FROST FIRE

This document is a step by step guide to Frost Fire and mentions the basic game rules. The participants have to submit their codes in C/C++.

1 Terminologies

1.1 Game Board

The board consists of a hexagon of edge length 4 which will consist of 37 positions. 22 Dragons are placed initially (11 per side). The two Dragons being Tyragon and Abagon. Tyragon is the the ICE Dragon while Abagon is the FIRE Dragon. There are 7 row markers on the board, spanning from A-G, and 7 diagonal markers, spanning from 1-7. These markers are initialised such that each position has its own unique index- ROWDIAGONAL (eg: E3).

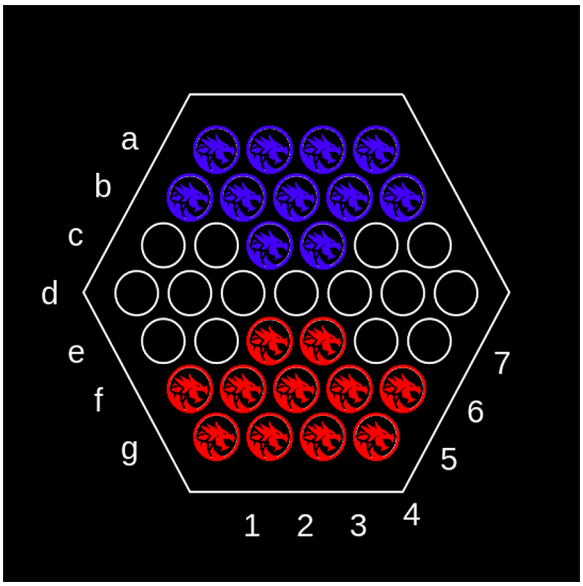

Figure 1

A4 A5 A6 A7
B3 B4 B5 B6 B7
C2 C3 C4 C5 C6 C7
D1 D2 D3 D4 D5 D6 D7
E1 E2 E3 E4 E5 E6
F1 F2 F3 F4 F5
G1 G2 G3 G4

Initially, each team will have its 11 dragons on either the top or bottom of the board (Tyragon on top). The 11 dragons of Tyragon will be placed as:-

- 4 dragons in Row A
- 5 dragons in Row B
- 2 dragons in Row C at indices C4 and C5.

where 'C' is Row Number and '4,5' are Diagonal Numbers.

The 11 Dragons of Abagon will be placed as :-

- 4 dragons in Row G
- 5 dragons in Row F
- 2 dragons in Row E at indices E4 and E3.

where 'E' is Row Number and '3,4' are Diagonal Numbers.

1.2 Initial Input:-

The first player will be chosen at random and will input as 0 (tokens-Tyragon) while, the second player will receive input as 1 (tokens- Abagon). No output is expected at this stage. The player who receives input as 0 plays first.

1.3 Input Format:-

The input specifies the opponent's previous move. The input to your bot will receive a 5 character string (including spaces) of the format :-
"Ax By"
A=Row of First dragon
x=Diagonal of First dragon
B=Row of Second dragon
y=Diagonal of Second dragon

1.4 Output Format:-

The output specifies your bot's move. The output by your bot must provide a 5 character string (including Spaces) of the format :-
"Ax By"
A=Row of First dragon
x=Diagonal of First dragon
B=Row of Second dragon
y=Diagonal of Second dragon

2 Gameplay

As the battle begins, each bot is either designated the number **Zero** or **One**. The number represents the order in which the bots play their turns.

The objective of the game is to strategize the bot's moves such that, four of the opponent's dragons are pushed off the board.

2.1 Dragon Moves

Moves are permitted in all directions, provided that the player's dragons continue to stay on board, that is, the player cannot push his own dragon out of the board.

The dragons can only move in pairs in the direction specified. For example, "Ax By" will have the dragon at index "Ax", which is linearly adjacent to dragon at index "By". The dragon must always move from Ax to By.

