

Deckz

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GPL-3.0-or-later

Render poker-style cards and full decks.

MICHELE DUSI

 @micheledusi

DECKZ is a flexible and customizable package to render and display poker-style playing cards in **Typst**¹. Use it to visualize individual cards, create stylish examples in documents, or build full decks and hands for games and illustrations.

Table of Contents

How to use DECKZ	2	Documentation	22
I.1 Import the package	2	II.1 Card visualization	22
I.2 Basic usage	2	II.2 Group visualization	27
I.2.1 Formats	3	II.3 Data	34
I.2.2 Back of cards	5	II.4 Randomization	36
I.3 Visualize cards together	5	II.5 Arranging hands	41
I.3.1 Decks	5	II.6 Evaluating hands	46
I.3.2 Line	6	II.7 Language-aware card symbols	56
I.3.3 Hands	8	Examples	57
I.3.4 Heaps	10	III.1 Displaying the current state of a game	57
I.4 Customize cards	11	III.2 Comparing different formats	59
I.4.1 Custom Suits	11	III.3 Displaying a full deck	61
I.5 Control randomness	12	III.4 Randomized game with card scoring	62
I.5.1 Noise in rendering	12	III.5 Scoring hands	65
I.5.2 The true nature of random outputs	13	Credits	68
I.5.3 Working with deterministic randomness	14	Contributions are welcome!	68
I.5.4 Creating variation with external RNGs	14	Index	69
I.5.5 Manipulate cards with mix	16		
I.6 Arrange and score cards	17		
I.6.1 Sort hands with arr	18		
I.6.2 Score hands with val	19		

¹<https://typst.app/>

Part I

How to use DECKZ

DECKZ is a Typst package designed to **display playing cards in the classic poker style**, using the standard French suits (hearts ♥, diamonds ♦, clubs ♣, and spades ♠). Whether you need to show a single card, a hand, or a full deck, **DECKZ** provides flexible tools to visualize cards in a variety of formats and layouts. The package has been developed with the idea of it being used in games, teaching materials, or any document where clear and attractive card visuals are needed.

This manual for **DECKZ** is organized in three main parts:

1. **Section I** helps you get started with the **main features**;
2. **Section II** provides **detailed documentation** for each function, serving as a reference;
3. **Section III** presents **practical examples** that combine different features.

At the end, you'll find credits and instructions for contributing to the project.

This manual refers to the most recent **DECKZ** release as of today: **version 0.3.0**.

I.1 Import the package

To start using **DECKZ** in your Typst document, simply **import the package** with:

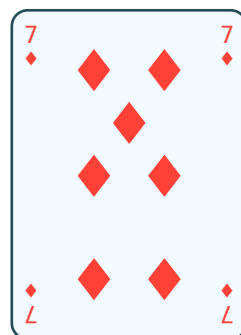
```
#import "@preview/deckz:0.3.0"
```

This makes all **DECKZ** functions available under the **deckz** namespace. Congratulations, you're now ready to start visualizing cards!

I.2 Basic usage

The main entry point to start using **DECKZ** visualization features is the **#deckz.render** function. Here's an example of how to use it:

```
#deckz.render("7D", format: "large")
```



As you can see, the function has been called with two arguments, and it produced a large card with the rank **7** and the suit of **diamonds ♦**.

1. The first argument is the **card identifier** as a string (`#deckz.render.card`). Use **standard short notation** like "AH", "10S", "QC", etc., where the first letter(s) indicates the **rank**, and the last letter the **suit**.
 - **Available ranks:** A, 2, 3, 4, 5, 6, 7, 8, 9, 10, J, Q, K.
 - **Available suits:** H (Hearts ♥), D (Diamonds ♦), C (Clubs ♣), S (Spades ♠).

🔮 *Behind The Scenes.* Card identifier is **case-insensitive**, so "as" and "AS" are equivalent and both represent the *Ace of Spades*.

2. The second argument is optional and specifies the **format** of the card display (`#deckz.render.format`). If not provided, **DECKZ** functions will typically default to **medium**, which is a well-balanced card size suitable for most uses.

To learn more about the available formats, see [Section I.2.1](#).

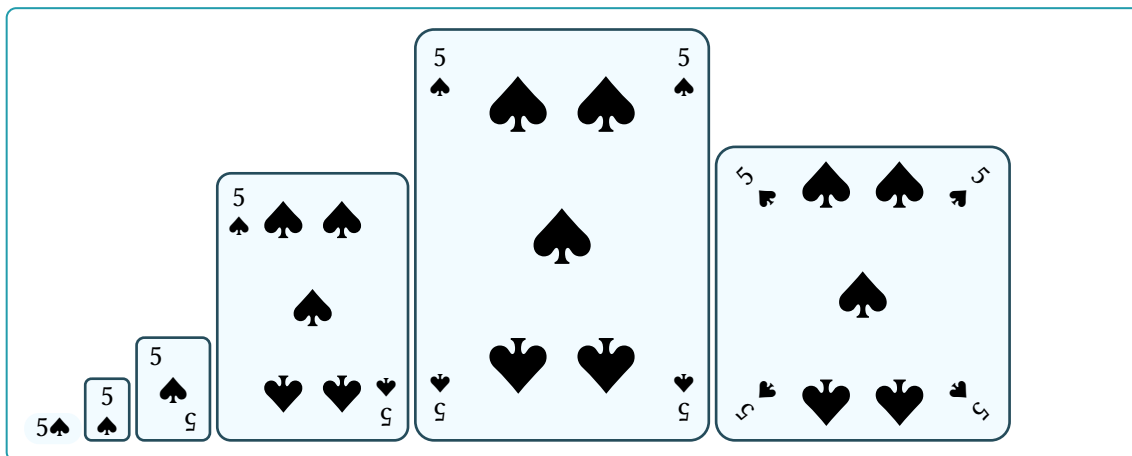
I.2.1 Formats

DECKZ provides multiple **display formats** to fit different design needs:

Format	Description
inline	A minimal format where the rank and suit are shown directly inline with text.
mini	The smallest visual format: a tiny rectangle with the rank on top and the suit at the bottom.
small	A compact but clear card with rank in opposite corners and the suit centered.
medium	A full, structured card with proper layout, two corner summaries, and realistic suit placement.
large	An expanded version of medium with corner summaries on all four sides for maximum readability.
square	A balanced 1:1 format with summaries in all corners and the main figure centered.


Here's an example of how the same card looks in different formats:

```
#deckz.render("5S", format: "inline")
#deckz.render("5S", format: "mini")
#deckz.render("5S", format: "small")
#deckz.render("5S", format: "medium")
#deckz.render("5S", format: "large")
#deckz.render("5S", format: "square")
```



You can use any of these with the **general function** `#deckz.render`, or by calling directly the **specific format functions**:

- `#deckz.inline`,
- `#deckz.mini`,
- `#deckz.small`,
- `#deckz.medium`,
- `#deckz.large`,
- `#deckz.square`.

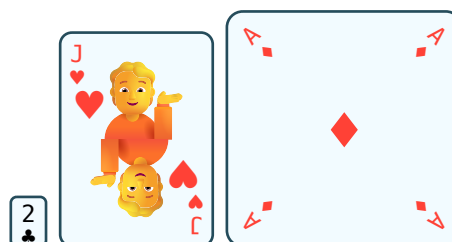
 *Behind The Scenes.* All formats are **responsive to the current text size**: they scale proportionally using em units, making them adaptable to different layouts and styles.

For reference, the summary view contained in larger formats (i.e. the symbols representing the rank and suit of a cards, usually placed in the card's corners) **scale with the current text size**, ensuring that card details remain readable by being no smaller than `1em` in size.

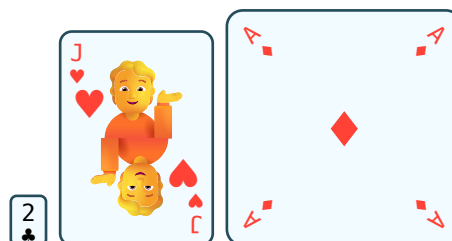
```
#deckz.mini("2C")
#deckz.medium("JH")
#deckz.square("AD")

are equivalent to

#deckz.render("2C", format: "mini")
#deckz.render("JH", format: "medium")
#deckz.render("AD", format: "square")
```



are equivalent to



If you want more examples of how to use these formats, check out [Section III](#) at the end of this document.

I.2.2 Back of cards


To render the **back of a card**, you can use the `#deckz.back` function. This will display a generic card back design, which can be useful for games or when you want to hide the card's face.

