Shapley-Shubik Power Index

Unit 2 – Weighted Voting
Sequential Coalition -

If I have three players P1, P2, and P3, I can form six different sequential coalitions.

When listing sequential coalitions, use ______________.

Tell me the six ways I can order P1, P2, and P3 in a sequential coalition.
Pivotal Player

• The player

• Every sequential coalition has one and only one pivotal player.

• To find a pivotal player
  • Add the players’ weights from left to right, one at a time, until the tally is greater than or equal to the quota.
Computing the Shapley-Shubik Power Distribution

1. Make a list of all possible ______________________ of the N players. Let T be the number of such coalitions.

2. In each sequential coalition

3. ___________________________________________ that P₁ is pivotal. This gives SS₁, the pivotal count for P₁.

4. ___________________________________________ for each player.

5. ___________________________ σ₁ = SS₁/T. This gives the Shapley-Shubik power index of P₁.
[4: 3, 2, 1]

1. Compute the Shapley-Shubik power distribution of the weighted voting system.
2. Compute the Shapley-Shubik power distribution of the weighted voting system.
How can I figure out how many possible sequential coalitions there are for a given weighted voting system?

• 3 players = ________ possible sequential coalitions (____________________)
• 4 players = ___________ possible sequential coalitions (____________________)
• 5 players = ___________ possible sequential coalitions (____________________)
• ______________________ or ______________________