**Algorithm 2.3** Paxos

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 1: State at process p_i :
 2:    p_i.id                                              {this process' identifier}
 3:    rnd ← 0                                             {round number}
 4:    vval ← ⊥                                            {possibly decided value}
 5:    vrnd ← 0                                            {round number from vval}
 6:    Proms ← ∅                                           {received PROMISEs}
 7:    Learns ← ∅                                          {received LEARNs}

 8: On new round                                           {on p_i believing itself to be the leader}
 9:    rnd ← rnd + 1                                       {increment rnd}
10:    Proms ← ∅
11:    broadcast ⟨PREPARE, rnd⟩

12: On ⟨PREPARE, r⟩ from p_j
13:    if r > rnd then
14:       rnd ← r
15:       send ⟨PROMISE, rnd, vrnd, vval, p_i.id⟩ to p_j

16: On ⟨PROMISE, r, vr, vv, id⟩ with r = rnd
17:    Proms ← Proms ∪ {⟨(vr, vv), id⟩}
18:    if len(Proms) > n/2 then                           {promis from majority}
19:       vval ← safeValue(Q)          {vv with highest vr, any value if highest vr = 0}
20:       vrnd ← rnd
21:       broadcast ⟨ACCEPT, rnd, vval⟩

22: On ⟨ACCEPT, r, val⟩ from p_j
23:    if r ⩾ rnd then
24:       rnd, vrnd, vval ← r, r, val
25:       broadcast ⟨LEARN, rnd, vval, p_i.id⟩

26: On ⟨LEARN, r, val, id⟩
27:    Learns ← Learns ∪ {⟨r, id⟩}
28:    if len({⟨rn, i⟩ ∈ Learns : rn = r}) > n/2 then
29:       decide(val)
30:
```