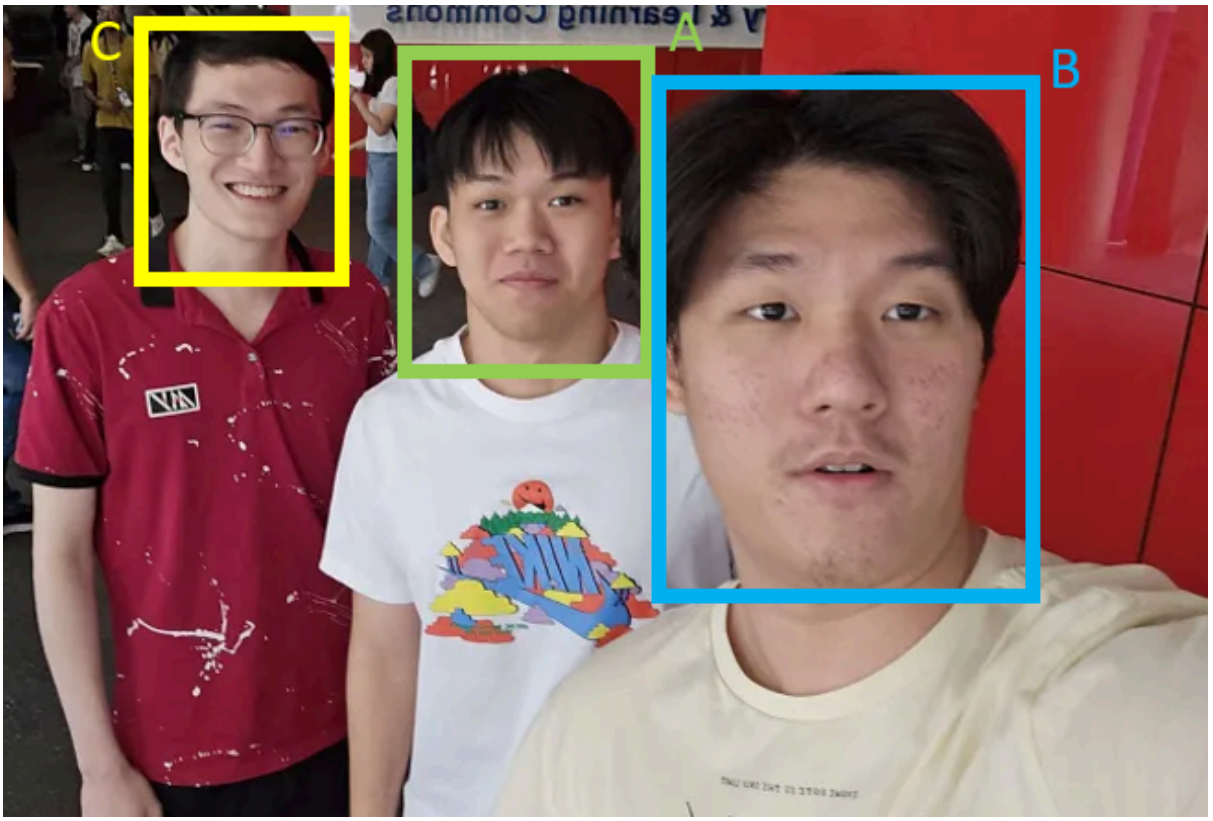
FIT3077 - Sprint 1

Table Of Contents

1. Team Information

1.1 Team Name & Team Photo



Team Name: Three Fellas Studio

1.2 Team Membership

A. **Vincent Tanuwidjaja (Green Border)**
   - **Contact**: vtan0031@student.monash.edu
   - **Technical Strengths**: Proficient in JavaScript and TypeScript for frontend and backend development, as well as Java and Python.
   - **Professional Strengths**: Adaptable, can adapt to new technology stacks relatively quickly, and skilled at problem-solving. Commits to continuous learning, whether it be outside of University or within.
   - **Fun Fact**: I love cooking.

B. **Po Han Tay (Blue Border)**
   - **Contact**: ptay0010@student.monash.edu
   - **Technical Strengths**: Proficient in Python and Java, which are used for backend development. Experienced in mobile app development.
   - **Professional Strengths**: Skilled in quality assurance procedures, attention to detail, capable of identifying and resolving software bugs.
   - **Fun Fact**: Been to every state in Malaysia

C. **Bryan Wong (Yellow Border)**
   - **Contact**: bwon0018@student.monash.edu

- **Technical Strengths**: Proficient in Java and Python for backend, as well familiarity with JavaScript and TypeScript used in frontend development.
- **Professional Strengths**: Skilled at coding, with a keen eye for writing clean, efficient, and maintainable code. Passionate about exploring new programming paradigms and applying best coding practices.
- **Fun Fact**: Holds a Grade 8 ABRSM piano certification

1.3 Team Schedule

Regular Meeting Schedule:

- **Frequency & Time**: Every Wednesday (2:00 PM) and Friday (2:00 PM)
- **Duration**: 2 hours
- **Platform**: Discord
- **Purpose**: The meetings will serve as check-in sessions to review progress, resolve any issues or roadblocks and plan for upcoming tasks. Items on the agenda include reviewing completed or pending tasks since the last meeting, assigning new tasks, planning for upcoming deliverables and milestones, setting deadlines and providing updates or concerns on individual contributions.

The regular work schedule for our group is designed as follows while ensuring progress towards our project objectives:

- **Flexibility**: While the group meets for 2 hours on Wednesdays and Fridays at 2:00 PM, the rest of the work schedule is flexible to accommodate the group member's availability and preferences. Group members are encouraged to work in their most productive hours while considering their personal schedules.
- **Teamwork**: The group promotes active collaboration and support among the group members as there will be tasks which may require joint efforts from other members. Constructive criticism is given when necessary in order to improve the overall quality of work and ensure that all perspectives are considered.
- **Communication**: Regular communication is done utilising an online communication platform like Discord, which offers voice and text channels to communicate with one another. This ensures that everyone is aware of any changes and up to date with progress. As some members are only sometimes active on Discord, a WhatsApp group is created to facilitate communication if urgent matters require immediate attention.
- **Setting Deadlines**: During group meetings, deadlines for tasks and milestones will be set while considering the project timeline. Every group member must adhere to and uphold these deadlines to ensure that their assigned tasks are completed on time.

Distribution and management of the workload are essential aspects of the project, which is designed as follows:

- **Task Allocation**: Tasks will be assigned based on each member's strengths, interests and availability. Ensuring that appropriate tasks are assigned to the right member will allow them to make significant contributions to the project due to their knowledge and

experience. These tasks will be evenly distributed among team members to prevent burnout and promote a sense of equity and collaboration within the group.

- **Task Tracking**: To help us efficiently manage our workload, Jira will be utilised for task tracking and project management. With this tool, the project can be easily broken down into manageable tasks, tasks can be assigned to group members and deadlines can be set. This allows us to maintain a comprehensive overview of our progress, identify any bottlenecks and take action to resolve them.
- **Adaptability**: Due to the possibilities of project requirements changing, unexpected challenges appearing and individual workloads fluctuating over time, we are willing to make any necessary adjustments to the workload distribution plan to accommodate these changing circumstances. This ensures that all tasks are completed on time and to the best of our ability.
- **Regular Progress Reviews**: In addition to our weekly scheduled meetings, informal check-ins will be conducted to evaluate the project's progress. From there, the group will discuss any difficulties or challenges encountered, and offer any support or feedback to these challenges. Through these check-ins, the group can keep track of each individual's progress, identify any potential issues early on and make the necessary adjustments to resolve them.

1.4 Technology Stack and Justification

Programming Language: Our group has decided to select Java as the main programming language in this project. This decision is influenced by a variety of factors such as our proficiency, experience and comfort with Java. As a team, we have a solid foundation in Java programming due to previous units and projects, which reduces the learning curve significantly, allowing us to progress in the project at a quicker pace than other alternatives.

While Python was considered as an alternative, we ultimately rejected it in favour of Java. Despite Python's simplicity in its syntax and versatility with its vast array of libraries, we determined that Java better aligns with our project requirements and team expertise due to its strong support for OOP principles. Java enforces encapsulation, inheritance, and polymorphism more rigorously than Python, making it easier to design and maintain the Fiery Dragons project codebase. Hence, by focusing on Java, we aim to leverage its strong OOP features to develop this project effectively and efficiently.

GUI Framework: Our team meticulously evaluated three options for the GUI framework: Java Swing, JavaFX, and AWT. We've decided to use Java Swing as our GUI framework after careful consideration of all three.

Despite JavaFX offering a more modern and visually appealing interface, we eventually opted for Java Swing due to its deeper integration of object-oriented programming (OOP) principles and ease of use. In addition, Java Swing has extensive documentation, which will provide valuable resources and support for our team throughout the development process of Fiery Dragon. In addition, JavaFX is more complicated to set up and use effectively, in

comparison to its competitors. We have also chosen to forego AWT due to its outdated nature and limited functionality compared to Swing. Ultimately, Java Swing is our chosen choice due to its simplicity, stability and widespread adoption in the Java development community.

