Naïve Bayesian Classification

rec	Age	Income	Student	Credit_rating	Buys_computer
r1	<=30	High	No	Fair	No
r2	<=30	High	No	Excellent	No
r3	31...40	High	No	Fair	Yes
r4	>40	Medium	No	Fair	Yes
r5	>40	Low	Yes	Fair	Yes
r6	>40	Low	Yes	Excellent	No
r7	31...40	Low	Yes	Excellent	Yes
r8	<=30	Medium	No	Fair	No
r9	<=30	Low	Yes	Fair	Yes
r10	>40	Medium	Yes	Fair	Yes
r11	<=30	Medium	Yes	Excellent	Yes
r12	31...40	Medium	No	Excellent	Yes
r13	31...40	High	Yes	Fair	Yes
r14	>40	Medium	No	Excellent	No

X = (age= youth, income = medium, student = yes, credit_rating = fair)

P(C1) = P(buys_computer = yes) = 9/14 =0.643
P(C2) = P(buys_computer = no) = 5/14= 0.357
P(age=youth /buys_computer = yes) = 2/9 =0.222
P(age=youth /buys_computer = no) = 3/5 =0.600
P(income=medium /buys_computer = yes) = 4/9 =0.444
P(income=medium /buys_computer = no) = 2/5 =0.400
P(student=yes /buys_computer = yes) = 6/9 =0.667
P(student=yes/buys_computer = no) = 1/5 =0.200
P(credit rating=fair /buys_computer = yes) = 6/9 =0.667
P(credit rating=fair /buys_computer = no) = 2/5 =0.400

P(X/Buys a computer = yes) = P(age=youth /buys_computer = yes) * P(income=medium /buys_computer = yes) * P(student=yes /buys_computer = yes) * P(credit rating=fair /buys_computer = yes) = 0.222 * 0.444 * 0.667 * 0.667 = 0.044

P(X/Buys a computer = No) = 0.600 * 0.400 * 0.200 * 0.400 = 0.019

Find class Ci that Maximizes P(X/Ci) * P(Ci)
=>P(X/Buys a computer = yes) * P(buys_computer = yes) = 0.028
=>P(X/Buys a computer = No) * P(buys_computer = no) = 0.007

Prediction : Buys a computer for Tuple X