This is the back of a card:
`#deckz.back(format: "small")`

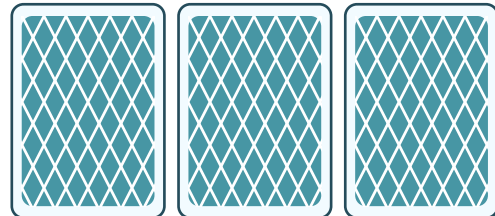



This is the back of a card:

Alternatively, you can use the general `#deckz.render` function with `"back"` as the card code, which is equivalent.

 *Behind The Scenes.* Any string other than a valid card identifier will be interpreted as a request for the back of the card (except for the empty string). The convention, however, is to use the string `"back"` for clarity.

```
// These are all equivalent:  
#deckz.medium("back")  
#deckz.render("back", format: "medium")  
#deckz.back(format: "medium")
```



 *Coming Soon Feature.* Currently, the back of cards uses a fixed design. In future updates, **DECKZ** will allow you to customize the back of cards and decks.

I.3 Visualize cards together

DECKZ also provides convenient functions to render **entire decks** or **hands of cards**. Both functions produce a *CeTZ* canvas from the [CETZ²](#) package, which can be used in any context where you need to display multiple cards together.

I.3.1 Decks

The deck visualization is created with the `#deckz.deck` function, which takes a card identifier as an argument. It renders a full deck of cards, with the specified card on top.

²<https://typst.app/universe/package/cetz>

```
#deckz.deck("6D")
```

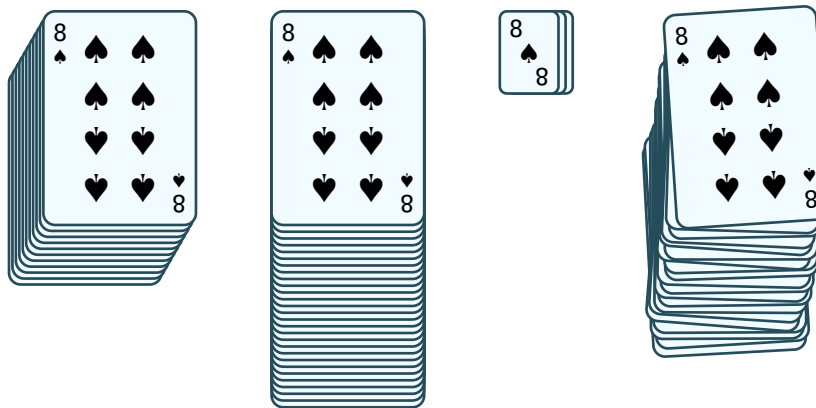


In the `#deckz.deck` function, you can also specify different parameters to **customize deck appearance**; we list here some of them.

- `#deckz.deck.angle` – The direction towards which the cards are shifted.
- `#deckz.deck.height` – The height of the deck, represented as a length.
- `#deckz.deck.format` – The format of the cards in the deck. It can be any of the formats described above, such as `inline`, `mini`, `small`, `medium`, `large`, or `square`.

For more information and in-depth explanations, see the documentation in [Section II](#).

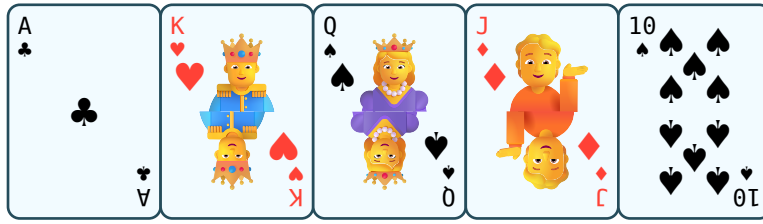
```
#stack(
  dir: ltr,
  spacing: 1cm,
  deckz.deck("8S"),
  deckz.deck("8S", angle: 90deg, height: 2.5cm),
  deckz.deck("8S", angle: 180deg, height: 8pt, format: "small"),
  deckz.deck("8S", angle: 80deg, height: 18mm, noise: 0.1)
)
```



I.3.2 Line

The line visualization is created with the `#deckz.line` function, which takes a variable number of card identifiers as arguments. It renders an horizontal **line of cards**, with the specified cards displayed side by side. It's a simple way to show a sequence of cards in a row, minimizing the space they occupy.

```
#deckz.line("AC", "KH", "QS", "JD", "10S")
```



As can be seen in the example above, the cards are displayed adjacent with no extra space.

However, such display can be customized. You can use the following parameters (more parameters for `#deckz.line` explained in [Section II](#)):

- `#deckz.line.spacing` – The **spacing between adjacent cards**. It must be a `length` (e.g., `10pt`). If set to `auto`, visualization will place cards according to the specified width (if any).
- `#deckz.line.width` – The **total width** of the line. It can be a `length` (e.g., `350pt`) or a `ratio` (e.g., `90%`). If left to `auto`, the width is determined by the number of cards and their format.

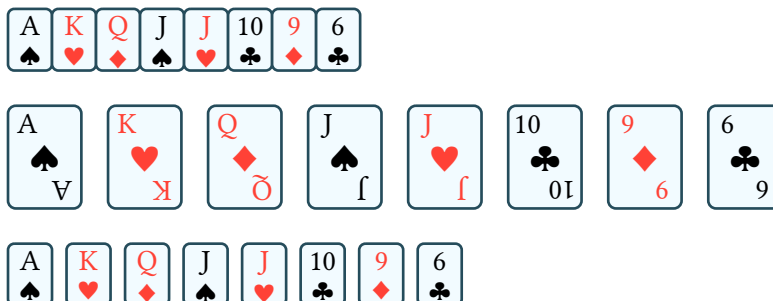
🔗 *Behind The Scenes.* Being one dependent on the other, only **one parameter** between `#deckz.line.spacing` and `#deckz.line.width` can be set to a specific value at a time. If none of them is set, cards are placed adjacent with no extra space.

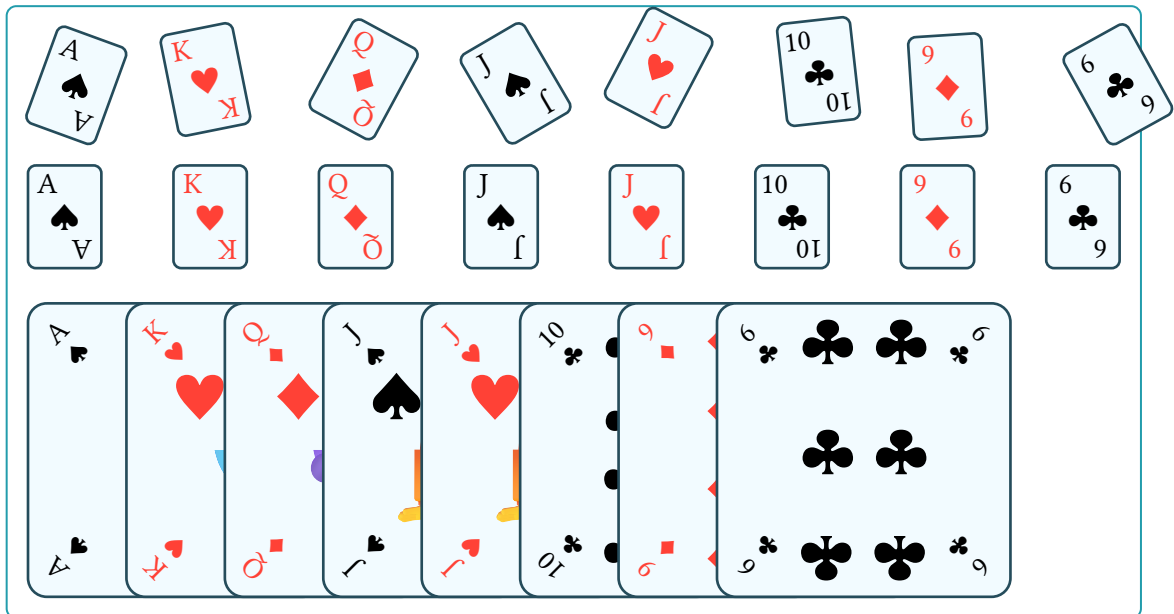
- `#deckz.line.format` – The **format** of the cards in the line. It can be any of the formats described above, such as `"inline"` | `"mini"` | `"small"` | `"medium"` | `"large"` | `"square"`. The default is `"medium"`.

