

Domain Model

Entities

- Board (Application)

Board is considered as an domain entity because this provides an interface for the players to play the game. This interface will have all the necessary elements that are needed to play the game and will initiate the game

- Dragon Token

It is a crucial domain entity as this represents the player's identity in the game. They are used to check the position of every player in the gameboard and hence can compare which player will win first.

- Player

Player is considered as an important domain entity as they are entities that make the game functional by playing it. The player will make the moves in the game which will help us test the functionality of the game. The player entity will play the game using all the required elements.

- Cave

It is considered as a domain entity because it is considered as the start and end point of the game. Before the game starts, the cave will hold a dragon token and eventually after 1 round, the dragon token lands back to its cave. Hence, a cave is an important entity as this helps us determine whether the player has won the game.

- Dragon card (chit card)

A chit card / dragon card are the cards that help in moving the game ahead. These cards are flipped by the player in order to move their token forward and win the game. Hence, it is a crucial domain entity as this will help in playing the game.

- Volcano card

Volcano cards are the cards where the token will position itself in the game. This will determine the position of each player in the game and let the players know who will win first. Hence it is a crucial entity as this is where the tokens will be placed when moving forward or backward.

- Pirate dragon

A pirate dragon is an entity in the game which is present in the form of a dragon card. Though dragon cards and flipped in order to move forward in the game, a pirated

dragon card will make the token move backward. Hence its an entity which stands different from dragon card.

- Animal

Animal is considered an entity as this specifies what all kinds of animals are present in the game. This entity is very crucial in the game as this is needed by other entities to specify each animal. This entity consists of 4 different type of animals :-

- Baby Dragon
- Bat
- Spider
- Salamander

Relationships and Cardinality

- Board relationship with Dragon Cards and Volcano Cards

The domain entity Board is where the game will take place. The domain entities dragon cards and volcano cards are the 2 essential components of the game. The Dragon cards help the player to move ahead by flipping them and matching symbols whereas volcano cards are the cards where the player will position itself in the game while moving forward. These 2 cards are the main elements that constitute the game, whereas the board is just an interface where the players can play the game. Hence its an aggregation relationship between them. As an aggregation relationship means that an element can exist without the existence of another element, similarly a board can exist without the existence of dragon cards and volcano cards.

Cardinality of board with dragon cards

A board will have 16 dragon cards/ chit cards

Cardinality of board with volcano cards

A board will have 24 volcano cards

- Board with caves and players

Caves are an important part of the game as this determines the start and end points for the token. Players are also an important part of the game as they are the entity that makes it possible to play the game. Both these entities are crucial and have an aggregation relationship with the board. Board is just an interface where the game can be run hence, caves and players can exist without the existence of board.

Cardinality of board with players

A board can have minimum of 2 players and maximum of 4 players

Cardinality of board with caves

A board will have 4 caves

- Player relationship with dragon tokens

Player is an essential domain entity as he/she will only play the game and move ahead. The dragon token is the token which represents the identity of the player in the game. Through the dragon token, the player can move ahead in the game and have a chance to win. Thus, player and dragon token have association relationship with each other as each dragon token is owned by only one player.

Cardinality of player and dragon token

Each dragon token is solely owned by only 1 player

- Player relationship with dragon cards

The dragon cards are an essential component of the game as they help the player to move ahead in the game. The player flips one card and checks whether the symbol matches with the token. If yes, then the player can move ahead in the game. If he gets a pirated Dragon card, then he moves backward or else he stays at its position. Thus, player and dragon cards have an association relationship with each other as the player flips one of the cards during his/her turn.

Cardinality of player and dragon cards

Only one dragon card is flipped by the number of players that ranges from 1 to 4.

- Dragon token with cave

The dragon tokens are initially placed in the cave as a starting point. These dragon tokens have to complete a full round of the board and land back to its cave to win the game. Hence, each dragon token occupies a cave. Thus, dragon tokens share an association relationship with the cave.

Cardinality of dragon token and cave

A cave is solely occupied by dragon token

- Dragon token with volcano card

The volcano cards are cards where a dragon token will be placed to determine its position. These dragon tokens will move on the volcano cards when moving out of its own cave and finish 1 round on the volcano cards. Thus, dragon token will share an association relationship with volcano cards as the token is moving on volcano cards.

Cardinality of dragon token and volcano card

A dragon token will move 0 to 3 steps on the volcano card

- Animal relationship with the Bat, Baby Dragon, Salamander and Spider

The entities like bat, dragon, salamander and spider share something in common, where all of them are a kind of animal. Therefore, a superclass called Animal is

introduced to structure these animals. Leading to a generalisation relationship between these animals and the entity Animal.

- Animal relationship with Dragon cards, Volcano cards, Dragon tokens and cave
Dragon card contains animals categorised by their types, with the number of animals influencing the player's movement. Similarly, the animal depicted on the VolcanoCard is also categorised by its type, and the player's movement depends on the matching type of animal on both the dragon card and volcano card.

