

▷PrecommitPhase

```
if IsLeader then
  prepareMsgs = wait for +2/3 VoteMessage{PREPARE, height, round, partialSig} ← valSet
  step = PRECOMMIT
  // IMPORTANT: Validate each partialSig or discard
  thresholdSig = aggregatem ∈ prepareMsgs{m.partialSignature}
  prepareQC = QCstep, height, block, thresholdSig
  broadcast ProposeMessage(PRECOMMIT, height, round, prepareQC) → valSet
else // IsReplica
  preCommitMsg = wait for ProposeMessage{PRECOMMIT, height, round, prepareQC} ← leader
  if IsValidQC(preCommitMsg.JustifyQC) then
    highPrepareQC = preCommitMsg.JustifyQC
    step = COMMIT
    send VoteMessage(PRECOMMIT, preCommitMsg.block) → leader
  else
    InterruptRound()
  end if
end if
```

▷CommitPhase

```
if IsLeader then
  preCommitMsgs = wait for +2/3 VoteMessage{PRECOMMIT, height, round, partialSig} ← valSet
  step = COMMIT
  // IMPORTANT: Validate each partialSig or discard
  thresholdSig = aggregatem ∈ preCommitMsgs{m.partialSignature}
  preCommitQC = QC{step, height, block, thresholdSig}
  broadcast ProposeMessage(COMMIT, height, round, preCommitQC) → valSet
else // IsReplica
  commitMsg = wait for ProposeMessage{COMMIT, height, round, preCommitQC} ← leader
  step = COMMIT
  if IsValidQC(commitMsg) then
    lockedQC = commitMsg.precommitQC
    send VoteMessage(COMMIT, commitMsg.block) → leader
  else
    InterruptRound()
  end if
end if
```

▷DecidePhase

```
// NOTE: Leader also needs to process the message like a replica to commit the block and start new height.
if IsLeader then
  commitMsgs = wait for +2/3 VoteMessage{COMMIT, height, round, partialSig} ← valSet
  step = DECIDE
  thresholdSig = aggregatem ∈ commitMsgs{m.partialSignature}
  commitQC = QC{step, height, block, thresholdSig}
  broadcast ProposeMessage(DECIDE, height, round, commitQC) → valSet
else // IsReplica
  decideMsg = wait for ProposeMessage{DECIDE, height, round, commitQC} ← leader
  step = DECIDE
  if IsValidQC(decideMsg) then
    // COMMIT BLOCK
    NewHeight()
  else
    InterruptRound()
  end if
end if
```

=0