See also [Section II](#) for the full list of parameters of `#deckz.line`.

```
#let my-line = ("AS", "KH", "QD", "JS", "JH", "10C", "9D", "6C")

#deckz.line(..my-line, format: "mini")
#deckz.line(..my-line, format: "small", spacing: 10pt)
#deckz.line(..my-line, format: "mini", width: 6cm)
#deckz.line(..my-line, format: "small", spacing: 1cm, noise: 0.8)
#deckz.line(..my-line, format: "small", width: 100%)
#deckz.line(..my-line, format: "square", width: 90%)
```

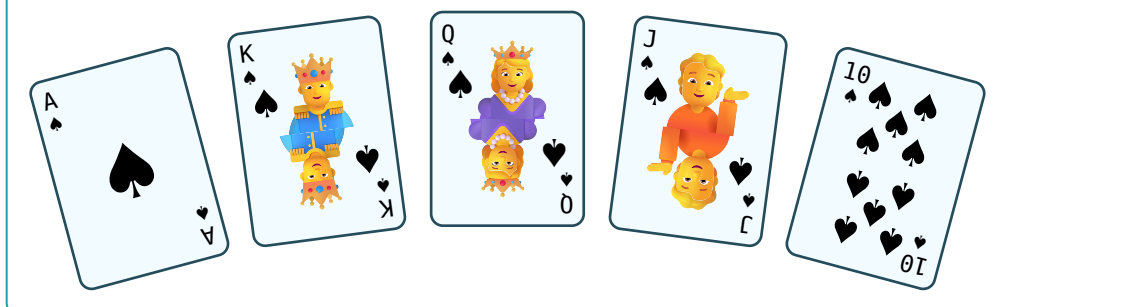




I.3.3 Hands

The hand visualization is created with the `#deckz.hand` function, which takes a variable number of card identifiers as arguments. It renders a **hand of cards**, with the specified cards displayed side by side.

```
#deckz.hand("AS", "KS", "QS", "JS", "10S")
```



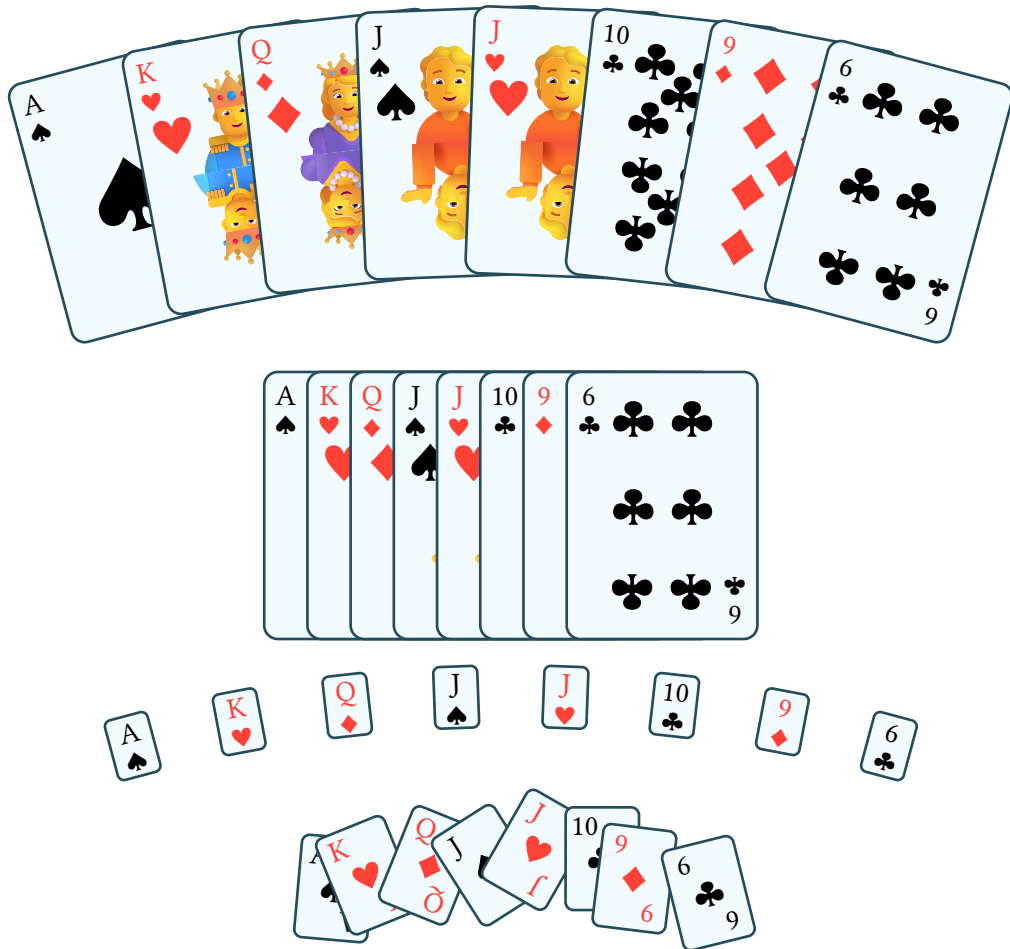
As can be seen in the example above, the cards are displayed in an arc shape, with the first card on the left and the last card on the right.

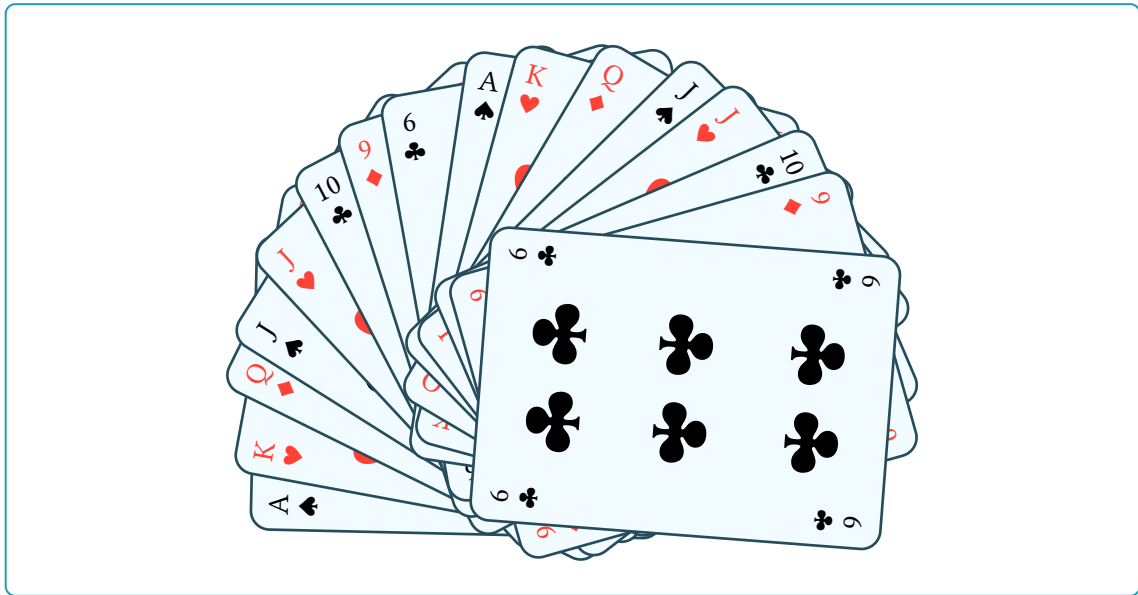
To customize such display, you can use the following parameters (more parameters for `#deckz.hand` explained in [Section II](#)):

- `#deckz.hand.angle` – The angle of the arc in degrees, i.e. the angle between the first and last cards' orientations.
- `#deckz.hand.width` – The width of the hand, i.e. the distance between the centers of the first and last card.
- `#deckz.hand.format` – The format of the cards in the deck. It can be any of the formats described above, such as `inline`, `mini`, `small`, `medium`, `large`, or `square`. The default is `medium`.


```
#let my-hand = ("AS", "KH", "QD", "JS", "JH", "10C", "9D", "6C")

#table(
  columns: (1fr),
  align: center,
  stroke: none,
  deckz.hand(..my-hand),
  deckz.hand(angle: 0deg, width: 4cm, ..my-hand),
  deckz.hand(format: "mini", ..my-hand),
  deckz.hand(width: 5cm, noise: 0.8, format: "small", ..my-hand),
  deckz.hand(angle: 180deg, width: 3cm, noise: 0.1, format: "large", ..(my-
hand + my-hand)),
)
```

