

# User Documentation

*Welcome to the card game software. This document explains the basic concepts and stages that the Game Builder uses. It also contains a list of all valid rules that can be specified in the Builder to build your custom game.*

## Game

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A card game is broken up into a collection of parts:

A game is a collection of rounds. A round is a collection of turns. A turn is a collection of phases. A phase is a collection of conditions and valid actions.

The game also contains players and a board.

At any given current phase in the turn, the computer will check if the phase is over and if the turn is complete.

## Groups

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A group is a collection of cards. The group can be a `hand` , `deck` , `discard` , or `set` (or other user specified groups using the Builder)

`Hand` - A group of cards that a player can see and interact with.

`Deck` - A group of cards that a player cannot see and cannot interact with except for the top card. It will be used to draw from or deal.

`Discard` - A group of cards that a player cannot see and cannot interact with except for the top card. It will be used to store cards that have been thrown away by the player.

`Set` - A valid group of cards that a player can interact with. In Gin Rummy and Rummy for example, the player's hand is a `hand` group, the deck is a `deck` group, and the discard is a `discard` group.

## Stages

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Each of the parts of the game are represented in the Rules Builder as a `Stage` .

- `Game` - The game stage is the top level stage. It contains the game rules, the players, and the game

controller.

- **Round** - The round stage contains the round rules and a turn
- **Turn** - The turn stage contains the turn rules, and a list of phases
- **Phase** - A phase is a part of a Players turn. The phase stage contains
  - *The player can only move on to the next phase if the current phase is complete. For example, in Gin Rummy the player cannot discard a card until they have played a valid set or hit onto an existing set.*
  - Phases contain **PlayerActions** which are the actions that the player can take during the phase.
  - Phases contain **Conditions** which are the rules that must be met for the phase to be complete.

## Computer Actions

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Each stage contains Stages:

- **BeforeActions** which is a list of **Computer Actions** that contains the actions that the computer will take before a stage.
- **AfterActions** which is a list of **Computer Actions** that contains the actions that the computer will take after the stage.

### Computer Actions: *(For Before or after Stages)*

**Create Group:** Creates a new group in the game with the specified tag, view type, and direction.

**Check Win Amount:** Checks if the player has won based on the specified amount.

**Check Win Score:** Checks if the player has won based on the specified score. **Place Deck:** Places a deck in the specified group tag.

**Transfer:** Transfers a specified amount from the source tag to the destination tag.

**Shuffle:** Shuffles the specified group tag.

## Player Actions

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*The **Phase** Stage contains Player Actions which are actions that a player CAN make during a give phase.*

A player can advance to a new phase once the required conditions have been met for that phase.

## Player Actions:

**PlayerDraw:** This action allows the player to draw the first card from a specific source and move it to a specific destination.

**PlayerTransfer:** This action allows the player to transfer an item or card from a specific source to a specific destination.

**CreateGroup:** This action allows the player to create a group with a given tag, view type, and direction.

**Swap:** This action allows the player to swap the contents of two different groups identified by their tags.

## Conditions

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A condition is a rule that must be met for a phase to be complete. For example, in Gin Rummy, the Draw phase is complete when the player has drawn a card from the deck or the discard pile.

### Phase Conditions:

**Group Empty:** Checks if a specific group (specified by the group\_tag parameter) is empty.

**Meld Condition:** Checks if a specific group (specified by the group\_tag parameter) contains cards that form a meld (a set of three or more cards of the same rank).

**Run Condition:** Checks if a specific group (specified by the group\_tag parameter) contains cards that form a run (a sequence of three or more cards of the same suit in consecutive rank order).

**Run Or Meld Condition:** Checks if a specific group (specified by the group\_tag parameter) contains cards that form either a run or a meld.

**Transfer Amount:** Checks if a specific amount of cards (specified by the amount parameter) can be transferred from one group to another.