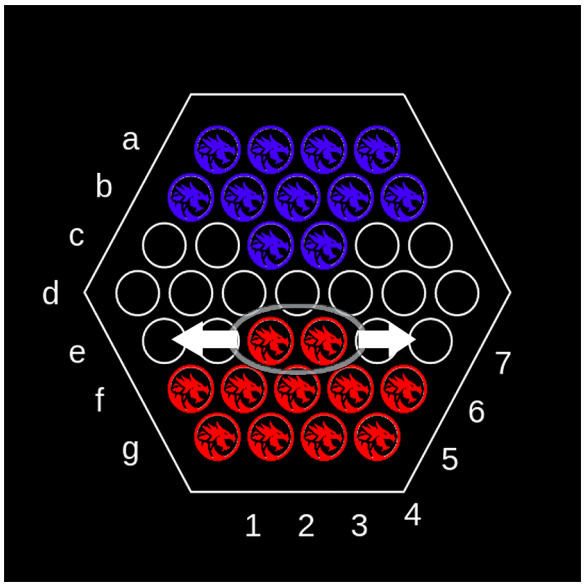

Figure 2

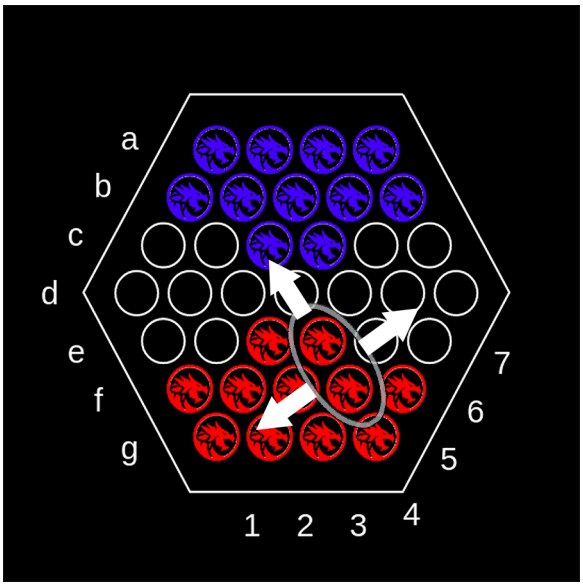

Figure 3

2.2 Pushing Criteria

The player's two, **linearly moving** dragons can push only one of the opponent's dragon **in the same direction** .

To play the move, follow the following steps:

- Select the first dragon that you want to move.
- Select the second dragon in the direction in which you want both the dragons to slide.

Note: Whenever the move is made, the initial dragon pushes the final dragon in the direction specified.
This means that, not more than two dragons can be used against an equal or greater number of the opponent's dragons.

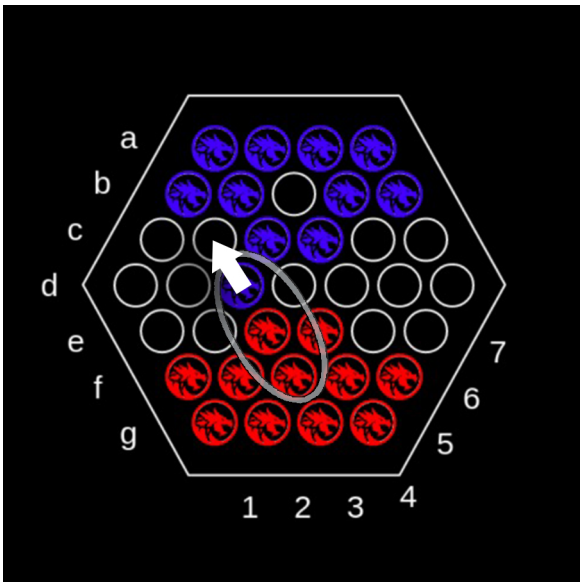

Figure 4

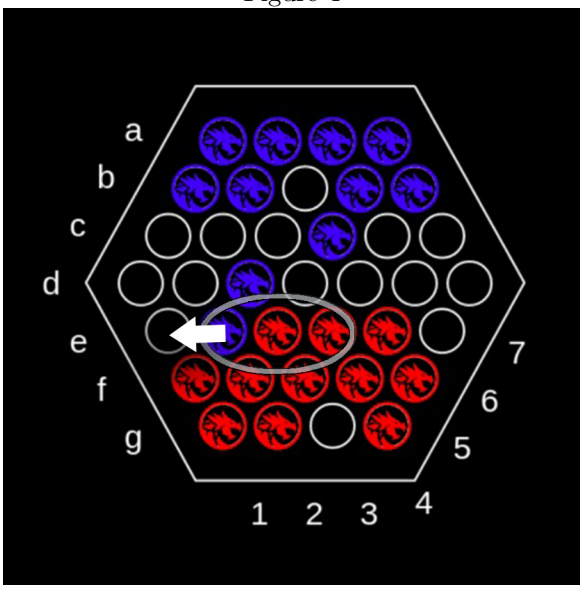

Figure 5

Note: Linear moves indicate the movement along the rows or diagonals exclusively.