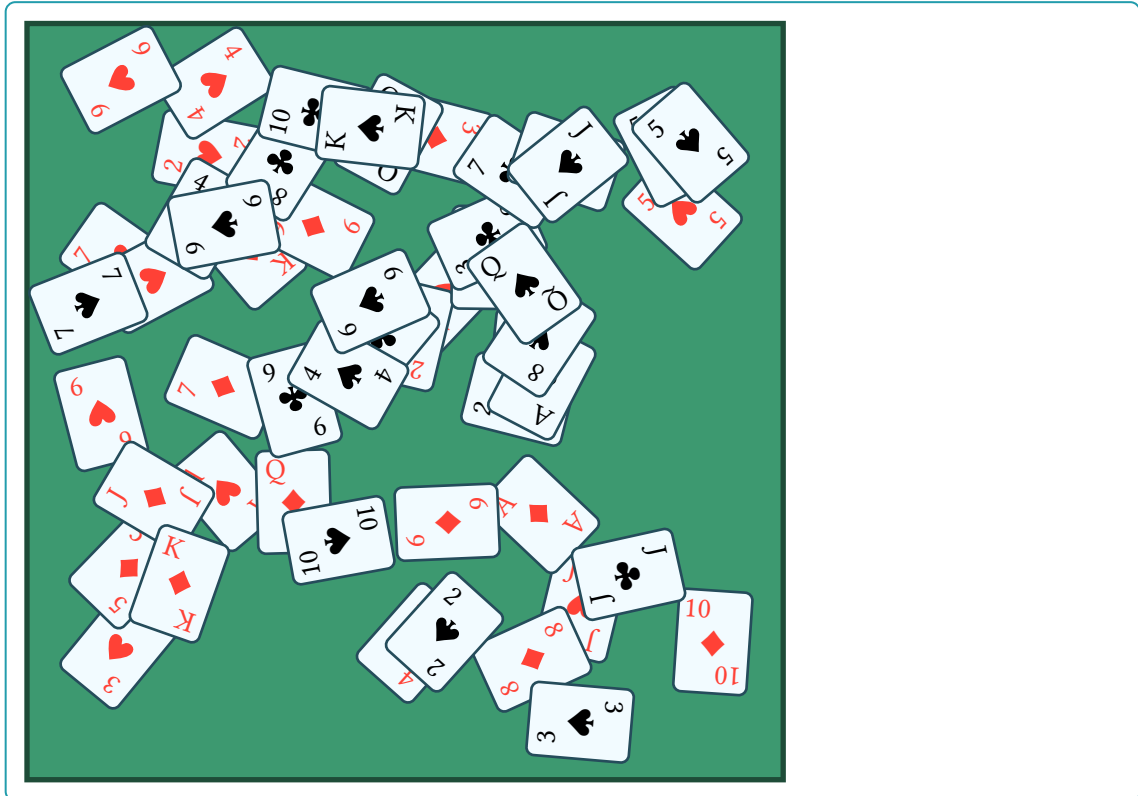




I.3.4 Heaps

`DECKZ` also provides a `#deckz.heap` function to display a **heap of cards**. This is similar to a hand (`#deckz.hand`), but the cards are randomly scattered within a specified area, rather than arranged in an arc. Like the hand, the heap requires a list of card identifiers as arguments, and it can be customized with various parameters.

```
#let (w, h) = (10cm, 10cm)
#box(width: w, height: h,
    fill: olive,
    stroke: olive.darken(50%) + 2pt,
)[
  #deckz.heap(format: "small", width: w, height: h, ..deckz.deck52)
]
// Note: The `deckz.deck52` array contains all 52 standard playing cards.
```




Some customization options are:

- `#deckz.heap.width` – The width of the heap, i.e. how far apart the cards will be scattered horizontally.
- `#deckz.heap.height` – The height of the heap, i.e. how far apart the cards will be scattered vertically.
- `#deckz.heap.format` – The format of the cards in the heap. It can be any of the formats described above, such as `inline`, `mini`, `small`, `medium`, `large`, or `square`. The default is `medium`.

See also [Section II](#) for the full list of parameters of `#deckz.heap`.

I.4 Customize cards

[DECKZ](#) allows for some **customization of the card appearance**, such as colors and styles.

 *Coming Soon Feature.* This functionality is not fully supported yet: please, come back for the next releases.

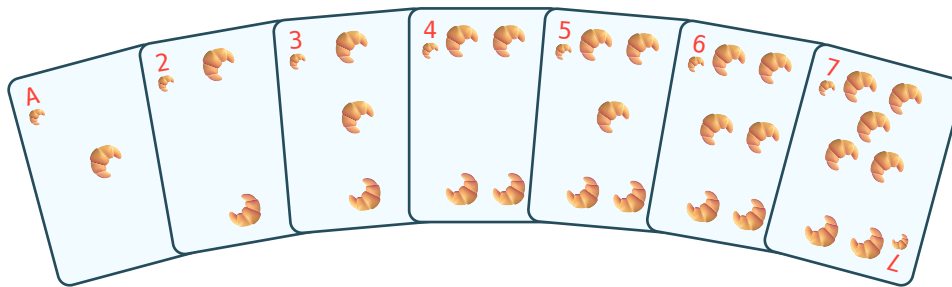
I.4.1 Custom Suits

[DECKZ](#) will allow you to define **custom suits**, so you can use your own symbols or images instead of the standard hearts, diamonds, clubs, and spades.

Even though this feature is not yet implemented, you can still use custom suits by defining your own show rule for the emoji suits. In fact, [DECKZ](#) uses the `emoji.suit.*` symbols to render the standard suits, so you can override them with your own definitions.

For example, if you want to use a *croissant emoji* 🥐 as a custom suit instead of *diamonds* ♦, you can define it like this:

```
#show emoji.suit.diamond: text(size: 0.7em, emoji.croissant)
#deckz.hand(..deckz.cards52.diamond.values().slice(0, 7))
```



🔗 *Behind The Scenes.* The **resizing** of the emoji in the previous example is used to make it fit better in the card layout. When you're defining your own show rule for suits customization, you may need to adjust their size as needed.

🔗 *Coming Soon Feature.* Custom suits will be better supported in the future releases, allowing you to define them more easily and consistently across the deck.

I.5 Control randomness

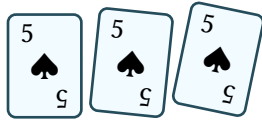
In card games, always having the same card order, shuffle, or draw every time would be unnatural. [DECKZ](#) provides functions to manage randomness in both card rendering and manipulation, allowing for varied and realistic outcomes.

In this section, we present functions for **shuffling** or **drawing** random cards from a deck. Furthermore, randomization is also available in **rendering**: most display functions can take a **noise** argument to change the card's appearance slightly, making it more visually appealing and less uniform.

I.5.1 Noise in rendering

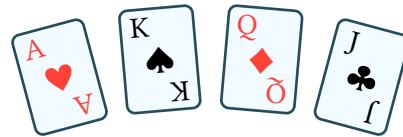
Noise is a small random variation applied to the card's rendering, which can be useful to create a more dynamic and less uniform appearance. For instance, we can slightly change a single card rendering by adding **noise** with the `#deckz.render.noise` argument:

```
#deckz.render("5S", format: "small") // Default: no noise
#deckz.render("5S", format: "small", noise: 0.5)
#deckz.render("5S", format: "small", noise: 1.0)
```

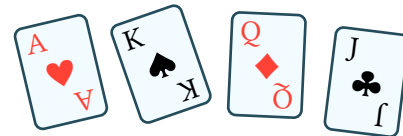


Noise can also be applied to groups of cards, such as **hands** or **decks** (see functions `#deckz.hand` and `#deckz.deck`):

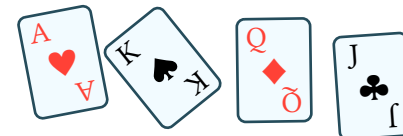
```
// Hand without noise (perfectly aligned)
#deckz.hand("AH", "KS", "QD", "JC",
format: "small", width: 4cm)
```



```
// Hand with moderate noise (slight variations)
#deckz.hand("AH", "KS", "QD", "JC",
format: "small", width: 4cm, noise: 0.5)
```



```
// Hand with high noise (more chaotic appearance)
#deckz.hand("AH", "KS", "QD", "JC",
format: "small", width: 4cm, noise: 1.2)
```



I.5.2 The true nature of random outputs

It is important to note that since *Typst* is a pure functional language, true randomness is not available. Instead, **DECKZ** uses the **SUIJI**³ package to generate **pseudo-random numbers**, which are used to produce a deterministic – but seemingly chaotic – output.

