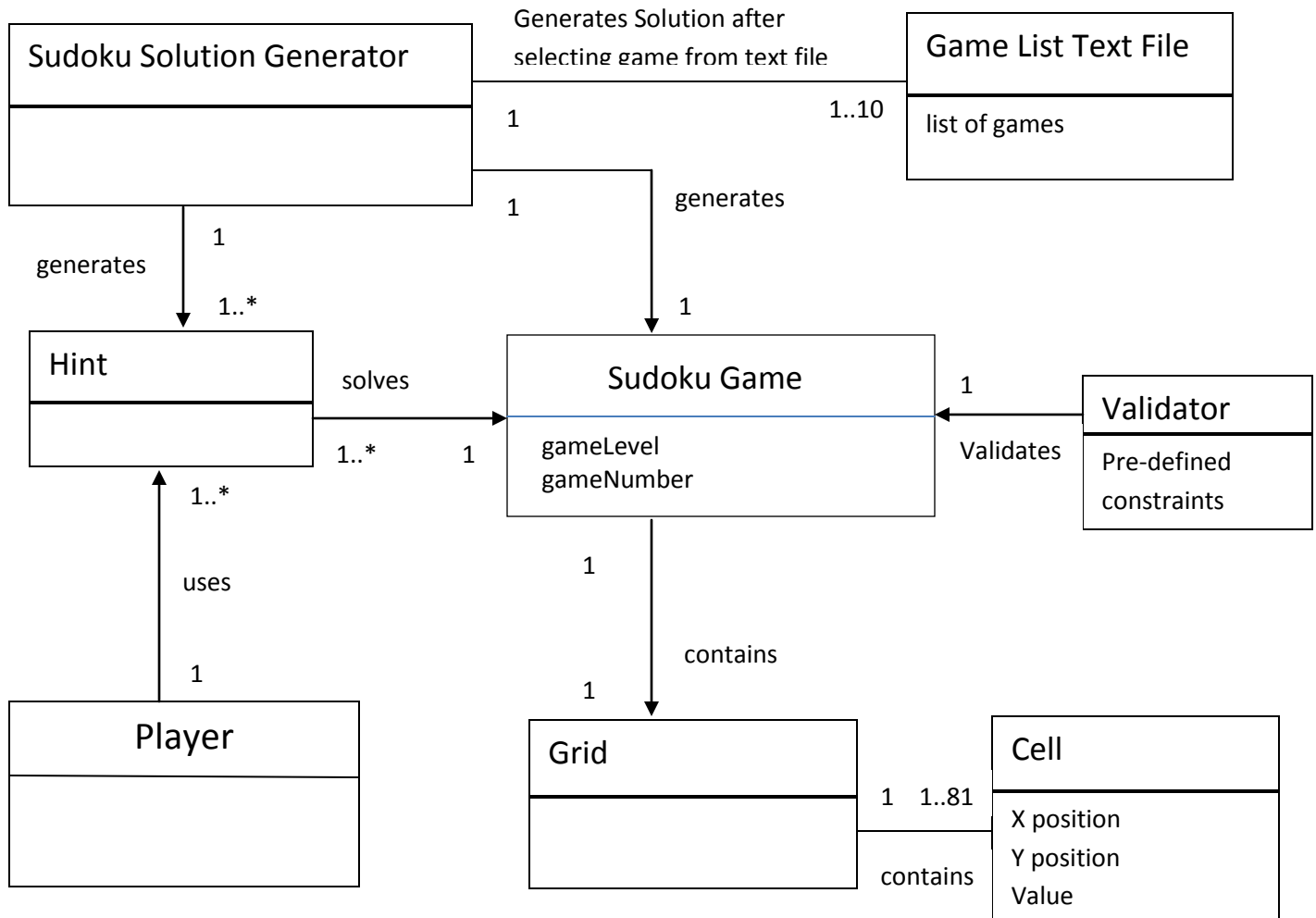


Domain Model for Sudoku



Domain Model Description

The domain model in the above figure shows a set of conceptual classes, their associations and attributes of Sudoku Game.

Conceptual Classes:

The following are the conceptual classes of the Sudoku Game:

- **Sudoku Game**: Indicates the Sudoku Game.
- **Player**: Indicates the player who plays the game.
- **Grid**: Indicates the grid which is created of 9 x 9.
- **Cell**: Indicates the cell on the grid in which the user enters the values.
- **Hint**: Indicates the Hint provided using the solution for a particular cell selected by user

- Sudoku Solution Generator: Indicates the solutions for the list of 10 games selected by user
- Validator: Validates the Solution entered by user using the pre-defined Sudoku constraints.
- Game list text file: Contains the solution of 10 Sudoku Games.

Associations:

The following are the associations between the conceptual classes of the Sudoku Game:

- Sudoku Game contains Grid. 1 Game contains only 1 grid of 9 x 9 dimension
- Grid contains Cell : 1 Grid contains 1 or more(81) cells.
- Sudoku Solution Generator and List of games text file : For 1 game only 1 solution can be generated but there can be 1 or more(10) different games to generate solutions.
- Player uses Hint to solve the Sudoku Game : Player can use 1 or multiple hint to solve the game.
- Hint is generated by Sudoku Solution Generator : Sudoku Solution Generator can generate 1 or more hints based on user requirements.
- Validator validates Sudoku Game : At a time only 1 Sudoku game can be validated by a Validator.

Attributes:

The following are the attributes of the conceptual classes of the Sudoku Game:

- Cell: It has X and Y position on the grid using which we can identify in which cell did the user entered the value.
- Sudoku Game: It has game level with values "Easy", "Medium", "Hard" and "Evil" and game numbers like 1,2 and 3. Based on the level and game number which a user selects Sudoku game should be generated.
- Validator: It has predefined constraints like any value in cell should be unique in that entire column, based on which validates the solution provided by user.
- Game list Text File: It contains the solution of 10 sudoku games of different levels.