 on Canvas and complete tasks P7.1 and P7.2 (15%).