Randomization in **DECKZ** is designed to be simple and intuitive: each function that requires randomness has a `rng` argument (**Random Number Generator**), which can be set to a specific value or left to the default (`auto`).

As a **general rule**:

- *If you don't provide a rng* ⇒ **DECKZ** will instance a **default generator** that is seeded with the current input content (usually, the cards array). This ensures that the same input will always produce the same output, making it **deterministic and reproducible**.
- *If you provide a rng* ⇒ **DECKZ** will use the provided generator and return the new `rng` state along with the produced output. With this approach, you can chain multiple random operations together, ensuring a pseudo-random sequence of results.

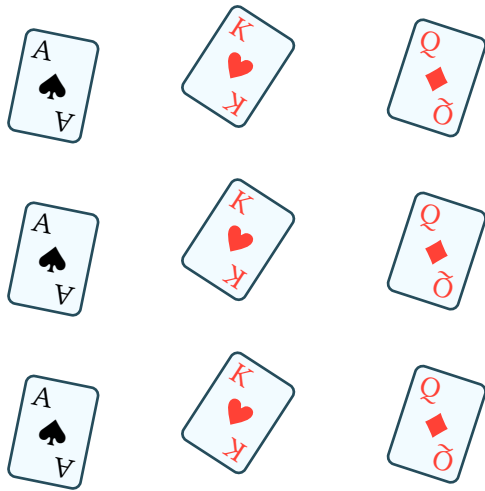
³<https://typst.app/universe/package/suiji>

Let's explore these two modes in detail.

I.5.3 Working with deterministic randomness

When you don't provide an RNG, `DECKZ` creates a deterministic output based on the input:

```
// These three calls will produce identical results
#stack(
  spacing: 5mm,
  deckz.hand("AS", "KH", "QD", format: "small", noise: 1.0, width: 5cm),
  deckz.hand("AS", "KH", "QD", format: "small", noise: 1.0, width: 5cm),
  deckz.hand("AS", "KH", "QD", format: "small", noise: 1.0, width: 5cm)
)
```



This behavior is useful for:

- *Consistent document layouts*: the same cards will always appear the same way.
- *Reproducible examples*: perfect for documentation and tutorials.
- *Version control*: documents will look identical across different compilations.

I.5.4 Creating variation with external RNGs

To get **different visual results** for the same cards, you need to provide your own RNG from outside the function. This can be done using the `suiji`⁴ function `gen-rng-f(seed)`:

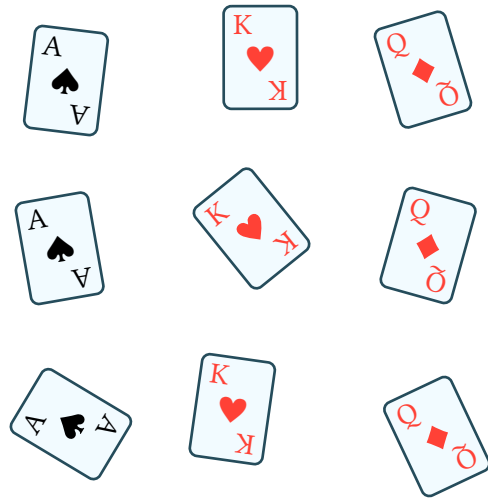
```
#import "@preview/suiji:0.4.0": gen-rng-f


// Create different RNGs with different seeds
#let rng1 = gen-rng-f(42)
#let rng2 = gen-rng-f(123)
#let rng3 = gen-rng-f(999)

// Same cards, different appearances
```

⁴<https://typst.app/universe/package/suiji>

```
#stack(
  spacing: 5mm,
  deckz.hand("AS", "KH", "QD", format: "small", noise: 1.0, width: 5cm, rng:
rng1).last(),
  deckz.hand("AS", "KH", "QD", format: "small", noise: 1.0, width: 5cm, rng:
rng2).last(),
  deckz.hand("AS", "KH", "QD", format: "small", noise: 1.0, width: 5cm, rng:
rng3).last(),
)
```



 *Behind The Scenes.* You may have noticed the `.last()` at the end of each call, in the previous example. This is because when using an external RNG, `DECKZ` functions return a **tuple** containing the new RNG state and the rendered content. To extract the final content, you need to access the last element of the returned tuple, which is done with the `.last()` function call.

However, instead of creating separate RNGs for each call, it is often more convenient to **chain operations** using the same RNG.

```
#import "@preview/suiji:0.4.0": gen-rng-f

#let my-rng = gen-rng-f(42)

// First operation: render a single card
#let (my-rng, card1) = deckz.small("3C", noise: 0.2, rng: my-rng)

// Second operation: use the updated RNG for a different result
#let (my-rng, card2) = deckz.small("3C", noise: 0.9, rng: my-rng)

// Display both cards - they will look different!
#grid(columns: 2, gutter: 1cm, card1, card2)
```



As a general guideline, you can follow these practices when working with randomness in [DECKZ](#):

Use deterministic mode when:

- Creating documentation;
- Building consistent layouts;
- Teaching card game rules;
- Making reproducible examples.

Use external RNGs when:

- Simulating real game scenarios;
- Creating varied visual content;
- Building interactive examples;
- Generating multiple variations.

I.5.5 Manipulate cards with [mix](#)

In addition to rendering, [DECKZ](#) provides functions for **manipulating hands and decks**, such as shuffling or drawing cards. These functions – included in the [mix](#) submodule of [DECKZ](#) – also support RNGs to control randomness.

Here we can see how to **shuffle** a deck of cards (`#deckz.mix.shuffle`) and **draw** a hand of five cards (`#deckz.mix.choose`) from it:

```
#import "@preview/suiji:0.4.0": gen-rng-f

// Shuffle the deck with a specific RNG
#let (my-rng, shuffled-deck) = deckz.mix.shuffle(deckz.deck52, rng: gen-rng-f(42))

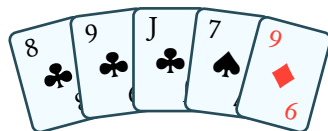
// Display the shuffled deck
The current shuffled deck: #shuffled-deck.map(deckz.inline).join()

// Draw the top 5 cards from the shuffled deck
#let (my-rng, hand) = deckz.mix.choose(shuffled-deck, n: 5, rng: my-rng)

// Display the drawn hand
We draw the following *five cards*: #deckz.hand(..hand, format: "small", width: 3cm)
```

The current shuffled deck: 2♠ 10♦ 5♦ 7♣ 10♣ 4♣ 7♦ 8♣ A♠ 6♥ A♣ 10♥ 8♠ K♦ 6♦ 2♦ K♠ J♠ Q♦ 5♥ 2♣ 9♣ 3♦ 4♥ 9♠ A♥ K♣ 5♠ 5♣ 8♦ 9♥ J♣ 6♠ 8♥ J♥ 7♠ 4♦ A♦ 3♥ 4♠ Q♠ Q♥ 9♦ 7♥ K♥ 2♥ J♦ 3♣ 10♠ Q♣ 6♣ 3♠

We draw the following **five cards**:

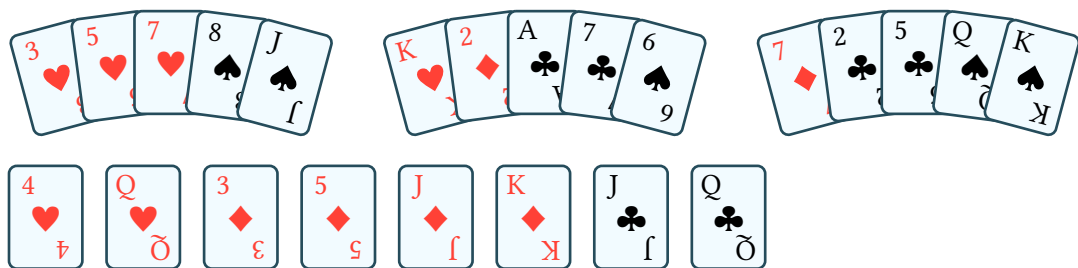


Another function included in the `mix` submodule is `#deckz.mix.split`, which allows to **split a deck** into multiple parts, according to the specified sizes. This can be useful for creating multiple hands or sub-decks from a larger deck.

```
// Randomly split the deck
#let split-deck = deckz.mix.split(deckz.deck52, size: ((3, 5), 8), rest: true)
#let ((hand1, hand2, hand3), board, remaining-cards) = split-deck


// Display the hands and the board
We split the deck into three hands and a board:
#grid(
  columns: (1fr, 1fr, 1fr),
  gutter: 1em,
  deckz.hand(..hand1, format: "small", width: 3cm),
  deckz.hand(..hand2, format: "small", width: 3cm),
  deckz.hand(..hand3, format: "small", width: 3cm),
  deckz.line(..board, format: "small", width: 10cm)
)
There are still *#remaining-cards.len() cards* left in the deck.
```

We split the deck into three hands and a board:



There are still **29 cards** left in the deck.