Note: The following moves are deemed as **invalid**:

- The third dragon that is pushed belongs to the same team as the other two.

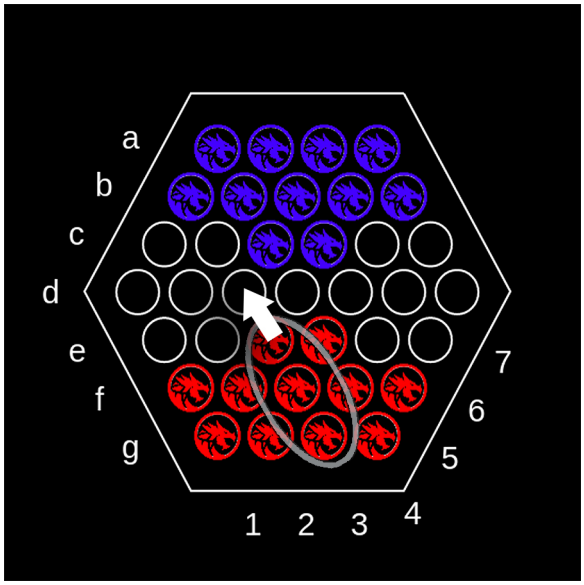

Figure 6

- **More than one** opponent's dragons are pushed at a time.

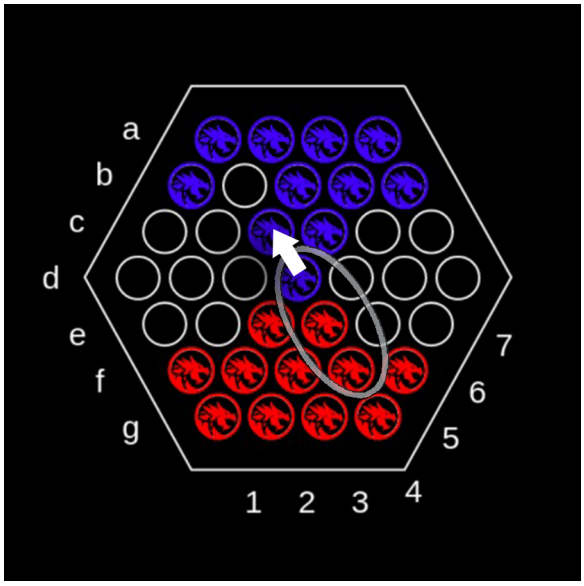

Figure 7

- The dragon is pushed off from the corner of the board.

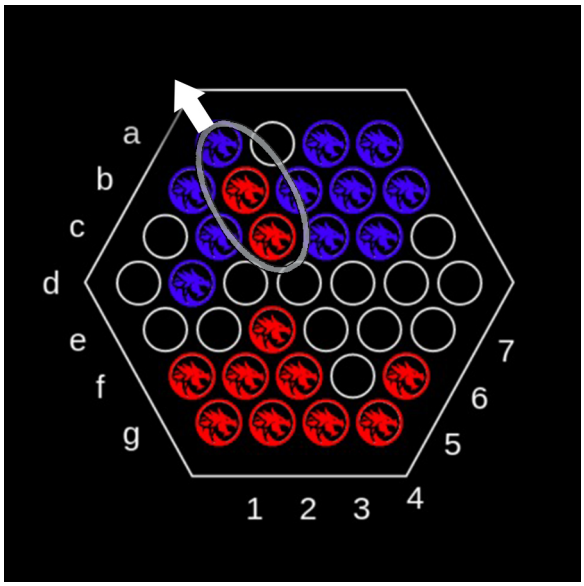

Figure 8

2.3 Elimination

A player's dragon is said to be eliminated when it lies on the edge and has been pushed off the board by the opponent.