2. User Stories

ID	As a <user>	I want <action>	So that <achievement>
001	Animal Chit Card	To display animal art from 4 unique animals (salamander, spider, baby dragon, bat) when flipped	Players can compare it to the square their dragon piece is on
002	Animal Chit Card	To show the number of animals (1, 2 or 3) on my front when flipped	Players know how many possible movements on the squares to move their dragon
003	Cave	To display animal art from 4 unique animals (salamander, spider, baby dragon, bat) on my front	Players can identify the matching starting and ending points for their dragon piece
004	Cave	To be strategically placed on the volcano path (game board), so that caves should be arranged on four perpendicular sides of a circle when there are four players, on three sides of the square when there are three players, and opposite each other when there are two players.	To offer the same chances of winning to every player and maintain fairness in the game.
005	Game Designer	To have all players' dragon pieces to start in their own respective caves	All players have a clear starting point in the beginning of the game
006	Game Designer	To provide clear instructions when assembling the volcano path (game board)	To avoid confusion during setup
007	Game Designer	To allow a player to reveal a animal chit card and potentially another if the animals are matched to the ones on the	Players can make progress or encounter challenges during their turn

		volcano square the player's dragon piece currently occupies	
008	Game Designer	To allow a player to reveal a chit card after revealing a pirate chit card	Players can negate the setback or risk further setbacks
009	Game Designer	To end if the revealed chit card doesn't match the animal on the player's current volcano square, if the player overshoots their cave or if there is another dragon piece in the volcano square the current dragon piece is heading	The game continues on and prevents unfair advantages
010	Game Designer	To have a winning condition which is achieved when a players' dragon piece successfully navigates through the entire volcano path (game board) and returns to its respective cave	There is a clear goal and a sense of accomplishment for the player
011	Pirate Chit Card	Show the number of pirates (1 or 2) on my front when flipped	Players know how many squares to move their dragon piece counterclockwise/backwards
012	Player	To go around the volcano path and enter back into my dragon cave	I can win the game
013	Player	To be wary of any known pirate chit cards	I can strategise which chit card to uncover during my turn and plan my moves
014	Player	To have my dragon piece not move if the animals on the current volcano square and the revealed chit card are not matching	The player can have a more challenging experience and an increase in difficulty by preventing their dragon piece from moving, allowing other Players to

			reach closer to their caves
015	Player	To arrange and set up the volcano cards in a circle to form the volcano path (game board) based on their own preference	To start the game promptly and have a more personalised experience for all players
016	Player	To uncover a matching animal chit card with the volcano square my dragon piece is on	I can progress and move my dragon piece along the board
017	Player	To have consistent and clear movement rules for my dragon piece when moving around the volcano path (game board)	All players are ensured to follow these movement rules and play with fairness
018	Volcano Card	To be connected in a circle	Players can move their dragon piece around the volcano path
019	Volcano Card	To be consists of volcano squares	Players can move along the cards and land on each volcano square
020	Volcano Square	To display animal art (salamander, spider, baby dragon, bat) from 4 unique animals	Players can match the animals on the chit cards with those on the volcano squares for movement
021	Player (extension)	Be able to choose the board configurations (e.g. number of volcano cards, number of volcano squares) at the start of the game	All players can play the game based on their preference
022	Special Square (extension)	To grant a unique ability	Strategic choices can be introduced and utilised for the player
023	Volcano Card (extension)	To feature special squares that provide unique abilities or effects upon landing on them.	To enhance the anticipation and unpredictability of the game.
024	Volcano Card (extension)	Be designed with a variable number of squares for movement (not all cards have 3)	The game board can have different configurations
025	Volcano Path	Be constructed from a variable	The game offers more

	(extension)	number of volcano cards in different configurations	variety and replayability

3. Domain Model

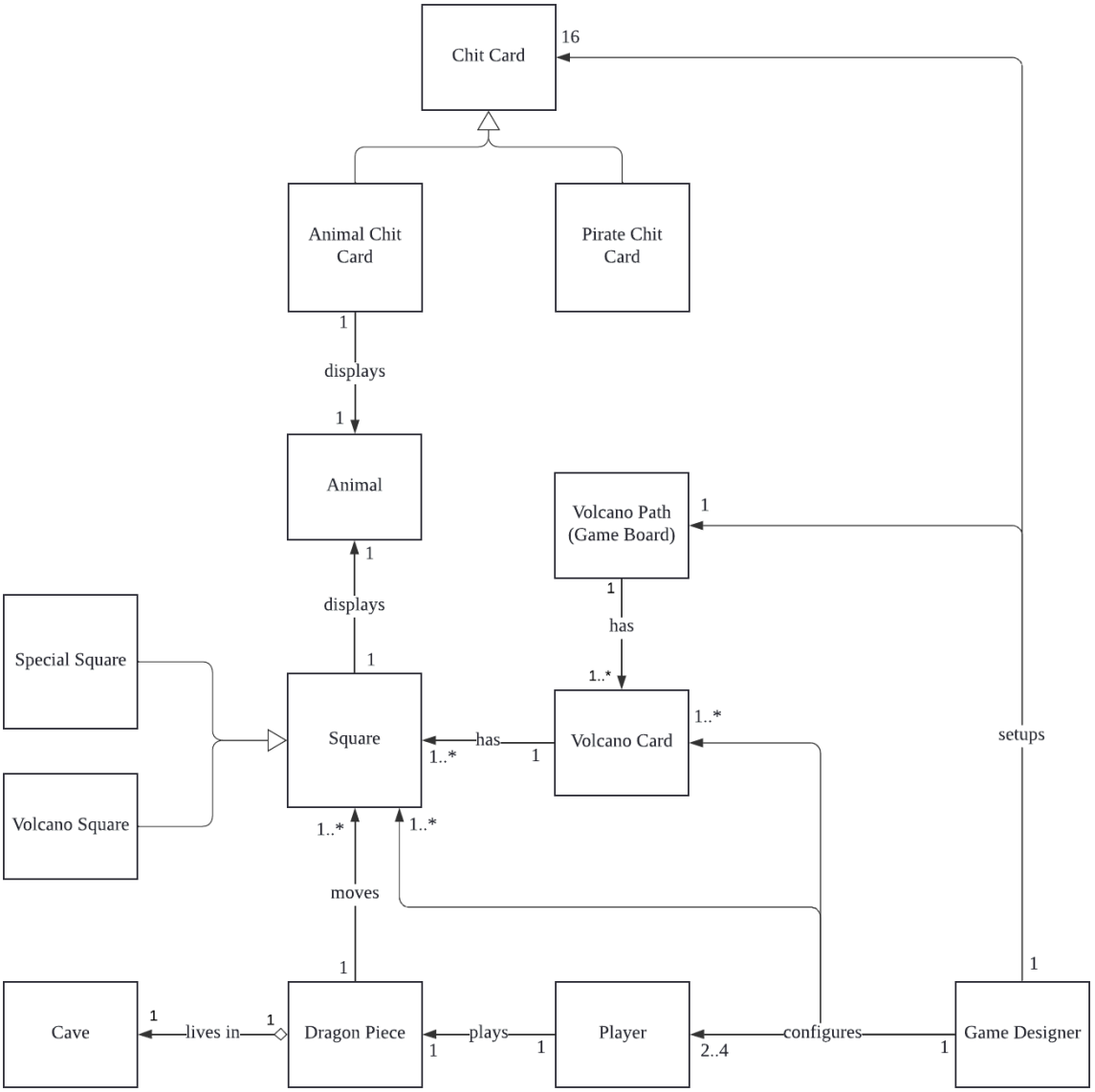


Figure 1: Domain Model of Fiery Dragon

3.1 Explanation and Justification

The entities in the domain model are the following:

- **Game Designer**: The Game Designer represents the central system that controls the rules, instructions, and flow of the game. It oversees the established mechanics, such as setup configuration and turn-taking.

- **Player**: A player represents a participant in the game. Each player is responsible for controlling their own Dragon piece and making strategic decisions based on the cards drawn to navigate back to their cave and win the game.
- **Dragon Piece**: Each Dragon piece represents the game piece controlled by a Player in the game. Each Dragon piece starts in their Cave and traverses around the Volcano based on the revealed Chit Cards and whether they match the animal depicted on their current Square. The objective for each Dragon piece is to be the first to complete a circuit around the volcano and return to its Cave.
- **Cave**: The Cave represents the designated starting and ending point for each Dragon piece. It serves as the starting point for each dragon piece at the beginning of the game and the finishing line for each dragon piece to win the game.
- **Volcano Path**: The Volcano path is the game board, in which all Dragon pieces will move around. It is represented by the assembled 8 Volcano Cards in the original game. *To comply with the extension where it can accommodate different board configurations, the number of Volcano Cards can be changed when assembling it into the Volcano path (extension).
- **Volcano Card**: The Volcano Card represents a segment of the Volcano path and is an individual piece that consists of individual 3 Volcano Squares in the original game. When assembled in a circle, the whole track will represent the Volcano. *To comply with the extension where it can accommodate different board configurations, the number of Volcano Squares can be changed for all Volcano Cards (extension).
- **Square**: The specific areas along the Volcano path where Players place their Dragon pieces are referred to as squares. The movement choices accessible to the Dragon pieces are determined by the locations of each square on the board.
- **Volcano Square**: The Volcano Square represents the standard, individual Square on Volcano Cards and displays an Animal symbol. According to the original game, it makes up the main playing spaces on the Volcano path. Players can manoeuvre their Dragon piece along these Squares as they travel along the Volcano, adhering to the instructions provided based on the Chit Cards.
- ***Special Square (extension)**: As part of our extension to the original game, Special Squares are Squares that grant a unique ability to the Players' Dragon pieces if they are currently on it. Players can also manoeuvre their Dragon pieces along these Squares as they travel along the Volcano.
- **Chit Card**: Chit Cards are the game element that determines a Dragon piece's movement around the Volcano path for any Card drawn during gameplay. The Card's front is hidden from every Player as their backs face them and are only revealed during gameplay.
- **Animal Chit Card**: An Animal Chit Card is a subset of Chit Cards, which depicts an Animal species symbol of varying amounts (from a minimum of 1 to a maximum of 3). For example, a Chit Card could have one salamander or three salamanders. A Dragon piece can only move if the Animal symbol on the Chit Cards matches the Animal symbol on the Volcano Square it currently occupies.