At first glance, the `#deckz.mix.split` function may seem similar to the `#deckz.mix.choose` function, but it has a fundamental difference: it keeps track of the **remaining cards** in the deck, allowing you to draw more cards later. If you use `#deckz.mix.choose` three times, you will have three different hands, but it's not guaranteed that the same card won't be drawn twice. Instead, `#deckz.mix.split` ensures that the drawn cards are unique and that you can still access the remaining cards in the deck.

 *Behind The Scenes.* For this reason, `#deckz.mix.split` is less efficient than `#deckz.mix.choose`, as it needs to keep track of the remaining cards.

I.6 Arrange and score cards

Up to this point, all cards have been “treated equally”, without regard to their suit or rank. However, in most card games, the arrangement and value of cards are crucial – winning often

depends on how cards are sorted and scored, and specific combinations can determine the outcome.

For this reason, the [arr](#) and [val](#) sub-modules of [DECKZ](#) include **sorting** and **scoring** functions respectively, for organizing cards and evaluating hands according to the rules of the most popular card games (especially poker).

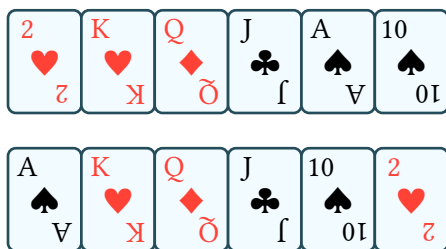
I.6.1 Sort hands with [arr](#)

The `#deckz.arr.sort` function **organizes cards array by different criteria**. The resulting array of cards can be passed to a function for group visualization, such as `#deckz.hand`, to display the cards in a specific order.

```
// Define an unordered set of cards
#let cards = ("AS", "KH", "QD", "JC", "10S", "2H")

// Sort by standard order (suit first, then rank)
#deckz.line(..deckz.arr.sort(cards, by: "order"), format: "small")

// Sort by score (high cards first: A, K, Q, J, 10...)
#deckz.line(..deckz.arr.sort(cards, by: "score"), format: "small")
```



Sometimes it can be useful to **count or group cards in the hand** according to their suit or rank, for example to display them in a more organized way. The `#deckz.arr.group-ranks` and `#deckz.arr.group-suits` functions can be used for this purpose.

```
#let hand = ("AS", "AH", "KS", "KH", "QD", "5H")

// Count occurrences of each rank
Count the number of each rank in a hand:
#deckz.arr.count-ranks(hand)

// Group cards by rank or suit
Group cards by *rank*:
#for (rank, cards) in deckz.arr.group-ranks(hand).pairs() [
  - #rank: #cards
]
Group cards by *suit*:
#for (suit, cards) in deckz.arr.group-suits(hand).pairs() [
```

- #suit: #cards

]

Count the number of each rank in a hand: (ace: 2, king: 2, queen: 1, five: 1)

Group cards by rank:

- ace: ("AS", "AH")
- king: ("KS", "KH")
- queen: ("QD",)
- five: ("5H",)

Group cards by suit:

- spade: ("AS", "KS")
- heart: ("AH", "KH", "5H")
- diamond: ("QD",)















I.6.2 Score hands with val

DECKZ includes functions to **evaluate hands of cards** according to the rules of the most common card games. More specifically, it is possible to assess **poker hands** with three types of functions:

- **Detection**: check if a hand *contains* a specific combinations.
- **Validation**: check if a hand *exactly matches* a specific combination.
- **Hand Extraction**: extract *all possible combinations* of a specific type from a hand.

Behind The Scenes. The combinations recognized by DECKZ are the standard poker combinations:

Combination	Description	Example
high-card	The singular highest card of the hand	
pair	A pair of cards with the same rank	
two-pairs	Two pairs of cards with the same rank	
three-of-a-kind	Three cards of the same rank	
straight	Five cards in a sequence, regardless of suit	
flush	Five cards of the same suit	
full-house	Three cards of one rank and two cards of another	
four-of-a-kind	Four cards of the same rank	

		   
straight-flush	Five cards in a sequence, all of the same suit	    
five-of-a-kind	Five cards of the same rank (only possible with multiple copies of the same card)	    

Detection and validation

[DECKZ](#) offers many functions to check if a hand **contains** (has-X) or **exactly matches** (is-X) a specific combination X (where X is one of the combinations defined in the table above).

Detection and validation functions return a bool value, and can be used as follows:

```
#let cards = ("AS", "AH", "KD", "QC", "JH")
#deckz.val.has-pair(cards) // true (contains a pair)
#deckz.val.is-pair(cards) // false (5 cards, not exactly 2)
#deckz.val.is-pair(("AS", "AH")) // true (exactly 2 matching cards)
```

```
true false true
```

Extraction of a given combination

[DECKZ](#) offers many functions to **extract** all possible combinations of a specific type from a hand. The return type is an array of all combinations found, which can be used to display the cards in a specific order or to evaluate the hand.

```
#let available-cards = ("AS", "AH", "KS", "KH", "QD")

// Get all possible pairs from these cards
All possible pairs:
#for pair in deckz.val.extract-pair(available-cards) [ - #pair ]

// Find the best hand automatically
Best hand combination:
#deckz.val.extract-highest(available-cards).first()
```

```
All possible pairs:
• ("AS", "AH")
• ("KS", "KH")

Best hand combination: ("AS", "AH", "KS", "KH")
```

The general `#deckz.val.extract` function can be used to extract any combination specified with the `#deckz.val.extract.scoring-combination` parameter.

```
#let some-cards = ("AS", "3H", "KS", "3C", "2C", "3S", "6H", "7H", "3D")
```

```
// These are equivalent:
```

```
Extracted combinations:
```

```
#deckz.val.extract("three-of-a-kind", some-cards)
```

```
Extracted combinations:
```

```
#deckz.val.extract-three-of-a-kind(some-cards)
```

```
Extracted combinations: (
```

```
  ("3H", "3C", "3S"),
```

```
  ("3H", "3C", "3D"),
```

```
  ("3H", "3S", "3D"),
```

```
  ("3C", "3S", "3D"),
```

```
)
```

```
Extracted combinations: (
```


```
  ("3H", "3C", "3S"),
```

```
  ("3H", "3C", "3D"),
```

```
  ("3H", "3S", "3D"),
```

```
  ("3C", "3S", "3D"),
```

```
)
```

 *Behind The Scenes.* All extraction functions are **stable functions**, meaning they evaluate the hand in a consistent order: if two cards have a certain order, their relative order will be preserved in the output. This is particularly useful for games where the order of cards matters.

Part II

Documentation

II.1 Card visualization

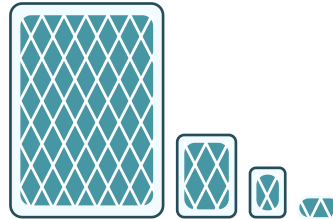
This section provides a comprehensive overview of the `DECKZ` package's **card visualization** capabilities. It presents the available formats and how to use them effectively.

<code>#deckz.back</code>	<code>#deckz.medium</code>	<code>#deckz.small</code>
<code>#deckz.inline</code>	<code>#deckz.mini</code>	<code>#deckz.square</code>
<code>#deckz.large</code>	<code>#deckz.render</code>	

`#deckz.back({format}: "medium") → content`

Renders the back of a card in the specified format. Currently, it only supports one style, which is a simple rectangle with a rhombus pattern.

```
#deckz.back(format: "medium")
#deckz.back(format: "small")
#deckz.back(format: "mini")
#deckz.back(format: "inline")
```



Argument

`{format}: "medium"`

str

The format of the card back, defaults to "medium". Available formats: "inline"|"mini"|"small"|"medium"|"large"|"square".

