Machine Learning

Assignment #5

Due: Monday, April 17th

1. Continuing with our earlier fixation on our roommate's activities, construct a decision tree to predict her activities based upon the weather, how much money she currently has available, and whether her parents are visiting.

Weekend (Example)	Weather	Parents	Money	Decision (Category)
W1	Sunny	Yes	Rich	Cinema
W2	Sunny	No	Rich	Tennis
W3	Windy	Yes	Rich	Cinema
W4	Rainy	Yes	Poor	Cinema
W5	Rainy	No	Rich	Stay in
W6	Sunny	Yes	Rich	Cinema
W7	Windy	No	Poor	Cinema
W8	Windy	No	Rich	Shopping
W9	Windy	Yes	Rich	Cinema
W10	Sunny	No	Rich	Tennis

2. Given the 14 patient examples given below, construct a ID3 decision tree to determine whether patient 15 should be given either drug A or drug B.

Patient ID	Age	Sex	BP	Cholesterol	Drug
p1	Young	F	High	Normal	Drug A
p2	Young	F	High	High	Drug A
p3	Middle-age	F	Hiigh	Normal	Drug B
p4	Senior	F	Normal	Normal	Drug B
p5	Senior	M	Low	Normal	Drug B
p6	Senior	M	Low	High	Drug A
p7	Middle-age	M	Low	High	Drug B
p8	Young	F	Normal	Normal	Drug A
p9	Young	M	Low	Normal	Drug B
p10	Senior	M	Normal	Normal	Drug B
p11	Young	M	Normal	High	Drug B
p12	Middle-age	F	Normal	High	Drug B
p13	Middle-age	M	High	Normal	Drug B
p14	Senior	F	Normal	High	Drug A
p15	Middle-age	F	Low	Normal	?

3. We would like to predict the sex of a person based on two binary attributes: leg-cover (pants or skirts) and facial-hair (some or none). We have a data set of 3,000 individuals, half male and half female. 70% of the males have no facial hair. Skirts are worn by 50% of the females. All females are barefaced and no male wears a skirt. Using ID3, construct a decision tree for this classification problem.