- **Pirate Chit Card**: The Pirate Chit Card is another subset of Chit Card that can feature 1 or 2 dragon Pirates. These cards can cause the Dragon piece to move backwards when uncovered, adding an element of risk to the game.
- **Animal**: The several Animals that are portrayed in the game are represented by different Animal species symbols displayed on Volcano Squares and Animal Chit Cards. They act as markers for actions and game outcomes, such as moving forward or backward on the Volcano path.

The relationships in the domain model are the following:

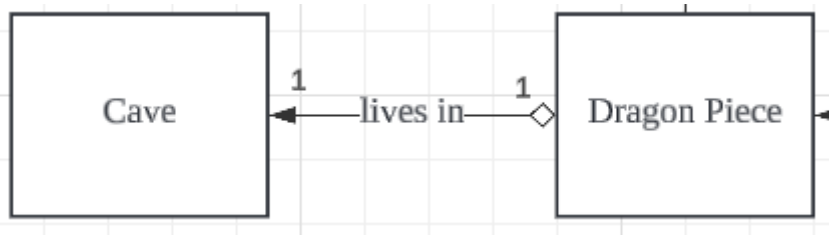


Figure 2: Aggregation from Dragon Piece to Cave

Figure 2 displays that each Dragon piece can start in their own Cave, thus each Dragon piece having an association with one Cave. However, a Cave can exist independently without the Dragon piece, hence it's an aggregation relationship.

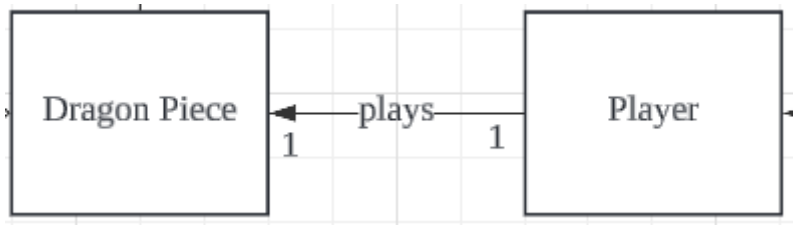


Figure 3: Association from Player to Dragon Piece

Figure 3 displays that each Player will control or play one Dragon piece, forming an association relationship between the two. Each Player will control their own Dragon piece, thus having a one-to-one relationship.

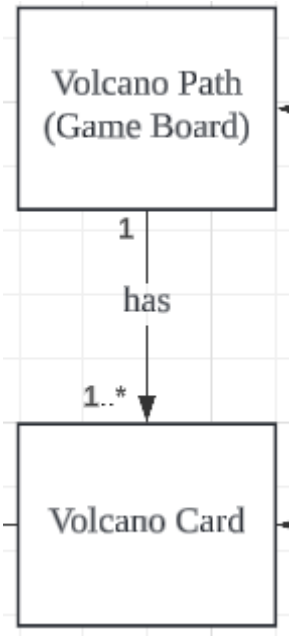


Figure 4: Association from Volcano to Volcano Card

Figure 4 shows that the Volcano can have 1 or more Volcano Cards. In adherence with the extension allowing for different board configurations, adjustments will be made to the Volcano to enable customisation, allowing for a variable quantity of Volcano Cards, with a minimum requirement of one card.

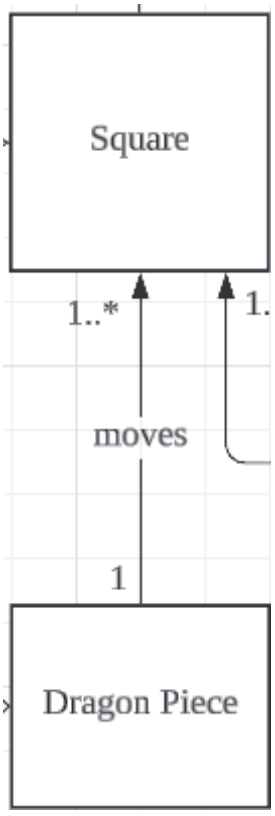


Figure 5: Association from Dragon Piece to Square

In Figure 5, each Dragon piece can move across 1 or more Squares based on the number of Animals or Pirates symbols on the Chit Card, creating an association relationship between the two.

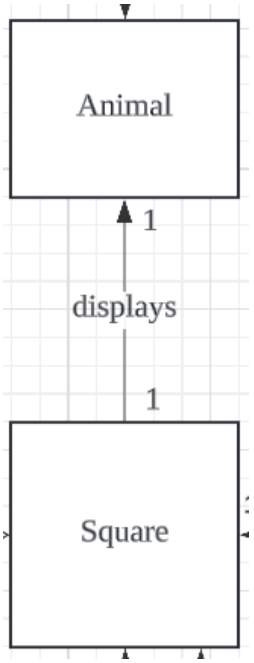


Figure 6: Association from Square to Animal

Figure 6 displays that each single Square can display one Animal species symbol, forming an association relationship from Square to Animal.

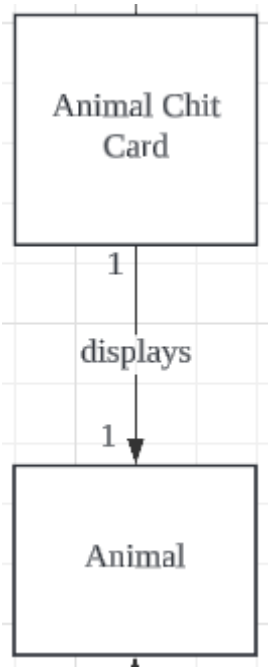


Figure 7: Association from Animal Chit Card to Animal

Figure 7 above depicts each Animal Chit Card can display a single Animal species symbol, meaning it has an association relationship from Animal Chit Card to Animal.

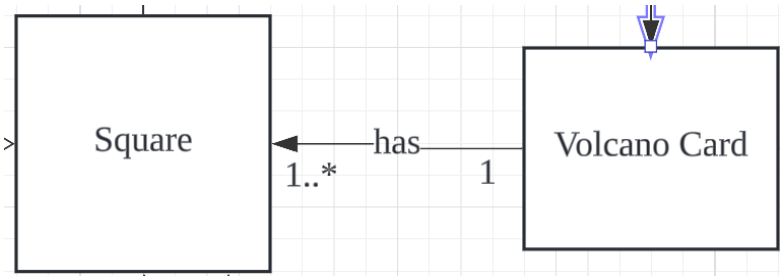


Figure 8: Association from Volcano Card to Square

Figure 8 shows that the Volcano Card has an association relationship with the Square entity. In the original game, each Volcano Card has 3 squares. To comply with the extension where it can accommodate different board configurations, the Volcano Card will be customisable to have a varying number of Squares with a minimum of at least 1 Square.

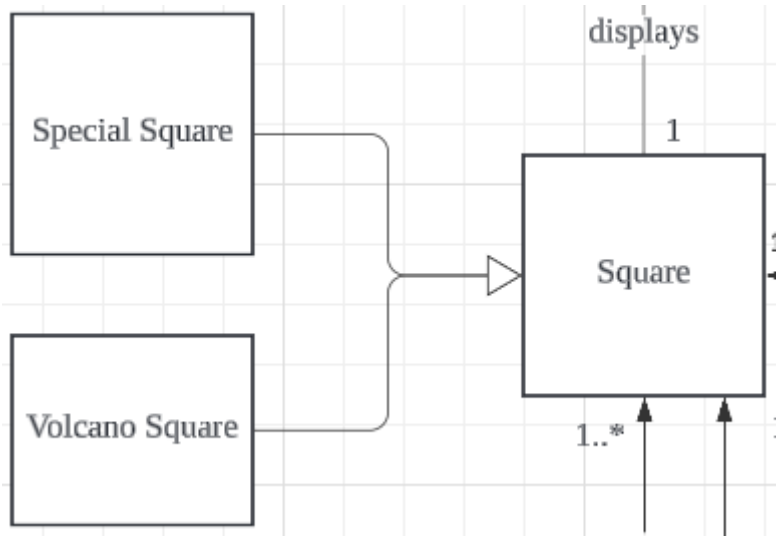


Figure 9: Generalisation from Special and Volcano Square to Square

Both Special Square and Volcano Square share similar properties (in that they are both “Squares”), thus they inherit the properties of the Square entity as shown in Figure 9 above. Special Square and Volcano Square may have additional properties or behaviours which are not shared between both of them or present in the generalised Square entity, hence forming separate generalisation behaviours between them and Square.

