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Quiz #1

Question 1:

a) Two features could be temperature data and humidity data.

b) The labels could be **Snowing** or **Not Snowing** and could be denoted as binary values (1 for snowing and 0 for not snowing).

Question 2:

- B and D would be the options that apply to reduce overfitting

Question 3:

- See next page

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a) Bayes Theorem $P(A|B) = \frac{P(B|A)\,P(A)}{P(B)}$

$$P(C_1|x) = \frac{P(x|C_1)\,P(C_1)}{P(x)}$$

$$P(C_2|x) = \frac{P(x|C_2)\,P(C_2)}{P(x)}$$

Priors

Since priors are the same and denominators are also the same, we can ignore them.

$$P(C_1|x) = P(x|C_1) = 0.2$$

$$P(C_2|x) = P(x|C_2) = \boxed{0.37}^{*}$$

data point belongs to C_2

b) Similarly we can use Bayes Theorem again and get the following when ignoring the denominator

$$P(C_1|x) = P(x|C_1)\,P(C_1) = 0.2\,(0.6) = 0.12$$

$$P(C_2|x) = P(x|C_2)\,P(C_2) = 0.37(0.4) = \boxed{0.148}^{*}$$

datapoint x still belongs to C_2