



*Fortnite* is an online video game released in 2017. *Fortnite Battle Royale* is a game mode version based on a "battle royale" game in which up to 100 players fight to be the last person standing.

A coordinator of a closed facebook group, coined **THE-FORTNITERS**, has come to you with the following problem: In their group, there are  $s \times p$  members, each of whom play a fortnite game once a day within  $s$  parallel sessions of  $p$  players. They would like you to come up with a schedule of play on  $d$  days so that a member play than another in at least  $min$  sessions and at most  $max$  sessions. If two players are scheduled to play in the same session for a given day, they can not play together the day after.

**Question 1** • Propose a CP model for this problem.

**Question 2** • Identify some symmetries of the problem by using every similar elements of the problem. Try to improve your model by breaking those symmetries.

**Example** A schedule for THE-FORTNITERS of number of sessions  $s = 4$ , number of players per session  $p = 4$ , number of days  $d = 5$ , min sessions  $min = 1$  and max sessions  $max = 1$  is:

FORTNITERS(4,4,5,1,1)

Day 1

Session 1: 0, 1, 2, 3,  
Session 2: 4, 7, 10, 13,  
Session 3: 5, 9, 11, 15,  
Session 4: 6, 8, 12, 14,

Day 2

Session 1: 0, 4, 5, 6,  
Session 2: 1, 7, 11, 14,  
Session 3: 2, 8, 10, 15,  
Session 4: 3, 9, 12, 13,

Day 3

Session 1: 0, 7, 8, 9,  
Session 2: 1, 4, 12, 15,  
Session 3: 2, 6, 11, 13,  
Session 4: 3, 5, 10, 14,

Day 4

Session 1: 0, 10, 11, 12,  
Session 2: 1, 5, 8, 13,  
Session 3: 2, 4, 9, 14,  
Session 4: 3, 6, 7, 15,

Day 5

Session 1: 0, 13, 14, 15,  
Session 2: 1, 6, 9, 10,  
Session 3: 2, 5, 7, 12,  
Session 4: 3, 4, 8, 11,