For each dragon token, there will be a different type of animal on it which are Baby dragon, Salamander, Spider and Bat. The players have to go back to their respective matching animal caves in order to win the game. Thus, it shows that the players' final winning condition relies on the matching type of animal on both the cave and dragon token.

As a result, Dragon card, Volcano card, Dragon token and cave entities are associated with the Type entity since the type of animals they contain is essential for their functionality within the game.

Cardinality of animal and dragon tokens

Each dragon token will only have one animal on it

Cardinality of animal and dragon cards

Each dragon card will have a different number of animals on it that range from 1 to 3

Cardinality of animal and volcano cards

Every volcano card will only have one animal on it

Cardinality of animal and caves

There will only be one animal appearing on one cave

- Pirate dragon with dragon card

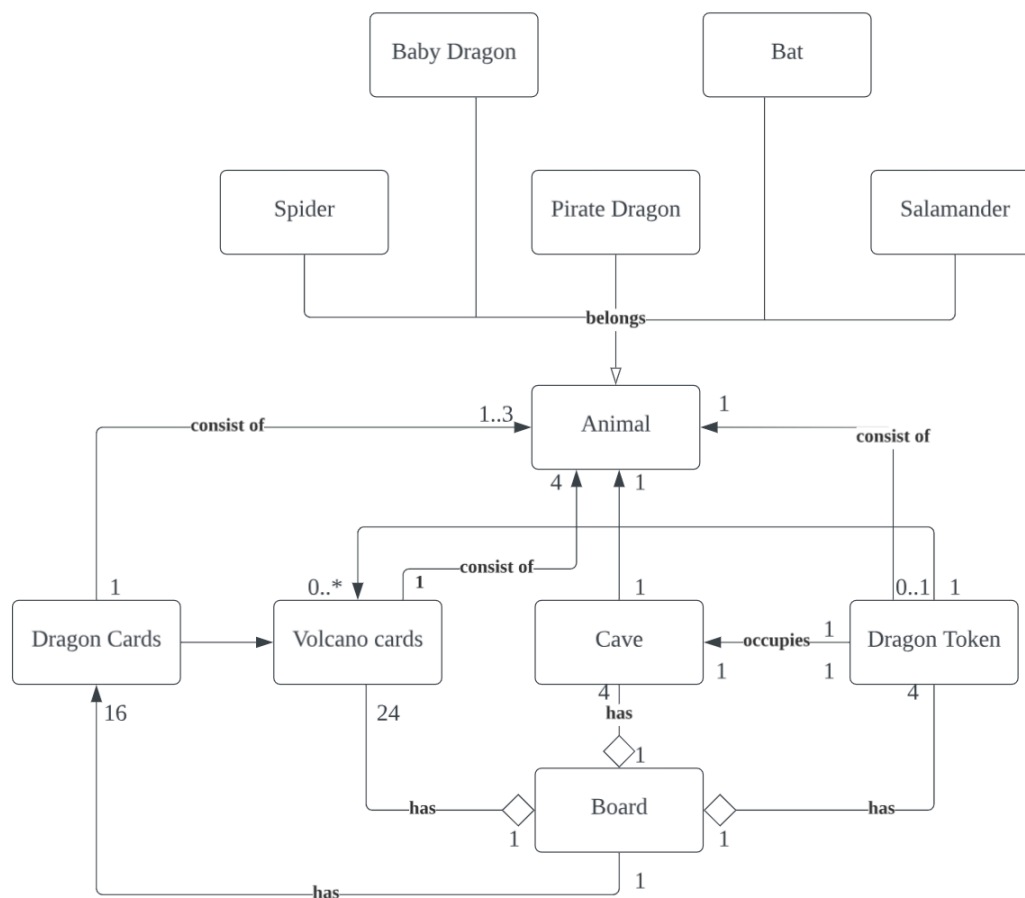
As pirate dragon entity exists solely within the context of a dragon card,

An association relationship is chosen between the pirate dragon entity and the dragon card entity because the pirate dragon exists solely within the context of a dragon card, with no shared ownership with other entities.

Cardinality of dragon card and pirate dragon

There will only be either one or two pirate dragon appearing on one dragon card

Discarded Alternatives



In our discarded domain model, we did not include the player entity. However, in our final domain model, we added the player entity to represent individuals participating in the game. This addition was crucial as it allowed us to establish relationships between players and essential game elements such as dragon tokens and dragon cards. By incorporating the player entity, we ensured that players could own and interact with these game components, enhancing the overall gaming experience.

Additionally, in the discarded domain model, we initially included a relationship between the pirate dragon entity and the animal entity. We assumed that the pirate dragon shared similarities with other animals in the game. However, upon further analysis, we realised that the pirate dragon only appears on dragon cards and does not interact with other game elements such as caves, dragon tokens, or volcano cards. Therefore, we removed the relationship between the pirate dragon and the animal entity, opting to make it an independent class solely connected to dragon cards. This adjustment simplified the domain model and clarified the role of the pirate dragon within the game.

