

Hiring - Game of Knights

"Game of knights" is a very simple turn-based game that can be used to assess candidate's basic programming skills and algorithmic thinking. A candidate is asked to complete a implementation of the game of knights in 30 minutes.

The challenge can be implemented in the language of choice of the applicant. It should be a simple "console" application, test-driven development is encouraged.

Description

The game is played by multiple knights forming a "circle" where each knight knows its immediate successor, and the first knight being last knight's successor. For example, for three knights *k1*, *k2*, and *k3* playing a game, *k2* is *k1*'s successor, *k3* is *k2*'s successor, and *k1* is *k3* successor. Each knight has a number of hit points and a name. Each knight has the same amount of hit points, which is defined before the game is started.

When the game starts, each knight makes a turn by attacking its successor. To determine the amount of damage a knight deals to its successor when attacking, a knight rolls a die, the number on the die will be a number subtracted from the amount of hit points the knight's successor has. If a knight has no hit points left (amount of hit points is less than or equal to 0), the knight dies and leaves the circle without making a turn. When it's time for the predecessor of the knight who died to make the next move, he will attack the successor of the dead knight. For example, for three knights *k1*, *k2*, and *k3* playing a game, when *k2* dies, the next time *k1* makes a move and attacks, he will attack *k3*.

The game continues until there is only one alive knight left.

Knights don't battle in silence.

- When a knight deals some damage to its enemy he claims "Knight X deals Y damage to knight Z", where X is name of the attacking knight, Y is amount of damage dealt, and Z is the name of the knight taking the damage.
- When a knight dies, he exhales "Knight X has died..." with his last breath.
- Once there is only one knight left in the game, he roars with triumph "Knight X stands victorious!"

The journal of the battle is returned as a list at the end of a game.

The visualization of the example game of 3 knights is provided below. Game is played by three knight (*k1*, *k2*, and *k3*), each of them having 5 HP. *k1* starts the game and makes a turn by rolling a die. A six is rolled, so *k1* deals 6 damage to *k2*. *k2* dies and leaves the game. *k3* makes the second turn by rolling a four and dealing 4 damage to *k1*. *k1* rolls a five and deals 5 damage to *k3* killing him. *k1* wins the game with 1 hit point left.