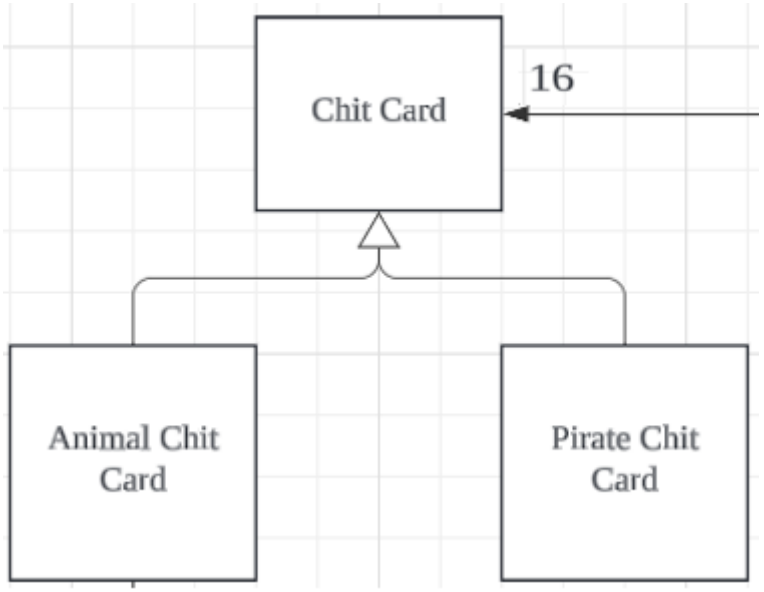


Figure 10: Generalisation from Animal Chit Card and Pirate Chit Card to Chit Card

Animal Chit Cards and Pirate Chit Cards both are types of Chit Cards in the game (Figure 10). Both of them have largely similar properties with some minor differences, therefore they can fall under the same entity - Chit Card.

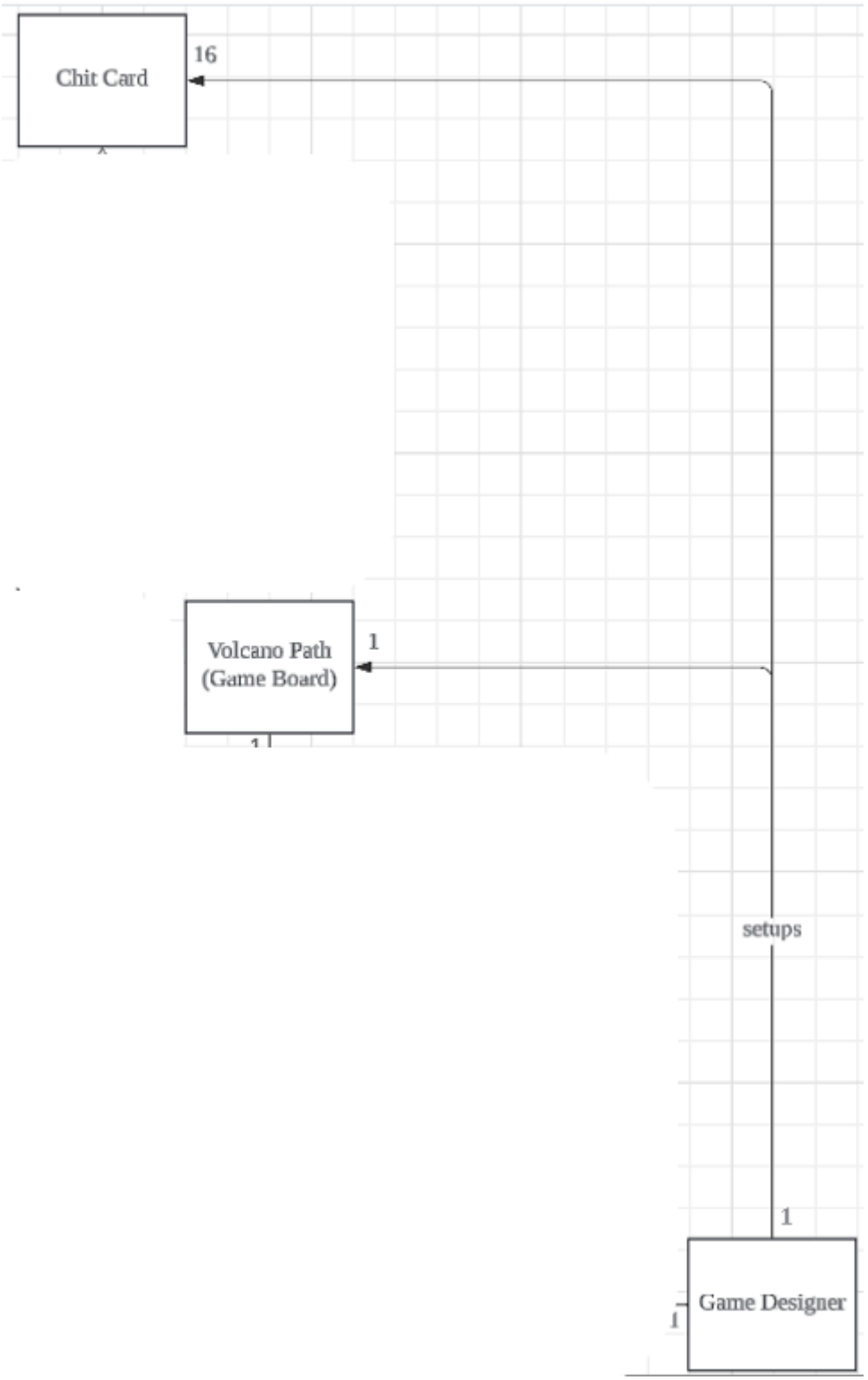


Figure 11: Association from Game Designer to Volcano and Chit Card

The association from Game Designer to Volcano ensures clear setup instructions for the game board, while the association to Chit Card illustrates the fact that the Game Designer manages how these Chit Cards are positioned during gameplay. There will be 16 Chit Cards in the game.

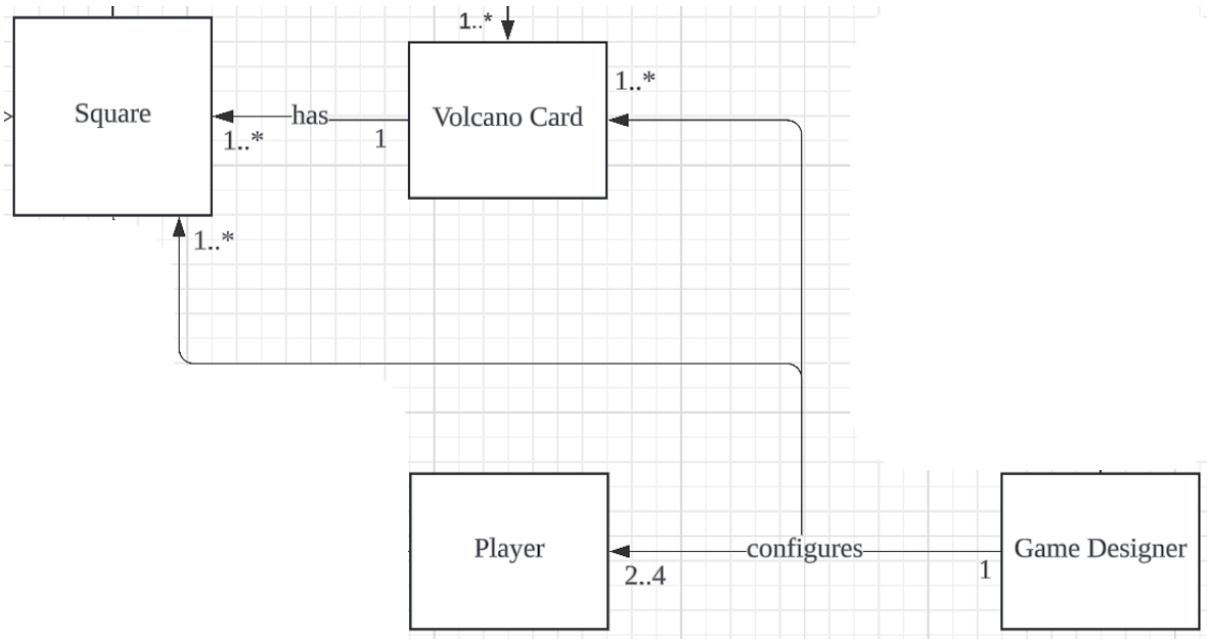


Figure 12: Association from Game Designer to Volcano Card, Player and Square

Figure 12 above highlights the Game Designer relationships. The Game Designer configures at least 2 and at most 4 Players participating in the game. To comply with the extension where it can accommodate different board configurations, it can configure one or more Volcano Cards, and it also can configure one or more squares within a Volcano Card. Moreover, the Game Designer allows configuration of the position of each Volcano Card in the Volcano board. All these associations set up the game environment as well as manage the game board components like Volcano Cards and Squares.

