Telecom Network Systems

False coin

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Imagine we have 12 coins and we know that one is false. This one can be heavier or lighter. The other 11 are OK.

We have old fashioned scales on which we can place any number of coins and it will swing one side or the other, or remain balanced.

- Calculate the Shannon entropy of measuring coins (1-6) vs. (7-12). (What are the probabilities of scales swinging left, right or stay balanced?)

- Design a better way to determine as fast as possible which coin is false.

- Calculate the Shannon entropy of your first measurement. Show that it is better than the strategy above. Can you prove your strategy is the best possible?