`#deckz.inline({card}, ..{args}) → content`

Renders a card with the "inline" format. The card is displayed in a compact style: text size is coherent with the surrounding text, and the card is rendered as a simple text representation of its rank and suit.

```
#Lorem(10)
#deckz.inline("AS"), #deckz.inline("3S")
#Lorem(10)
#deckz.inline("KH").
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do. A♠, 3♠ Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do. K♥.

This is a wrapper around the `#deckz.render` function with the format set to "inline". Every additional argument passed to this function will be forwarded to the `#deckz.render` function.

Argument

`{card}`

str

The code of the card you want to represent.

Argument

`..{args}`

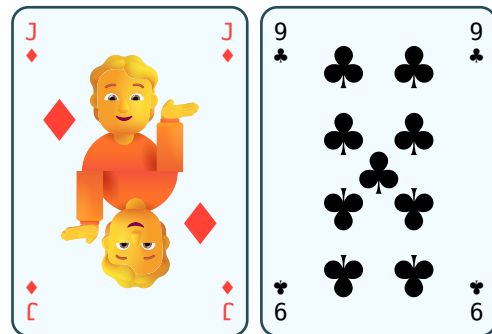
any

Additional arguments to pass to the rendering function `#deckz.render`.

`#deckz.large({card}, ..{args})` → `content`

Renders a card with the “**large**” format, emphasizing the card’s details: all four corners are used to display the rank and suit, with a large central representation. Like other formats, the large format is responsive to text size; corner summaries are scaled accordingly to the current text size.

```
#deckz.large("JD")
#deckz.large("9C")
```



This is a wrapper around the `#deckz.render` function with the format set to “large”. Every additional argument passed to this function will be forwarded to the `#deckz.render` function.

Argument

`{card}`

str

The code of the card you want to represent.

Argument

`..{args}`

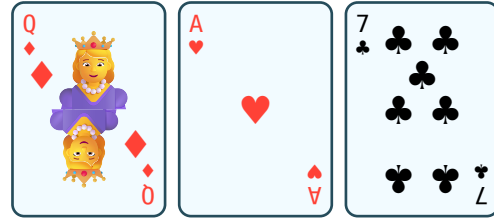
any

Additional arguments to pass to the rendering function `#deckz.render`.

`#deckz.medium({card}, ..{args})` → `content`

Renders a card with the “**medium**” format: a full, structured card layout with two corner summaries and realistic suit placement. The medium format is usually the default format for card rendering in `DECKZ`.

```
#deckz.medium("QD")
#deckz.medium("AH")
#deckz.medium("7C")
```



This is a wrapper around the `#deckz.render` function with the format set to “medium”. Every additional argument passed to this function will be forwarded to the `#deckz.render` function.

Argument

`{card}`

str

The code of the card you want to represent.

Argument

`..{args}`

any

Additional arguments to pass to the rendering function `#deckz.render`.

`#deckz.mini({card}, ..{args})` → content

Renders a card with the “mini” format. The card is displayed in a very compact style, suitable for dense layouts. The frame size is responsive to text, and it contains a small representation of the card’s rank and suit.

```
#deckz.mini("JC")
#deckz.mini("AH")
#deckz.mini("5S")
#deckz.mini("9D")
#deckz.mini("4H")
#deckz.mini("3C")
#deckz.mini("2D")
#deckz.mini("KS")
```



This is a wrapper around the `#deckz.render` function with the format set to “mini”. Every additional argument passed to this function will be forwarded to the `#deckz.render` function.

Argument

`{card}`

str

The code of the card you want to represent.

Argument

`..{args}`

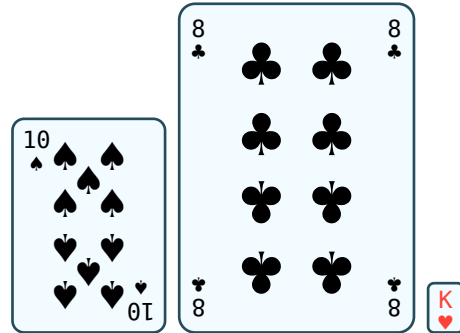
any

Additional arguments to pass to the rendering function `#deckz.render`.

`#deckz.render({card}, {format}: "medium", {noise}: none, {rng}: auto)` → content

Render function to view cards in different formats. This function allows you to specify the format of the card to be rendered. Available formats include: inline, mini, small, medium, large, and square.

```
#deckz.render("10S")
#deckz.render(format: "large", "8C")
#deckz.render(format: "mini", "KH")
```



Argument

(card)

str

The code of the card you want to represent.

Argument

(format): "medium"

str

The selected format of the card. Available formats are: "inline" | "mini" | "small" | "medium" | "large" | "square".

Argument

(noise): none

float | none

The amount of “randomness” in the placement and rotation of the card. Default value is **none** or **0.0**, which corresponds to no variations. A value of **1.0** corresponds to a “standard” amount of noise, according to **DECKZ** style. Higher values might produce crazy results, handle with care.

Argument

(rng): auto

rng | auto

The random number generator to use for the noise. If not provided or set to default value **auto**, a new random number generator will be created. Otherwise, you can pass an existing random number generator to use.

#deckz.small({card}, ..{args}) → **content**

Renders a card with the “**small**” format. The card is displayed in a concise style, balancing readability and space: the card’s rank is shown symmetrically in two corners, with the suit displayed in the center.

```
#deckz.small("3S")
#deckz.small("6H")
#deckz.small("QS")
#deckz.small("5D")
#deckz.small("AC")
#deckz.small("4S")
```



This is a wrapper around the `#deckz.render` function with the format set to “small”. Every additional argument passed to this function will be forwarded to the `#deckz.render` function.

Argument

`{card}`

str

The code of the card you want to represent.

Argument

`..(args)`

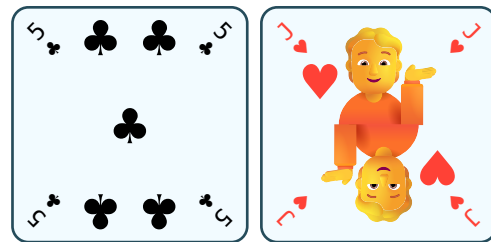
any

Additional arguments to pass to the rendering function `#deckz.render`.

`#deckz.square({card}, ..(args))` → `content`

Renders a card with the “square” format, i.e. with a frame layout with 1:1 ratio. This may be useful for grid layouts or for situations where the cards are often rotated in many directions, because the corner summaries are placed diagonally.

```
#deckz.square("5C")
#deckz.square("JH")
```



This is a wrapper around the `#deckz.render` function with the format set to “square”. Every additional argument passed to this function will be forwarded to the `#deckz.render` function.

Argument

`{card}`

str

The code of the card you want to represent.

Argument

`..(args)`

any

Additional arguments to pass to the rendering function `#deckz.render`.

II.2 Group visualization

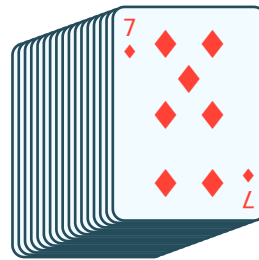
This section covers the **group visualization** features of the [DECKZ](#) package, i.e. all functions that allow you to visualize groups of cards, such as hands, decks, and heaps.

```
#deckz.deck          #deckz.heap
#deckz.hand          #deckz.line
```

```
#deckz.deck(
  {top-card},
  {format}: "medium",
  {angle}: 60deg,
  {height}: 1cm,
  {noise}: none,
  {rng}: auto
) → content
```

Renders a **stack** of cards, as if they were placed one ontop of each other. Calculates the number of cards based on the given height ([#deckz.deck.height](#)), and spaces them evenly along the specified angle ([#deckz.deck.angle](#)). Each card is rendered with a positional shift to create a fanned deck appearance.