3.2 Rationale for the Domain Model

Each entity, including Game Designer, Player, Dragon Piece, Cave, Volcano, Volcano Card, Square, Chit Card, Animal, Animal Chit Card, and Pirate Chit Card, serves a distinct role in the game environment, contributing to its functionality and gameplay experience. For Animals, each Animal species is represented by an Animal entity. As this is a high-level conceptualisation of the game, specific animals such as Baby Dragons, Salamanders, Spider and Bat are not included in the domain model and fall under the umbrella of the “Animal” entity.

The game board consists of Volcano Cards, which each are subdivided into Squares. The original Fiery Dragon game has 8 Volcano Cards, where each Volcano Card has 3 Squares. To comply with the extension requirements, our game board is customisable, meaning the number of Squares in a Volcano Card and the number of Volcano Cards around the Volcano can differ based on the player’s choice.

The Game Designer is an entity representing the central system that controls the rules, instructions, and flow of the game. As we aren’t expected to go into the specifics on the solutions of the game, we instead opted to encompass all the game setup and controls under the Game Designer entity.

Moreover, the generalisation relationships, such as between Special Square and Volcano Square to Square, and between Animal Chit Card and Pirate Chit Card to Chit Card, allow for a streamlined representation of shared characteristics and behaviours among related entities.

3.3 Discarded alternatives

A number of different configurations were taken into consideration throughout the domain model's development, but they were eventually discarded for a variety of reasons. An alternate approach was to combine the Pirate and Animal chit cards into a single entity that would represent all chit cards. This strategy, however, would have made it harder to see the distinct qualities and features connected to each specific kind of card, which would potentially confuse players during gameplay.

Similar considerations were given to Special Squares and Volcano Squares. To simplify the model and the depiction of playing places on the volcano board, it was first proposed to combine these two kinds of squares into a single Square entity.

But in the end, this strategy was determined to be inappropriate for the same reasons that the Chit Card entity was. The distinct qualities associated with each kind of square would be hidden if volcano squares and special squares were combined into one. It may be difficult for players to discern between Special and Volcano Squares, which could cause uncertainty and confusion about how each affects gameplay.

An additional alternative that was considered throughout the domain model's development was the incorporation of a single, all-inclusive entity to represent every aspect of the game, such as players, dragons, chit cards, volcano cards, squares, and caves called Game Piece. The goal of this method was to reduce the number of entities in the model and make it easier to understand by consolidating them all into one main object.

However, this option was rejected because of a number of important shortcomings. First of all, combining all aspects of the game into one would create a very complicated and jumbled model that would be challenging to understand and control separately. During gameplay, players may experience bewilderment and irritation due to their inability to comprehend the relationships and interactions between various parts.

In addition, each game element's specificity and clarity would be lost if all entities were combined into one. Every entity has a specific role and has special qualities and features that add to the overall gameplay experience. These distinctions would be lost if they were combined into one single entity, which would make it more difficult for players to interact with the game mechanisms.

Therefore, even while at first it seemed to simplify things by combining all of the game's components into one, it turned out to be unfeasible and even harmful to the domain model's overall utility. Consequently, this option was dropped in favour of keeping unique, separate

entities for every part of the game, guaranteeing consistency, clarity, and flexibility in the structure of the model.

4. Basic UI Design

4.1 Selecting the number of players

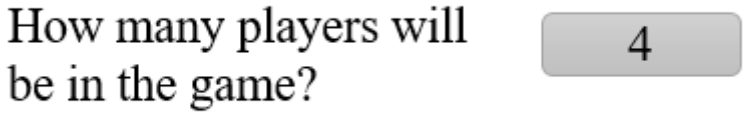


Figure 13: Option for number of players

When starting the game application, the players will be greeted with a screen with this option to set up the game parameters before the gameplay starts. This primary option serves to have a player input the number of players in the game within the grey input box on the right side of the question. A player will click on the grey input box and input a number from 2 to 4 with the keyboard. Clarity and simplicity are prioritised for this design to ensure that users can easily understand and navigate through the setup procedure.

4.2 Selecting the number of Squares and Volcano Cards (extension)

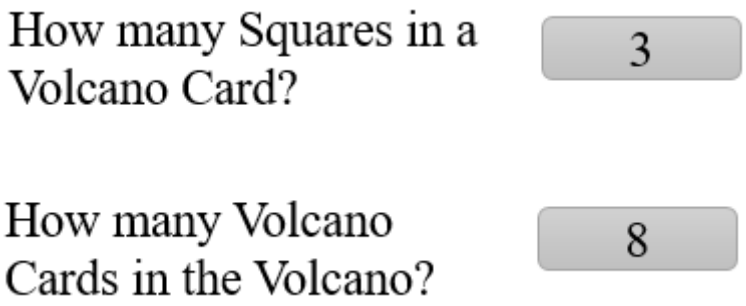


Figure 14: Option for different board configurations

To comply with the extension where it can accommodate different board configurations, 2 additional options are displayed to set up the game parameters as well. The former option serves to have a player input the number of squares within each volcano card and the latter option serves to have a player input the number of volcano cards in the volcano path. Similar to Section 4.1, the option contains a grey input box that allows a player to click and input a number with the keyboard. Moreover, it maintains consistency with the previous section by using a similar layout.

4.3 Arrange volcano cards

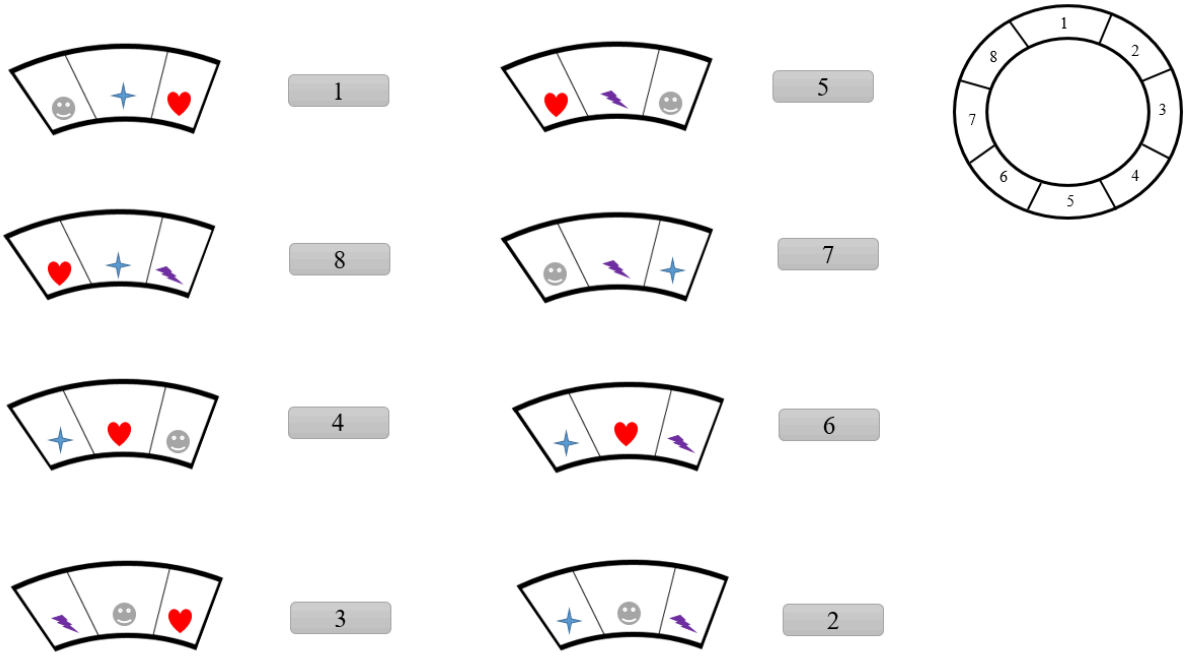


Figure 15: Screen to arrange the volcano cards

****The symbols shown in this figure do not accurately reflect the animal symbols and are just present as placeholders for example**

On the next screen, players will be able to arrange the volcano card's positions on the volcano path. At the top right of the screen, the volcano path is divided into segments corresponding to the number of volcano cards. For example, if there are 8 volcano cards selected, the volcano path will be divided into 8 segments. Each segment is labelled with a number representing the position of the volcano card in the volcano path. These numbers are shown clearly to indicate where each volcano card will be placed within the volcano path.
At the centre of the screen, each volcano card is shown with different combinations of animal symbols. The contents of each volcano card are represented by these combinations, which also provide players with information about the possible movements of the dragons during the gameplay. The animal symbols are displayed in an easily recognisable manner, which helps players quickly identify the animal symbol they are required to find.

There is a grey input box to the right of each volcano card, where a player can enter the numeric position indicated on the top right volcano path. A player can click on each input box and enter the number with the keyboard to arrange the desired position for each volcano card. Each number has to be unique and there will be no duplicates.

