PRML Homework Assignment III
(Due on Monday, June 15, 2020.)
Please submit to our TA–Siwen Liu before 5:30 pm.
For every 5 minutes beyond the deadline, 5 points will be deducted from your score.

Part I Decision Tree (45 points)

Consider the following table which contains four attributes deciding whether to play tennis (ref. p59-Table3.2, Tom Mitchell, *Machine Learning*, McGraw-Hill,1997.).

Day	Outlook	Temperature	Humidity	Wind	PlayTennis
D1	Sunny	Hot	High	Weak	No
D2	Sunny	Hot	High	Strong	No
D3	Overcast	Hot	High	Weak	Yes
D4	Rain	Mild	High	Weak	Yes
D5	Rain	Cool	Normal	Weak	Yes
D6	Rain	Cool	Normal	Strong	No
D7	Overcast	Cool	Normal	Strong	Yes
D8	Sunny	Mild	High	Weak	No
D9	Sunny	Cool	Normal	Weak	Yes
D10	Rain	Mild	Normal	Weak	Yes
D11	Sunny	Mild	Normal	Strong	Yes
D12	Overcast	Mild	High	Strong	Yes
D13	Overcast	Hot	Normal	Weak	Yes
D14	Rain	Mild	High	Strong	No

(a) (20 points) Build a decision tree based on the this table using ID3 algorithm (Please use the entropy impurity).

(b) (20 points) Build a decision tree based on the this table using CART algorithm (Please use the Gini impurity).

(c) (5 points) Compare the results of (a) and (b), and explain the major difference between ID3 and CART.