School of Computing and Information Systems
The University of Melbourne
COMP90049
Knowledge Technologies (Semester 1, 2018)
Workshop exercises: Week 10

1. What is the **Naive Bayes** classifier? How does it classify data? What assumptions do we need to make about the data?

2. For the following dataset:

apple	ibm	lemon	sun	CLASS
TRAINING INSTANCES
Y	N	Y	Y	FRUIT
Y	N	Y	Y	FRUIT
Y	Y	N	N	COMPUTER
Y	Y	Y	Y	COMPUTER
TEST INSTANCES
Y	N	Y	Y	?
Y	N	Y	N	?

   Classify the test instances according to the method of Naive Bayes, as discussed in this subject.

3. A **confusion matrix** is an indication of the performance of a classifier over a set of test data, by counting the various output instances:

		Actual
		a	b	c	d
	a	10	2	3	1
Classified	b	2	5	3	1
	c	1	3	7	1
	d	3	0	3	5

   (a) Calculate the classification **accuracy** of the system.

   (b) Calculate the **precision**, **recall**, **F-score** (where $\beta = 1$), **sensitivity**, and **specificity** for class d. (Why can't we do this for the whole system? How can we consider the whole system?)

4. How is **holdout** evaluation (like in the Project 2 data) different to **cross-validation** evaluation?