4.4 Select Starting Dragon Cave

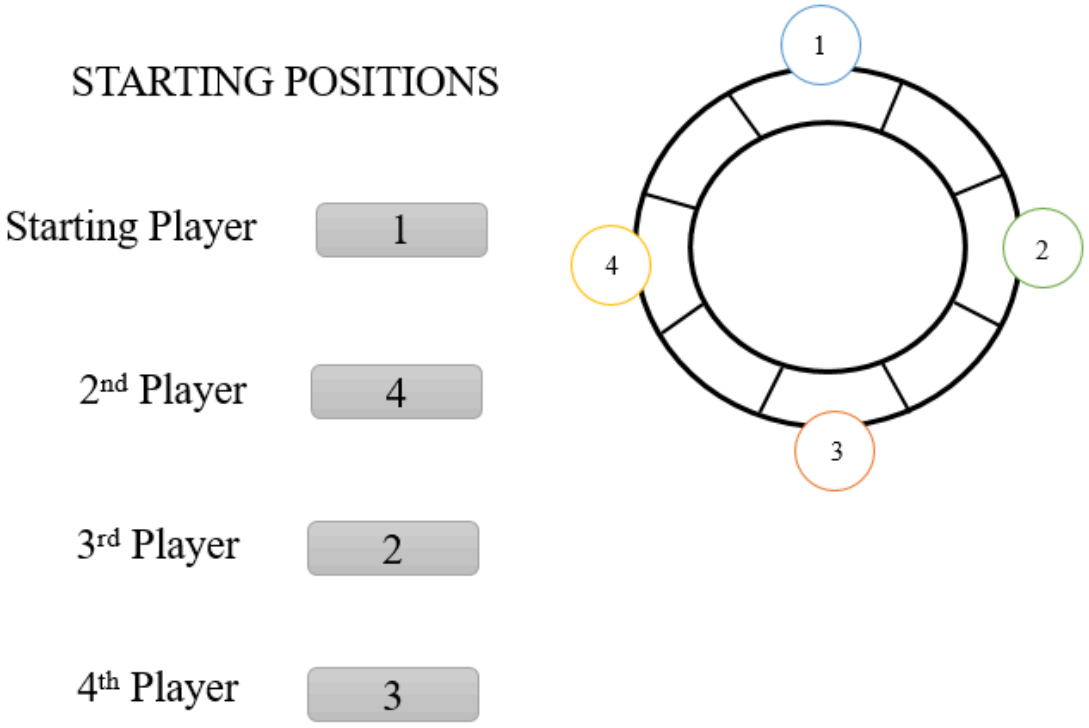


Figure 16: Screen to select the player's starting cave

On the next screen, as displayed in Figure 16, players will be able to choose their starting positions for their dragon piece in its respective cave. At the top right of the screen, a visual representation of the volcano path with the number of caves that have been previously selected (number of players in the game) will be displayed. In Figure 16, there will be 4 caves which indicates there are 4 players in the game. In the scenario of there being 2 caves, indicating there are 2 players, the 2 caves will be located directly opposite of each other. Each cave is labelled with a number representing its position on the volcano path. In the middle of the screen, each player's identification is displayed clearly with a grey input box to the right of it. A player will have to click on the input box and enter a numeric position from the visual representation at the top right with the keyboard.

The starting player is someone who won the most recent game or the youngest player. They are to choose their desired cave and the game will start its turn with that player. The remaining players will then choose the other remaining available caves. Each cave is designated by 4 distinct colours which will be talked about in future sections. For example, as shown in Figure 16, the starting player chose position 1, which indicates that they are in a blue cave with a blue dragon piece. Next, the 2nd player chose position 4 which indicates that they are in a yellow cave with a yellow dragon piece. This rule applies to the remaining players as well.

4.5 Start of game

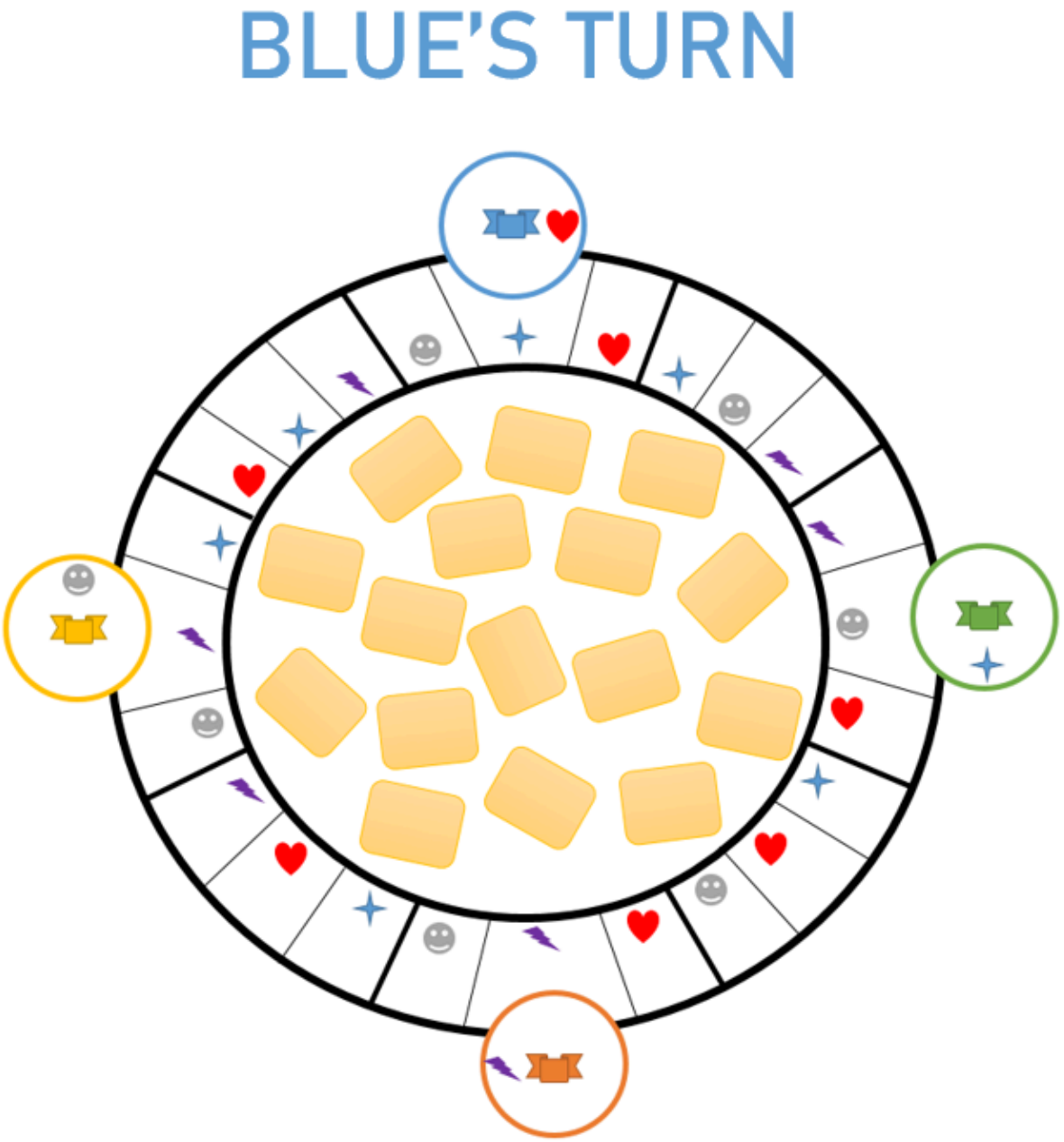


Figure 17: Start of the game

****The symbols shown in this figure do not accurately reflect the animal symbols and are just present as placeholders for example**

Onto the next screen is where the gameplay begins, where the game board occupies the majority of the screen. It features a circular arrangement of volcano cards forming the volcano path with the coloured dragon pieces and caves placed around the perimeter. Each player's dragon piece is placed on their own respective coloured caves. Players can easily recognise their pieces during gameplay since each player's dragon corresponds to a distinct colour.

The volcano cards feature volcano squares with various symbols representing different animal species on each square, as determined during the game setup. The arrangement of the volcano cards creates the path around the volcano path that the dragon pieces will travel around during the game. The chit cards are located in the middle of the volcano path, providing a central focus point on the board. These chit cards are faced down, waiting to be revealed during gameplay by the players to determine the movements of their dragon pieces.

At the top of the screen, there's a large text indicating whose turn it is. The text clearly displays the colour of the dragon piece whose turn it currently is. In Figure 17, it is currently the blue dragon piece's turn and the player who is associated with the colour blue has to reveal a chit card. This indicator ensures that players are aware of whose turn it is at any given moment, which makes the gameplay progress smoothly.

In Figure 17's case, the blue dragon piece starts first, indicating that this player won the previous round or is the youngest. Following the selection of the starting player, turns are played in a clockwise direction with each player taking their turn in order. For example in the case of Figure 17, it will be the green dragon piece's turn after the blue dragon piece's turn ends as the green dragon piece is the next dragon piece located in a clockwise direction.

