

Re: can Huffman coding method be used to coin weighing problem?

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I have no idea what the Huffman coding scheme is. Here is my input.

Name the coins A, B, C, D, E, F, G, H, I, J, K, L.

First weighing:

Weigh A, B, C, D against E, F, G, H.

Second weighing:

If $\text{mass}(A, B, C, D) = \text{mass}(E, F, G, H)$, weigh I, J, K against A, B, C.

If $\text{mass}(A, B, C, D) > \text{mass}(E, F, G, H)$, weigh A, B, G against C, D, E.

If $\text{mass}(A, B, C, D) < \text{mass}(E, F, G, H)$, weigh A, B, G against C, D, E.

Third weighing:

If $\text{mass}(I, J, K) = \text{mass}(A, B, C)$, weigh L against A. If $\text{mass}(L) = \text{mass}(A)$, then there is no counterfeit coin. Otherwise L is the counterfeit coin.

If $\text{mass}(I, J, K) > \text{mass}(A, B, C)$, weigh I against J. If $\text{mass}(I) = \text{mass}(J)$, then K is the counterfeit coin. If $\text{mass}(I) > \text{mass}(J)$, then I is the counterfeit coin. If $\text{mass}(I) < \text{mass}(J)$, then J is the counterfeit coin.

If $\text{mass}(I, J, K) < \text{mass}(A, B, C)$, weigh I against J. If $\text{mass}(I) = \text{mass}(J)$, then K is the counterfeit coin. If $\text{mass}(I) < \text{mass}(J)$, then I is the counterfeit coin. If $\text{mass}(I) > \text{mass}(J)$, then J is the counterfeit coin.

For $\text{mass}(A, B, C, D) > \text{mass}(E, F, G, H)$:

If $\text{mass}(A, B, G) = \text{mass}(C, D, E)$, weigh F against A. If there is a difference, then F is the counterfeit coin. Otherwise H is the counterfeit coin.

If $\text{mass}(A, B, G) > \text{mass}(C, D, E)$, weigh A against B. If $\text{mass}(A) > \text{mass}(B)$, then A is the counterfeit coin. If $\text{mass}(A) < \text{mass}(B)$, then B is the counterfeit coin. If $\text{mass}(A) = \text{mass}(B)$, then E is the counterfeit coin.

If $\text{mass}(A, B, G) < \text{mass}(C, D, E)$, weigh C against D. If $\text{mass}(C) > \text{mass}(D)$, then C is the counterfeit coin. If $\text{mass}(C) < \text{mass}(D)$, then D is the counterfeit coin. If $\text{mass}(C) = \text{mass}(D)$, then G is the counterfeit coin.

For $\text{mass}(A, B, C, D) < \text{mass}(E, F, G, H)$:

If $\text{mass}(A, B, G) = \text{mass}(C, D, E)$, weigh F against A. If there is a difference, then F is the counterfeit coin. Otherwise H is the counterfeit coin.

If $\text{mass}(A, B, G) < \text{mass}(C, D, E)$, weigh A against B. If $\text{mass}(A) < \text{mass}(B)$,

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then A is the counterfeit coin. If $\text{mass}(A) > \text{mass}(B)$, then B is the counterfeit coin. If $\text{mass}(A) = \text{mass}(B)$, then E is the counterfeit coin. If $\text{mass}(A, B, G) > \text{mass}(C, D, E)$, weigh C against D. If $\text{mass}(C) < \text{mass}(D)$, then C is the counterfeit coin. If $\text{mass}(C) > \text{mass}(D)$, then D is the counterfeit coin. If $\text{mass}(C) = \text{mass}(D)$, then G is the counterfeit coin.

lucy wrote:

- > *Suppose one has n coins, among which there may or may not be ONE counterfeit coin.*
- > *coin.*
- > *If there is a counterfeit coin, it may be either heavier or lighter than the*
- > *other coins.*
- > *The coins are to be weighed by a balance.*
- >
- > *What is the coin weighing strategy for $k = 3$ weighings and 12 coins?*
- >
- > *I am trying to figure this weighing scheme out by using optimal Huffman*
- > *coding scheme to achieve the minimal code length...*
- >
- > *How to do that?*