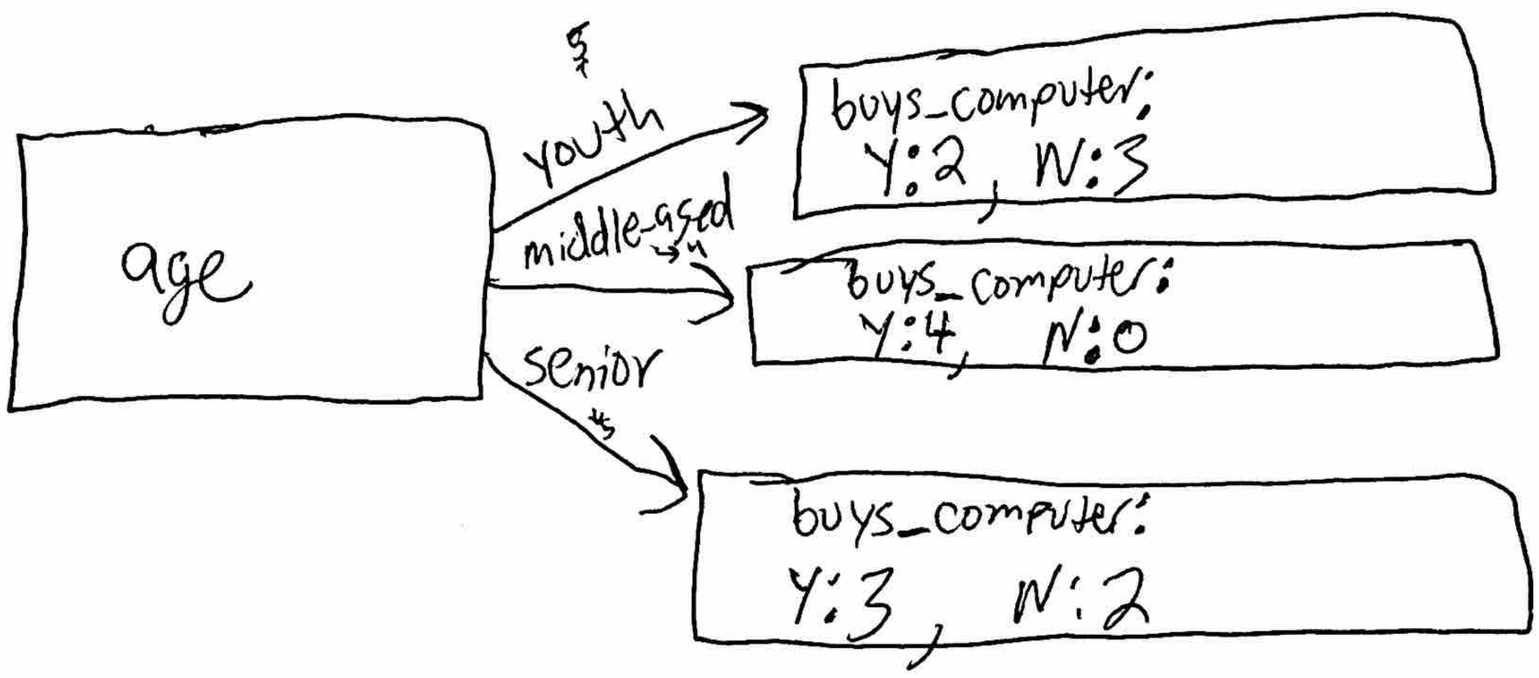
buys { 9-yes, 5-no } → 14 total

Y = yes
N = No



$Gini(buys\_computer/age = youth) = 1 - (2/5)^2 - (3/5)^2 = 0.48$

$Gini(buys\_computer/age = middle\_aged) = 1 - (4/4)^2 - (0/4)^2 = 0$

$Gini(buys\_computer/age = senior) = 1 - (3/5)^2 - (2/5)^2 = 0.48$

$\text{Gini index for age} = 5/14 \times 0.48 + 4/14 \times 0 + 5/14 \times 0.48 = \boxed{0.3429}$