4.5.1 Extension

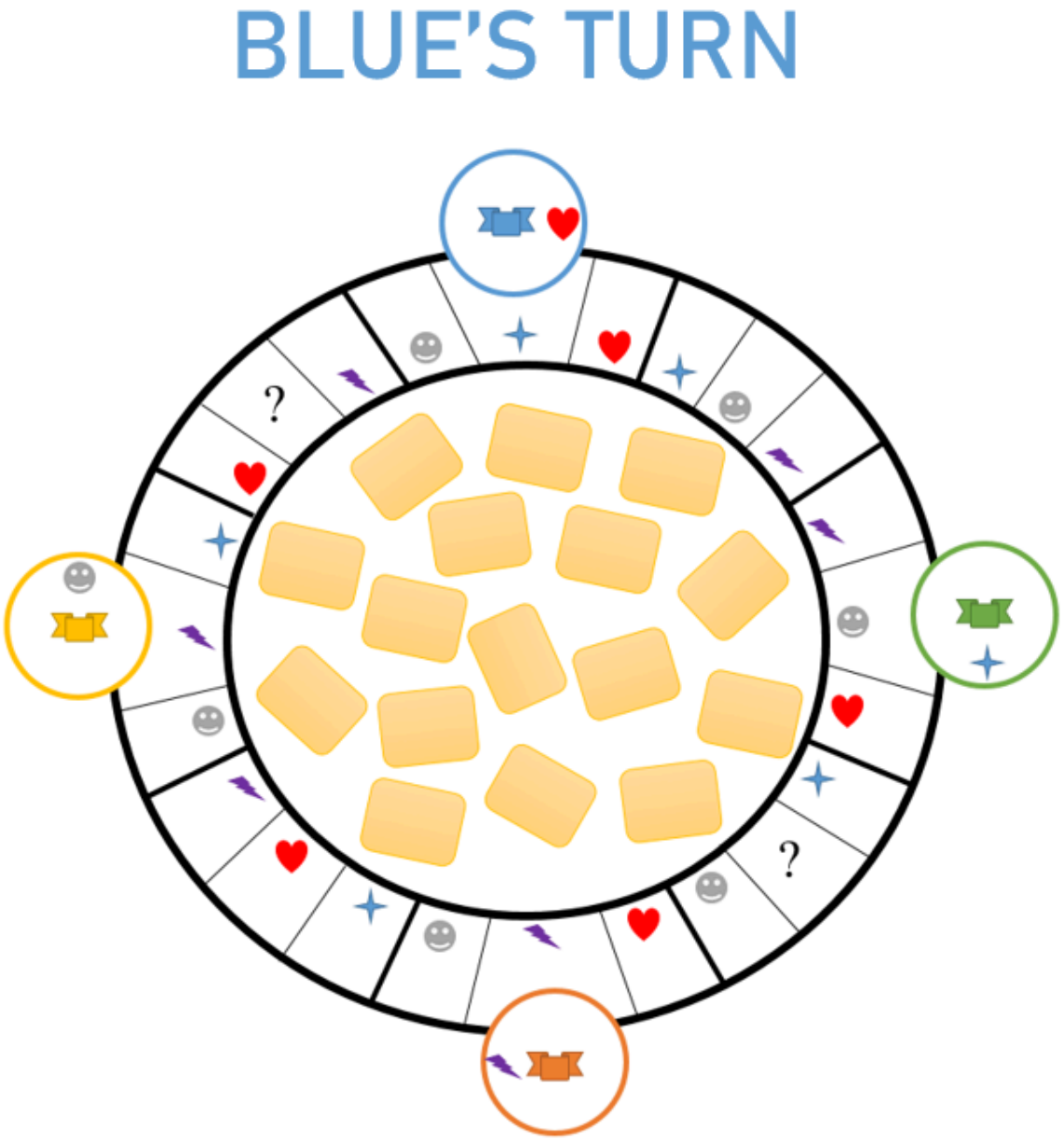


Figure 18: Start of the game with special squares

****The symbols shown in this figure do not accurately reflect the animal symbols and are just present as placeholders for example**

As we are expected to cover a high-level conceptualisation of the game, without going too deep into the specifics, we opted to include special squares as our own extension. Within the circular arrangement of volcano cards, there will be 2 squares marked with a '?' sign which symbolises the special squares (Figure 18). During the gameplay, these special squares stand out from the other volcano squares, attracting the player's attention to their unique significance. Landing on a special square grants the player's dragon piece a unique ability which varies and provides players with strategic opportunities when playing the game.

4.6 Revealing a chit card and moving

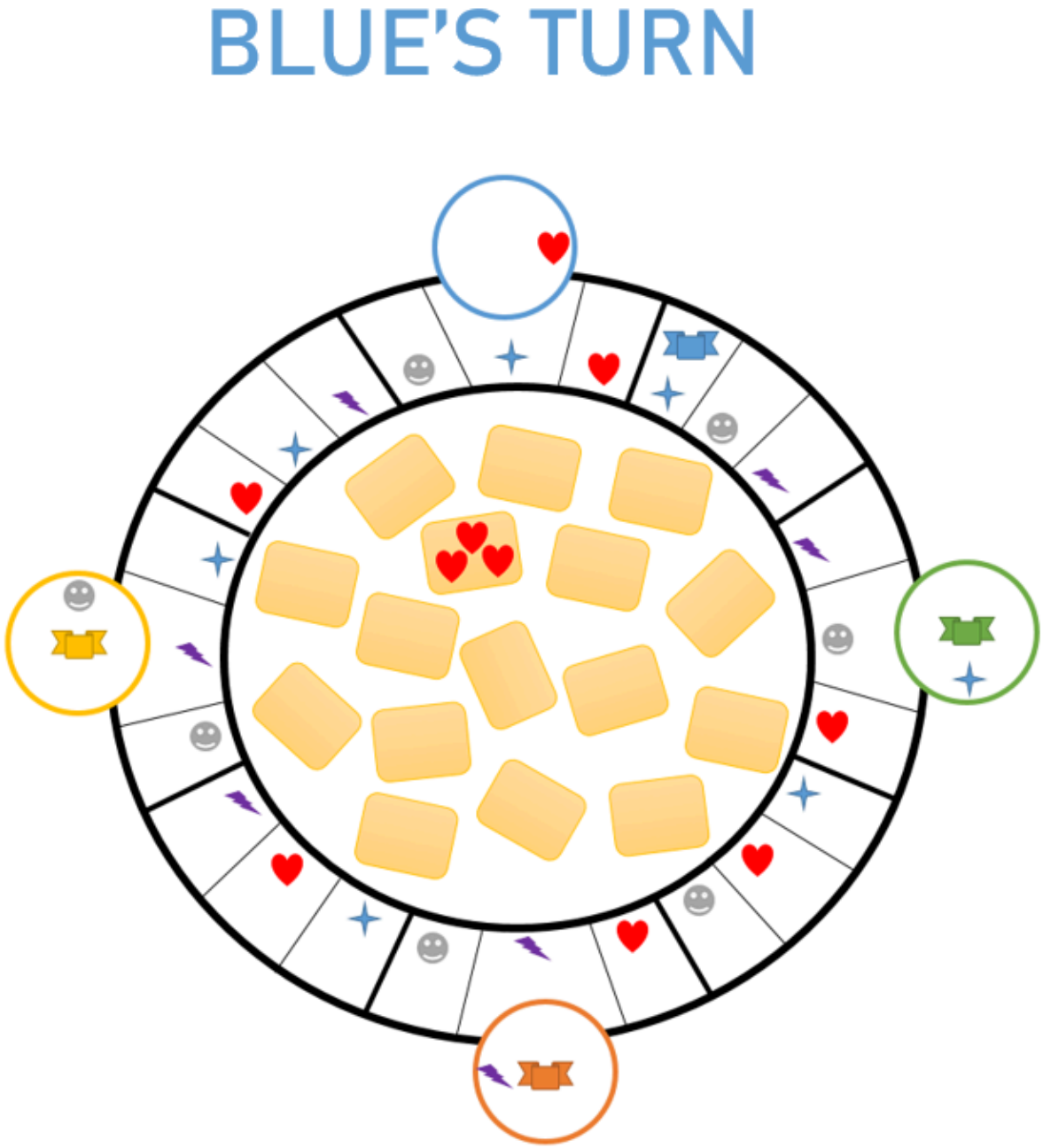


Figure 19: Game Board after Blue's turn
****The symbols shown in this figure do not accurately reflect the animal symbols and are just present as placeholders for example**

When it's a player's turn, they have to click on their desired chit card from the centre of the volcano path to reveal the symbol. This action initiates the movement of the player's dragon piece. Upon clicking on a chit card, the player's dragon piece moves automatically based on the symbols shown on the chit card. This movement is executed by the game, providing an accurate and consistent gameplay. For example, as shown in Figure 19, it's the blue dragon piece's turn and they revealed a chit card with three red hearts. As the symbols on the chit card match the symbol in their cave, the blue dragon piece will automatically move 3 squares

clockwise from their cave. The number of symbols on the chit card depicts the number of squares they can move.

