

---

**Algorithm 1** Two-Player Prisoner's Dilemma Game

---

```
1: procedure PRISONERDILEMMA(player1_choice, player2_choice)
2:   Define betrayal_reward, cooperation_reward, temptation_reward, punishment_reward
3:   if both players betray then
4:     return punishment_reward for both
5:   else if both players cooperate then
6:     return cooperation_reward for both
7:   else if player1 betrays and player2 cooperates then
8:     return temptation_reward for player1, 0 for player2
9:   else if player1 cooperates and player2 betrays then
10:    return 0 for player1, temptation_reward for player2
11:   end if
12: end procedure
13: procedure MAIN(n_rounds)
14:   Initialize empty data_list
15:   Initialize player1_score and player2_score to 0
16:   for round_num from 1 to n_rounds do
17:     Display current round number
18:     Player1 inputs choice (cooperate or betray)
19:     Player2 inputs choice (cooperate or betray)
20:     if invalid choices then
21:       Display error message
22:       return
23:     end if
24:     Calculate rewards using PrisonerDilemma function
25:     Display choices and rewards for both players
26:     Update player1_score and player2_score
27:     Display updated scores
28:     Add round data to data_list
29:   end for
30:   Display "Game Over" and final scores
31:   Display all round data
32: end procedure
33: procedure GAMESTART
34:   Input number of rounds
35:   Call Main procedure with number of rounds
36: end procedure
```

---