[R] Exercise 1

Consider a data set with two numeric attributes a1 and a2 and one nominal target attribute c with two possible values:
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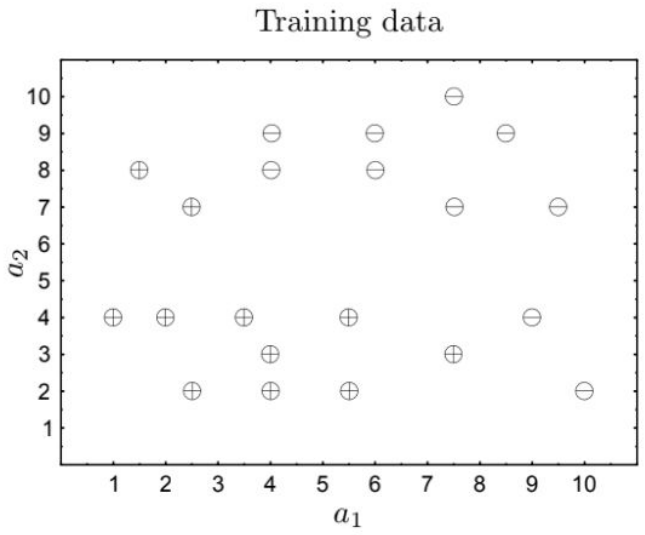
The training examples are shown in the figure below



1. Find a decision tree that classifies all training examples correctly.
2. Draw the decision surface of this tree on the figure.

[R] Exercise 2

1. Show a decision tree that could be learned assuming it gets the following examples:

Example	Sky	AirTemp	Humidity	Wind	Water	Forecast	EnjoySport
1	sunny	warm	normal	strong	warm	same	yes
2	sunny	warm	high	strong	warm	same	yes
3	rainy	cold	high	strong	warm	change	no
4	sunny	warm	high	strong	cool	change	yes

2. Add the following example and show how a decision tree would be induced using Information Gain for these 5 examples. Continue until all leaf nodes are homogenous

5	sunny	warm	normal	weak	warm	same	no

Starting point:

Attribute	Values	+	−	Entropy	IG
Sky	Sunny	3	1	0.811	0.32
	Rainy	0	1	0.000	
AirTemp	Warm				
	Cold				
Humidity	Normal	1	1	1.000	0.02
	High	2	1	0.918	
Wind	Strong				
	Weak				
Water	Warm				
	Cool				
Forecast	Same				
	Change				