If the revealed chit card doesn't match the symbol on the player's current square or there is another dragon piece on the square the current dragon piece is heading to, the player's turn ends instantly. Following this, all revealed chit cards are automatically flipped back to their initial face-down position and the turn will progress to the next player in a clockwise direction. So if the player selects a matching symbol, they are prompted to select another chit card. If a pirate chit card is revealed, the dragon piece will move backwards (counterclockwise) based on the number of pirates on the chit card and players can continue to reveal other chit cards. However, if the player's dragon piece is still in the cave and they reveal a pirate chit card, no movement is performed and players can continue to reveal other chit cards.

4.7 Finishing the game

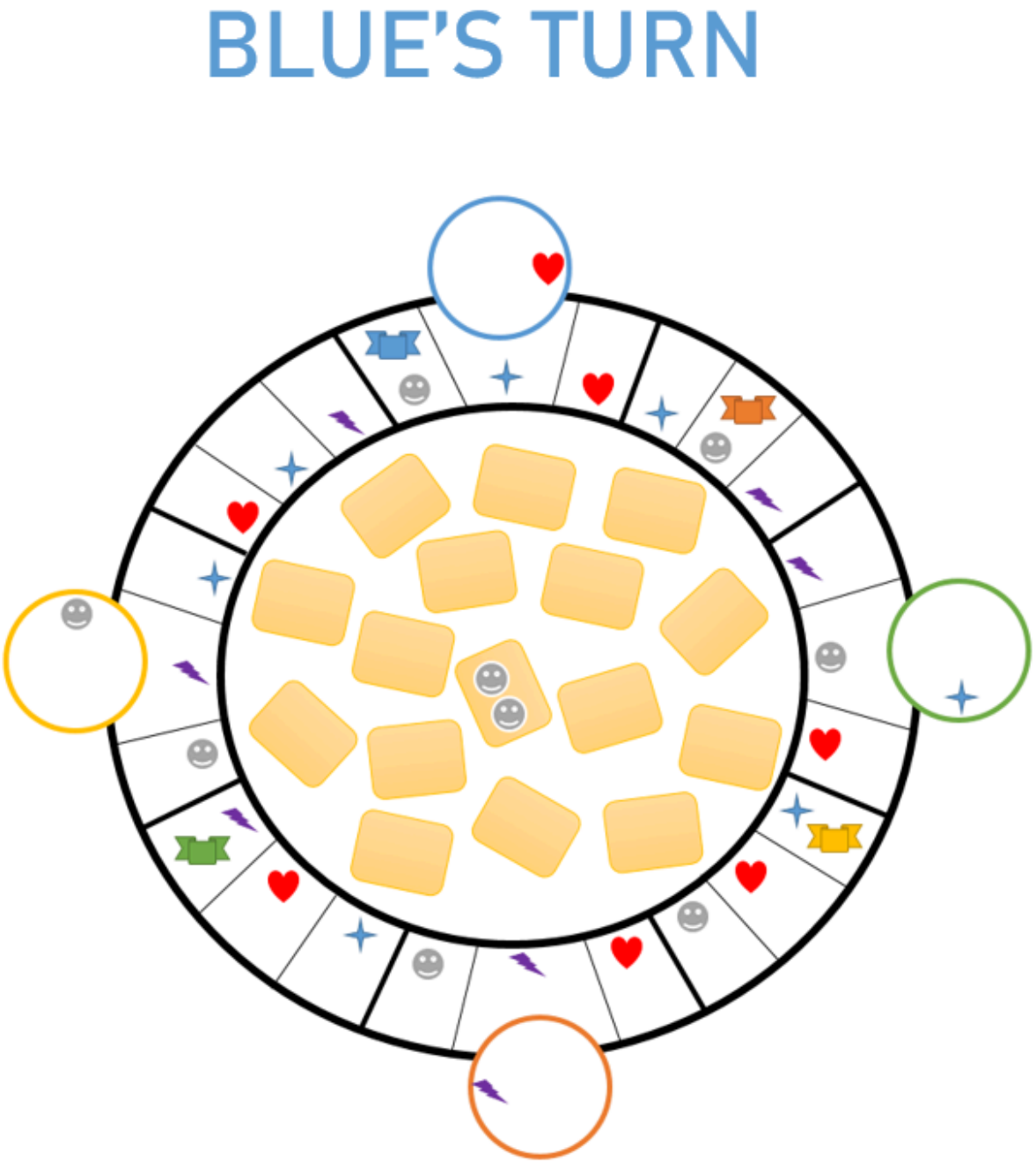


Figure 20: Blue flips over a Chit Card

****The symbols shown in this figure do not accurately reflect the animal symbols and are just present as placeholders for example**

When nearing the end of the game as Figure 20 illustrates, where it is the blue dragon piece's turn, they click on a chit card to reveal two smiley faces that match the symbol they are currently on. Therefore, the chit card stays up and the blue dragon piece moves two steps in the clockwise direction. In this case, it happens to land back in its respective cave after the movement. However, if the number of matched symbols on the chit card exceeds the number of squares to the cave, it indicates that the dragon piece will overshoot the cave. This will immediately end the player's turn with their dragon piece remaining at their current location.

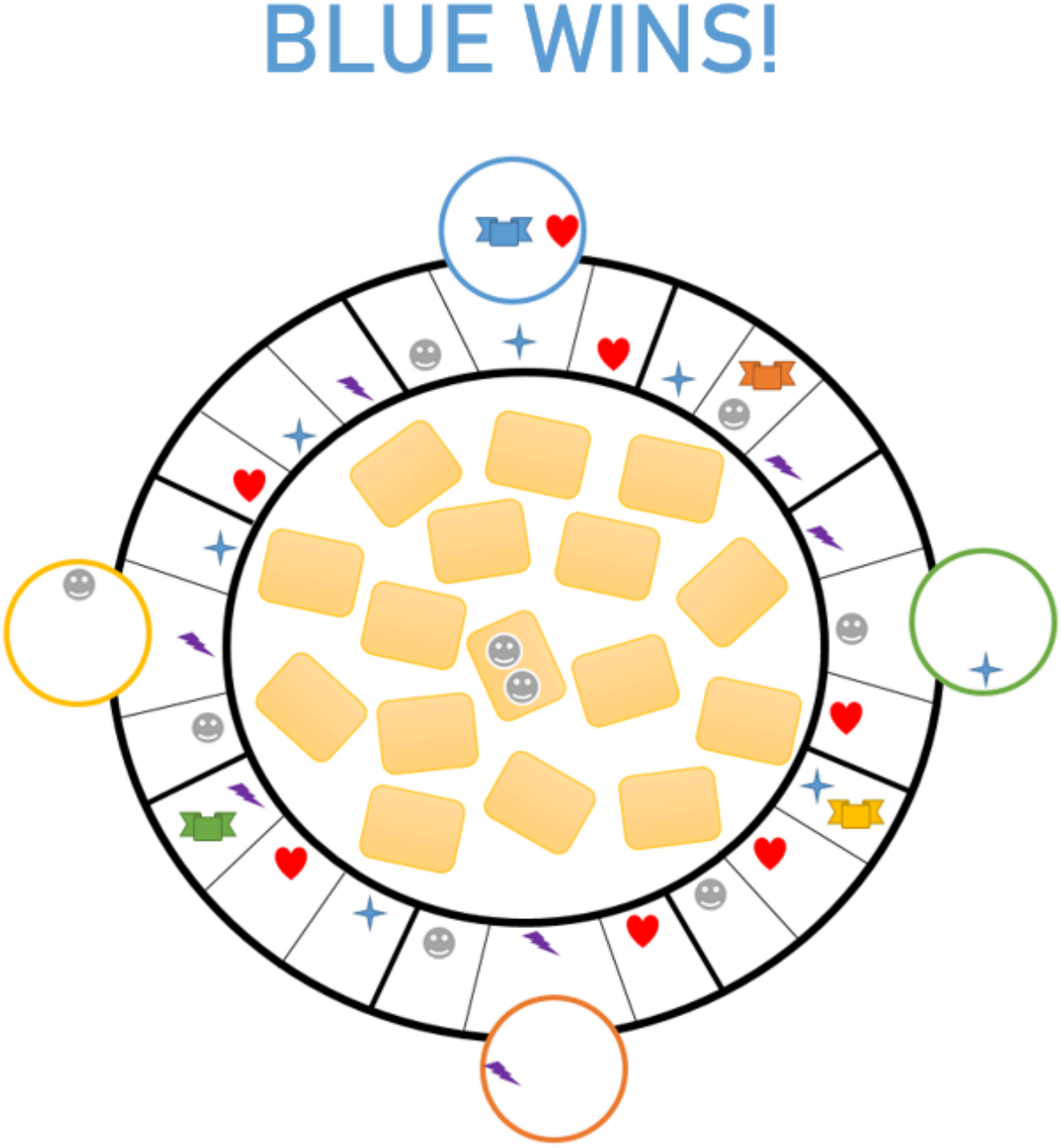


Figure 21: End of the game

****The symbols shown in this figure do not accurately reflect the animal symbols and are just present as placeholders for example**

As shown in Figure 21, the blue dragon piece has finally reached its cave after its previous movement and completed one circle around the volcano path. As a consequence, the player controlling the blue dragon piece wins the game with the large text at the top of the screen displaying the winner.

5. Contribution Analytics

Figure 22: Contributor Analytics