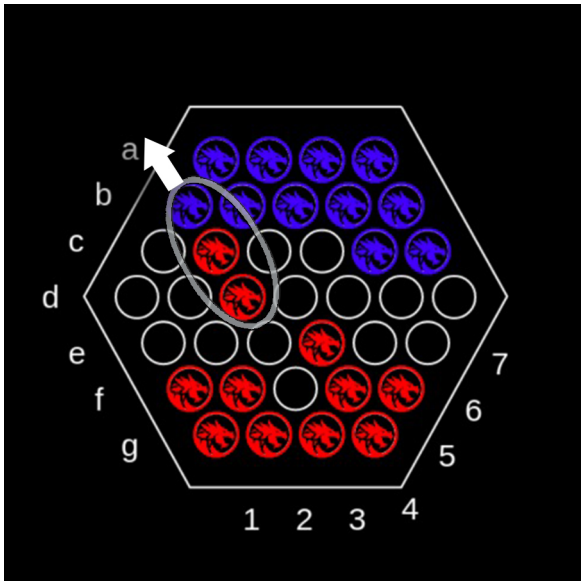

Figure 9

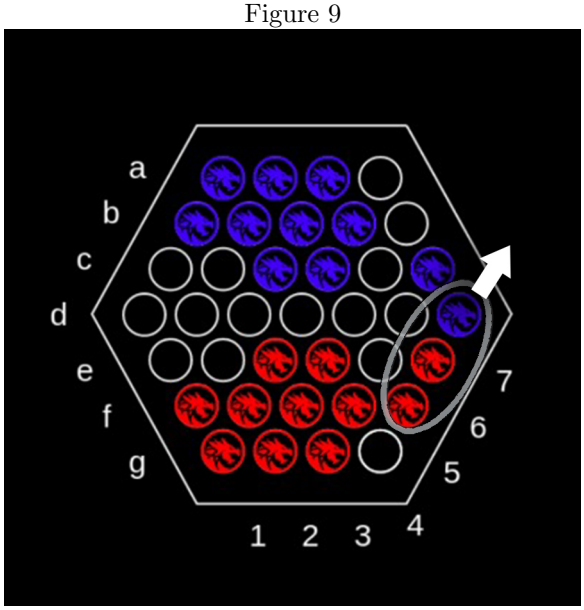

Figure 10

But, the move is said to be invalid if the dragon is pushed off the board while it stands at a vertex.

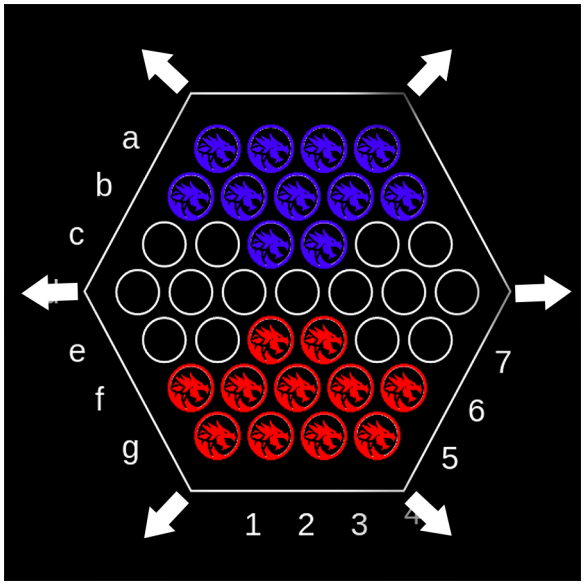

Figure 11

2.4 End Of The Game

- The Battle ends when a side loses **Four** of its dragons. The opposite side is declared as the *Winner*.
- The battle may also terminate if all dragons of a side are blocked or isolated. In such a situation,the Battle is declared as a **Draw**.

Note: The bot program will be terminated automatically when game is over.

3 Disqualification

Bot will be disqualified due to any of the following reasons:

- Bot does not respond within **3 seconds** (for C and C++) of its execution.
- Syntactical errors in the program.
- Bot returns an invalid move.
- Excessive resource usage (Bot should consume less than 20MB memory and max file size must be less than 1MB).
- Any malicious activity encountered in the code.

Note: The latest version of the bot would be taken into consideration.
Note: In case of any disputes, the decision of the XOdia team will be final.