Election Problem, Formally

- A run of the election algorithm must always guarantee at the end:
  - **Safety**: For all non-faulty processes *p*: (*p*'s elected = (q: a particular non-faulty process with the best attribute value) or Null)
  - **Liveness**: For all election runs: (election run terminates)
    & for all non-faulty processes *p*: *p*'s elected is not Null
- At the end of the election protocol, the non-faulty process with the best (highest) election attribute value is elected.
  - Common attribute : leader has highest id
  - Other attribute examples: leader has highest IP address, or fastest cpu, or most disk space, or most number of files, etc.