

20 coins, 1 is fake, lighter or heavier

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Grouping: $G_1 : 0, \dots, 6 \rightarrow 7 \text{ coins}$

$G_2 : 7, \dots, 13 \rightarrow 7 \text{ coins}$

$G_3 : 14, \dots, 19 \rightarrow 6 \text{ coins}$

if $G_1 > G_2 \Rightarrow$ Goto # 1.1

if $G_1 = G_2 \Rightarrow$ Goto # 1.2

If $G_1 < G_2 \Rightarrow$ same idea as # 1.1

1.1

$G_1 > G_2 \Rightarrow G_1: H$ (G_1 is heavier) or $G_2: L$

Grouping $J_1 : 0, 1, 2, 3,$ (lighter)

$J_2 : 4, 5, 6, \underline{14}$

$J_3 : 7, 8, 9, 10,$

$J_4 : 11, 12, 13, \underline{15},$

if $J_1 > J_2 \Rightarrow J_1: H \Rightarrow$ Goto # 1.1.1

if $J_1 = J_2 \Rightarrow J_3: L$ or $J_4: L \Rightarrow$ Goto # 1.1.2

Note that, $14 \dots 19$ are genuine coins