5 Pirates Version 2 Puzzle

The Puzzle:

5 pirates of different ages have a treasure of 100 gold coins.

On their ship, they decide to split the coins using this scheme:

The oldest pirate proposes how to share the coins, the OTHER pirates (not including the oldest) will vote for or against it.

If 50% or more of the pirates vote for it, then the coins will be shared that way. Otherwise, the pirate proposing the scheme will be thrown overboard, and the process is repeated with the pirates that remain.

Assuming that all 5 pirates are intelligent, rational, greedy, and do not wish to die, (and are rather good at math for pirates) what will happen?

Our Solution:

The oldest pirate will propose a 97 : 0 : 1 : 0 : 2 split.

Let us name the pirates (from oldest to youngest): Alex, Billy, Colin, Duncan and Eddie.

Working backwards:

2 Pirates: Duncan splits the coins 0: 100 (giving all to Eddie). Otherwise, and perhaps even then, Eddie would vote against him and over he goes!

3 Pirates: Colin splits the coins 99 : 1 : 0. Eddie is going to vote against him no matter what (see above) so gets nothing, but Duncan will vote for him, to get at least one gold out of it (if Duncan votes against him, there will only be two pirates remaining and Duncan will get nothing, and may even lose his life!)

4 Pirates: Billy splits the coins 97 : 0 : 2 : 1. This way, Eddie will vote for him, and so will Duncan - they're getting more than they would under 3 pirates.

5 Pirates: Alex splits the coins 97 : 0 : 1 : 0 : 2. This way, Eddie will vote for him, and so will Colin - they're both getting better than they would under 4 pirates.