

Felix Ludus application is application that allows our clients to organize games and customizes them for their specific needs.

Applications consist from two parts, one parts serves purposes to create template for a game with specific purposes. A second part allows one game to be played by applying game rules on the template and gives game result.

Currently only LOTTO types of games are supported. Lotto games simulate drawing numbers from the main and bonus pool. Both pools are defined by lower and upper limit of numbers in them and numbers of draws from them. There is also main prize defined during game creation.

Example of JSON used to create one game:

```
/**
 * JSON for LOTTO game properties:
 *
 * {
 *   "name": "AcmeCompanyGames",
 *   "type": "LOTTO",
 *   "properties": {
 *     "minMain": 1,
 *     "maxMain": 46,
 *     "mainNum": 5,
 *     "minBonus": 1,
 *     "maxBonus": 9,
 *     "bonusNum": 3,
 *     "mainPrize": 10000
 *   }
 * }
 */
```

One example of draw:

Main pool: 43, 2, 21, 44, 4

Bonus pool: 4, 2, 6

Tasks:

Our clients are reporting that for LOTTO game sometimes results give more than one same picked number. Ex 41, 23, 5, 5, 32

This is not allowed.

- a) Find out what is causing this bug.
- b) Write tests in code that will cover this use case.

There are two almost identical methods that do similar work. *getValidatorForGameType* in *GameTemplateController* and *getGamePlayerForGameType* in *GamePlayService*.

- a) Rewrite the code to avoid duplication
- b) Write tests

Our tester reported that it is possible to create LOTTO game where lowest number in the range is biggest that the biggest number in the range.

- a) Debug application to see how is this possible
- b) Write tests

We need to divide our application users into two groups. One group is allowed only to create games and the other group will be able only to play games.

- a) Protect Api in creator package so that is accessible only by the users with the role CREATOR
- b) Protect Api in arena package so that is accessible only by the users with the role PLAYER

Our client wants to change LOTTO games in a way that prize is defined during playing game and during creation it will be defined only percentages for 2nd, 3rd and 4th player.

- a) Extend properties during game creation to allow to define how much players who came 2nd, 3rd and 4th win.
- b) Allow game playing api to define main prize
- c) Calculate percentages and return them in the game result
- d) Write tests

Our clients are expressed need to track if one particular user has unusual numbers of wins in LOTTO type of games.

- a) Create api that will allow our clients to send a user information when this users wins a game
- b) Each call should add to the sum of all wins for the particular user and return total number of wins
- c) Write tests