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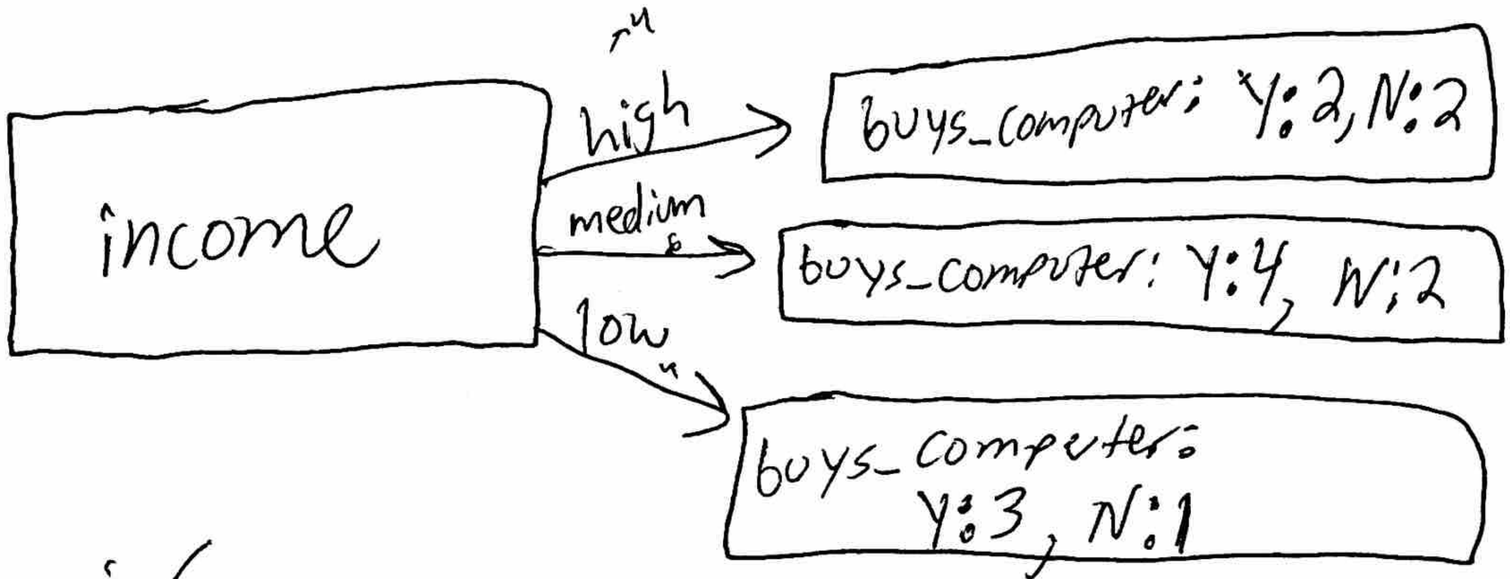
buys { 9-yes, 5-no } → 14 total

Y = yes
N = No

Income



$Gini(buys\_computer \mid income = high) = 1-(2/4)^2-(2/4)^2 = 0.5$

$Gini(buys\_computer \mid income = medium) = 1-(4/6)^2-(2/6)^2 = 0.444\overline{4}$

$Gini(buys\_computer \mid income = low) = 1-(3/4)^2-(1/4)^2 = 0.375$

Gini index for income $= 4/14 \times 0.5 + 6/14 \times 0.444\overline{4} + 4/14 \times 0.375$

$= \boxed{0.4405}$

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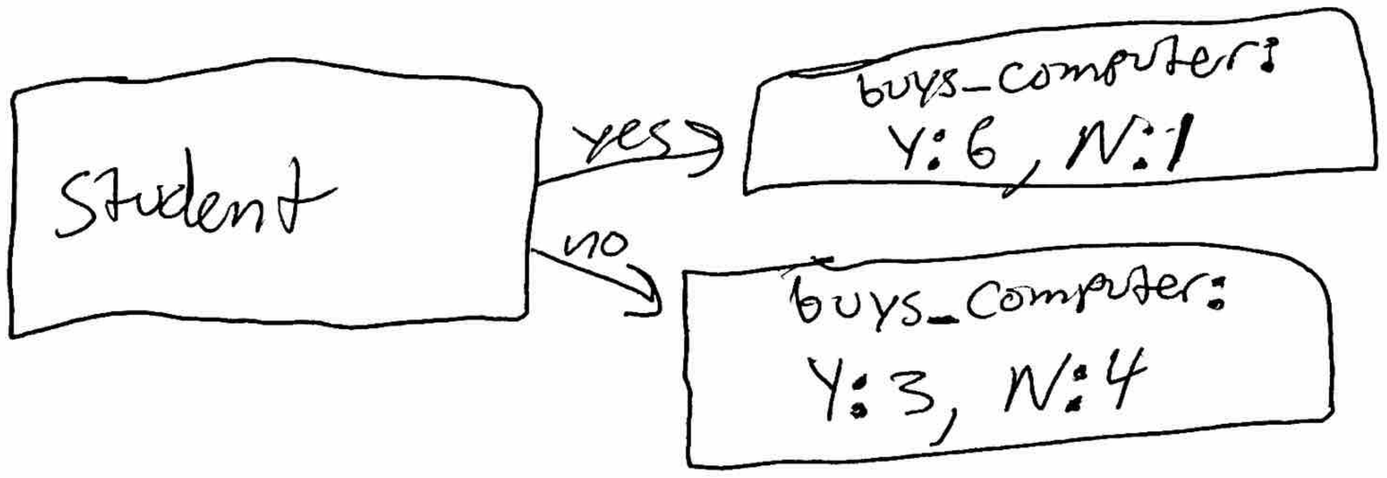
buys { 9-yes, 5-no } → 14 total

