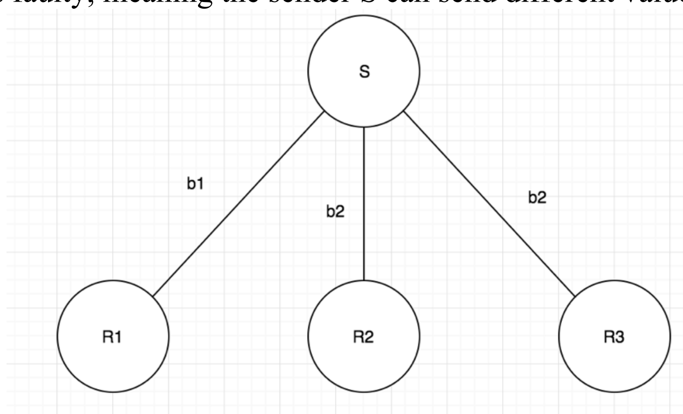
3.1 The corruption threshold that would satisfy validity is $\frac{n}{4}$. Since by round 3, each player i checks whether the received some message m from at least $\frac{3n}{4}$, if not, the will output _|_.
Here's an attack. Let sender be honest and sent a message m. If F, the set of faulty players, is larger than $\frac{n}{4}$, and they output some message m', then all the honest i would see there are less than $\frac{3n}{4}$ output m, they will output _|_, which contradicts validity.

3.2 The protocol does not satisfy consistency. Let's consider a scenario where there are 4 players and only the sender is faulty, meaning the sender S can send different values to different players.



Including the votes themselves. Player 1 would see there are 2 votes for b1 and 2 votes for b2 and therefore output _|_. And player 2 and 3 will see there are 1 player vote b1, and 3 players votes b2, which is greater and equal to $\frac{3n}{4}$, and therefore output b2. In the end b2 is not equal to _|_, 2 honest players output different values, thus contradicts consistency.

3.Bonus: The protocol satisfies the weak form of consistency.
Assume < $\frac{n}{2}$ players are faulty. If in some round r, honest player i, j sees $\frac{3n}{4}$ votes for bi and bj. Then bi = bj.
Proof by contradiction: We assume bi ≠ bj. Let Si be the set of players send player i a vote for bi. We define Sj analogously. By assumption:

$$|Si| + |Sj| \geq \frac{3n}{4} + \frac{3n}{4} = \frac{3n}{2}$$

Recall that honest players vote a unique bit each time. No honest players can be in both Si and Sj, thus they can contribute at most n - |F| to above sum. Faulty players however, can be in both Si, an Sj, thus contribute at most 2|F|.

$$|Si| + |Sj| \leq n - |F| + 2|F| = n + |F| < n + \frac{n}{2} = \frac{3n}{2}$$

Which is a contradiction. So bi = bj complies with consistency.