Portable Figgie Notation (PFN) Specification

1 Overview

PFN is a line-oriented, text-based language for recording a round of Figgie. To simplify parsing and leverage existing libraries, PFN is now designed to be fully compatible with the TOML format. In this design, each PFN section is expressed as a TOML table (or an array of tables), and all key–value pairs follow standard TOML syntax.

2 TOML Syntax Conventions for PFN

General Guidelines

- **Tables:** Each section is a TOML table.
- **Key–Value Pairs:** Keys and values follow standard TOML syntax.
- **Arrays of Tables:** Multiple trade records are stored in an array of tables using `[[Trades]]`.
- **Data Types:** Strings must be quoted. Numeric values (integers or decimals) are unquoted. Dates should be in ISO 8601 format.

3 Section Specifications

3.1 FiggieGame Table

Purpose: Contains high-level metadata about the game round.

Required Keys:

- **Title** (string): The name of the game round.
- **GameID** (string): A unique identifier for the game instance.
- **Players** (integer): The number of players.

- **Date** (string): The game date in ISO 8601 format.
- **GameDuration** (decimal): The total game duration in seconds.
- **GameVariant** (string, optional): The variant of the game (e.g., "Standard").

3.2 DeckSetup Table

Purpose: Defines the decks composition and the goal suit selection logic.

Required Keys:

- **GoalSuitColor** (string): Either `"Black"` or `"Red"`.
- **GoalSuit** (string): Must be one of `"Spades"`, `"Clubs"`, `"Hearts"`, or `"Diamonds"`.
- **Distribution** (table): Defines the number of cards in each suit.

Example:

```
[DeckSetup]
GoalSuitColor = "Black"
GoalSuit = "Spades"
[DeckSetup.Distribution]
Spades = 10
Clubs  = 12
Hearts = 10
Diamonds = 8
```

3.3 Trades Array of Tables

Purpose: Logs each executed trade.

Required Keys:

- **TradeIndex** (integer): A sequential positive integer.
- **T** (decimal): A strictly increasing timestamp.
- **Buyer** (string): Must reference a valid player (e.g., "P1").
- **Seller** (string): Must reference a valid player.
- **Suit** (string): Must be a valid suit.
- **Card** (string): The specific card traded.
- **Price** (decimal/integer): The trade price.

3.4 Result Table

Purpose: Summarizes the final state of the game round.

Required Keys:

- **Revealed12CardSuit** (string): Must match the suit with 12 cards in `[DeckSetup.Distribution]`.
- **GoalSuit** (string): Must match the final goal suit.
- **P_FinalBank** (integer): Final bankroll for each player.
- **Winners** (array of strings): List of winning players.

3.5 Events Table (Optional)

Purpose: Logs special game events.

Example:

```
[[Events]]
T = 20.0
Type = "Pause"
Reason = "Player P3 disconnected"
```

4 Example Gameplay Sequence

```
[FiggieGame]
Title    = "Demo Round"
GameID   = "G12345"
Players = 4
Date     = "2025-02-15"
GameDuration = 60.0

[DeckSetup]
GoalSuitColor = "Black"
GoalSuit      = "Spades"
[DeckSetup.Distribution]
Spades   = 10
Clubs    = 12
Hearts   = 10
Diamonds = 8

[Deal]
P1 = "S1,S2,S3,C2,C7,H5,H6,H7,D8"
```

```
P2 = "S4,S5,S6,C1,C8,H3,H9,D2"
P3 = "S9,S10,H1,H2,H4,D3,D4,D5"
P4 = "C3,C4,C5,C6,H8,H10,D6,D7"

[[Trades]]
TradeIndex = 1
T          = 12.5
Buyer      = "P2"
Seller     = "P1"
Suit       = "Spades"
Card       = "S2"
Price      = 15

[[Trades]]
TradeIndex = 2
T          = 30.1
Buyer      = "P3"
Seller     = "P2"
Suit       = "Diamonds"
Card       = "D2"
Price      = 10

[Result]
Revealed12CardSuit = "Clubs"
GoalSuit           = "Spades"
P1_FinalBank       = 420
P2_FinalBank       = 355
P3_FinalBank       = 335
P4_FinalBank       = 290
Winners            = ["P1"]
```

5 Error Handling and Validation

- Ensure `GoalSuit` and `Revealed12CardSuit` are valid.
- Validate trade events to ensure players only sell cards they own.
- Enforce strictly increasing timestamps in `[[Trades]]`.
- Check consistency between `[DeckSetup]` and `[Result]`.