Y = yes
N = no

Students



Gini (buys_computer | student = yes) = $1 - (6/7)^2 - (1/7)^2 = 0.2449$

Gini (buys_computer | student = no) = $1 - (3/7)^2 - (4/7)^2 = 0.4898$

Gini index for Student = $7/14 \times \overset{0.2449}{\cancel{0.2449}} + 7/14 \times 0.4898$

$= \boxed{0.3674}$

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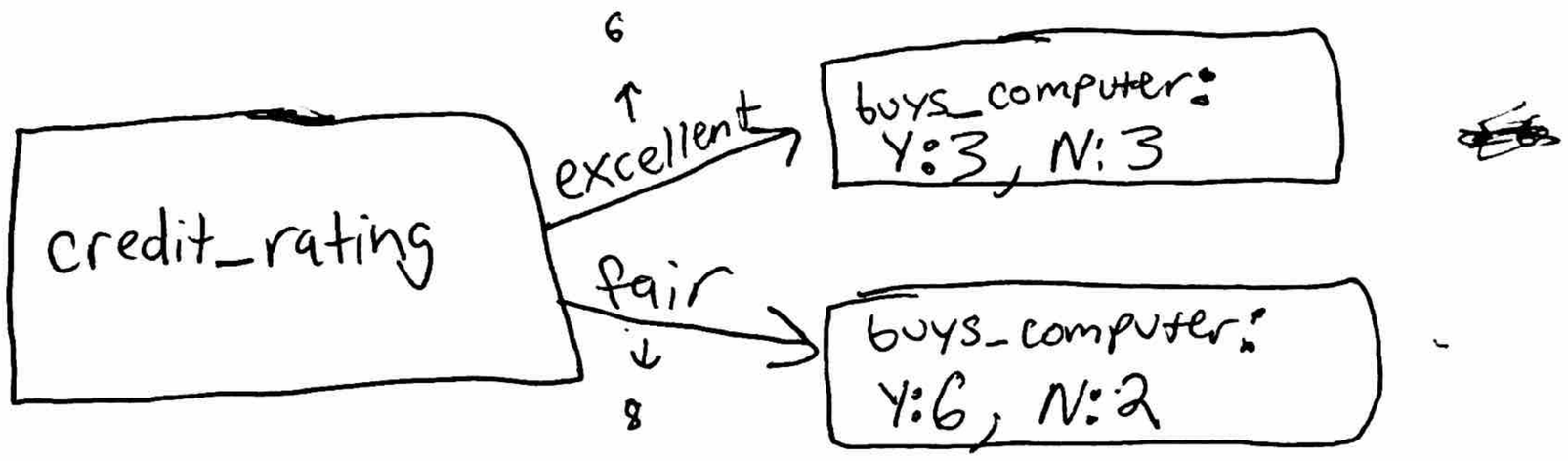
Credit_rating

buys { 9-yes, 5-no } ⇒ 14 total

Y = yes
N = no



Gini(buys_computer | credit_rating = excellent) = $1-(3/6)^2-(3/6)^2$
$= 0.5$

Gini(buys_computer | credit_rating = fair) = $1-(6/8)^2-(2/8)^2 = 0.375$

Gini index = $6/14 \times 0.5 + 8/14 \times 0.375 = \boxed{0.4286}$
for credit_rating

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Split according to lowest Gini

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age: 0.3429 ← age is lowest, so we start w/ it in our decision tree! (root node)
income: 0.4405
student: 0.3674
Credit_rating: 0.4286