```
#deckz.deck(
  angle: 20deg,
  height: 1.5cm,
  "7D"
)
```



Argument

{top-card}

str

The **top card** in the deck, with standard code representation.

Argument

{format}: "medium"

str

The **format** to use for rendering each card. Default is “medium”.

Argument

{angle}: 60deg

angle

The **angle** at which the deck is fanned out. Default is 60deg.

Argument

{height}: 1cm

height

The total **height** of the deck stack. This determines how many cards are rendered in the stack, as one card is displayed for every **2.5pt** of height.

Argument

{noise}: **none**

float | **none**

The amount of “**randomness**” in the placement and rotation of the card. Default value is “none” or “0”, which corresponds to no variations. A value of 1 corresponds to a “standard” amount of noise, according to Deckz style. Higher values might produce crazy results, handle with care.

Argument

{rng}: **auto**

rng | **auto**

The **random number generator** to use for the noise. If not provided or set to default value **auto**, a new random number generator will be created. Otherwise, you can pass an existing random number generator to use.

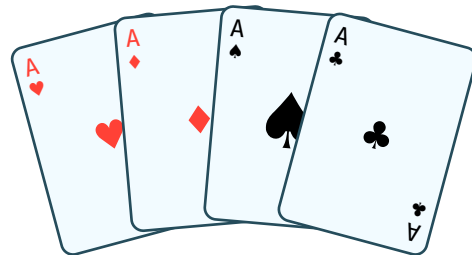
```
#deckz.hand(
  ..{cards},
  {format}: "medium",
  {angle}: 30deg,
  {width}: 10cm,
  {noise}: none,
  {rng}: auto
```

) → **content**

Displays a **sequence of cards** in a horizontal hand layout and applying a slight rotation to each card, creating an arched effect.

This function is useful for displaying a hand of cards in a visually appealing way. It accepts any number of cards, each represented by a string identifier (e.g., "AH" for Ace of Hearts).

```
#deckz.hand(
  width: 100pt,
  "AH", "AD", "AS", "AC"
  // Poker of Aces
)
```



Argument

..{cards}

array

The list of **cards** to display, with standard code representation.

Argument

`{format}: "medium"``str`

The **format** of the cards to render. Default is “medium”. Available formats: inline, mini, small, medium, large, square.

Argument

`{angle}: 30deg``angle`

The **angle** between the first and last card, i.e. the angle covered by the arc.

Argument

`{width}: 10cm``length`

The **width** of the hand, i.e. the distance between the first and last card.

Argument

`{noise}: none``float``none`

The amount of “**randomness**” in the placement and rotation of the card. Default value is “none” or “0”, which corresponds to no variations. A value of “1” corresponds to a “standard” amount of noise, according to [DECKZ](#) style. Higher values might produce crazy results, handle with care.

Argument

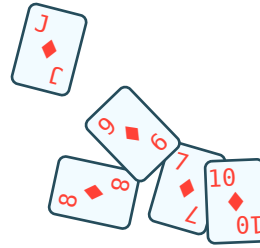
`{rng}: auto``rng``auto`

The **random number generator** to use for the noise. If not provided or set to default value `auto`, a new random number generator will be created. Otherwise, you can pass an existing random number generator to use.

```
#deckz.heap(
  ..{cards},
  {format}: "medium",
  {width}: 10cm,
  {height}: 10cm,
  {exceed}: false,
  {rng}: auto
) → content
```

Renders a **heap** of cards, randomly placed in the given area. The cards are placed in a random position within the specified width (`#deckz.heap.width`) and height (`#deckz.heap.height`), with a random rotation applied to each card. The `#deckz.heap.exceed` parameter controls whether cards can exceed the specified frame dimensions or not.

```
#deckz.heap(  
  format: "small",  
  width: 5cm,  
  height: 4cm,  
  "7D", "8D", "9D", "10D", "JD"  
)
```



Argument

`..(cards)`

array

The **cards to display**, with standard code representation. The last cards are represented on top of the previous one, as the rendering follows the given order.

Argument

`{format}: "medium"`

str

The **format** to use for rendering each card. Default is “medium”.

Argument

`{width}: 10cm`

length

The **horizontal dimension** of the area in which cards are placed.

Argument

`{height}: 10cm`

length

The **vertical dimension** of the area in which cards are placed.

Argument

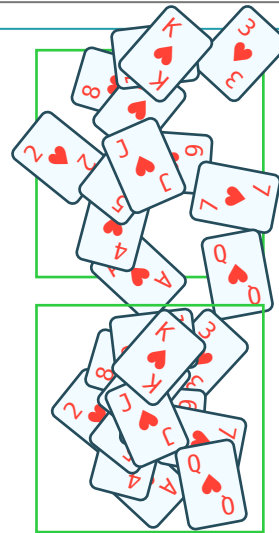
`{exceed}: false`

bool

If true, allows cards to **exceed the frame** with the given dimensions. When the parameter is false, instead, cards placement considers a margin of half the card length on all four sides. This way, it is guaranteed that cards are placed within the specified frame size. Default is false.

```
// Example with `exceed: true`
#box(width: 3cm, height: 3cm, stroke:
green)[
  #place(center + horizon, deckz.heap(
    format: "small",
    width: 3cm,
    height: 3cm,
    exceed: true,
    ..deckz.deck52.slice(0, 13)
  ))
]

// Example with `exceed: false`
#box(width: 3cm, height: 3cm, stroke:
green)[
  #place(center + horizon, deckz.heap(
    format: "small",
    width: 3cm,
    height: 3cm,
    exceed: false,
    ..deckz.deck52.slice(0, 13)
  ))
]
```



Argument

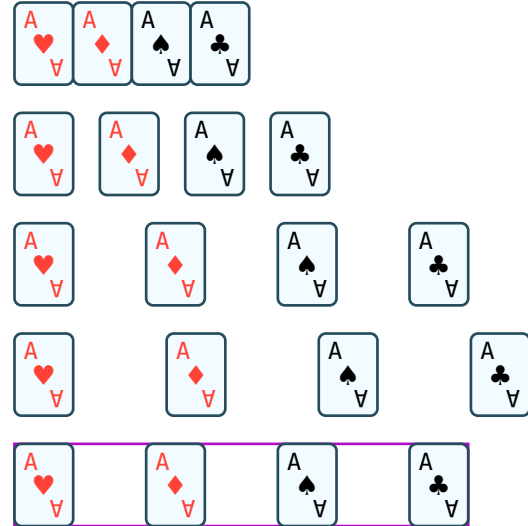
(rng): **auto**rng | **auto**

The **random number generator** to use for cards displacement. If not provided or set to default value **auto**, a new random number generator will be created. Otherwise, you can pass an existing random number generator to use.

```
#deckz.line(
  ..{cards},
  {format}: "medium",
  {spacing}: auto,
  {width}: auto,
  {noise}: none,
  {rng}: auto
) → content
```

Displays a **sequence of cards** in a horizontal line layout. The function accepts any number of cards, each represented by a string identifier (e.g., "AH" for Ace of Hearts). It accepts parameters to control the format of the cards and the area they occupy. The value of spacing determines the space between adjacent cards, while width specifies the total width of the line. **Important:** being one dependent on the other, only one parameter between spacing and width can be set to a specific value at a time. If none of them is set, cards are placed adjacent with no extra space.

```
#let hand = ("AH", "AD", "AS", "AC")
#deckz.line(..hand, format: "small")
#deckz.line(..hand, format: "small", spacing:
10pt)
#deckz.line(..hand, format: "small", width:
6cm)
#deckz.line(..hand, format: "small", width:
100%)
#box(width: 6cm, stroke: purple)[
  #deckz.line(..hand, format: "small", width:
100%)
]
```



Argument

`..(cards)`

array

The list of **cards** to display, with standard code representation.

Argument

`{format}: "medium"`

str

The **format** of the cards to render. Default is “medium”. Available formats: inline, mini, small, medium, large, square.

Argument

`{spacing}: auto`

length | auto | none

The **spacing** between adjacent cards.

- If set, cards are distributed with the specified spacing.
- Default is **auto**. If left to default value, cards are placed adjacent with no extra space.
- In any other case – i.e. when spacing is set to a specific positive non-zero value, the function requires width to be left as **auto** or set to **none** otherwise, the function will panic.

Argument

`{width}: auto`

length | auto | none

The **total width** of the line, measured from the center of the first card to the center of the last card.

- If set, cards are distributed evenly along this width.
- Requires spacing to be left as **auto** or set to **none** otherwise, the function will panic.
- Default is **auto**. If both width and spacing are **auto**, cards are placed adjacent with no extra space.

Argument

`{noise}: none``float | none`

The amount of “**randomness**” in the placement and rotation of the card. Default value is `none` or `0`, which corresponds to no variations. A value of `1` corresponds to a “standard” amount of noise, according to `DECKZ` style. Higher values might produce crazy results, handle with care.

Argument

`{rng}: auto``rng | auto`

The **random number generator** utilized for the noise. If not provided or set to default value `auto`, a new random number generator will be created. Otherwise, you can pass an existing random number generator to use.

II.3 Data

This section provides an overview of the **data structures** used in the [DECKZ](#) package, including suits, ranks, and cards. It explains how these data structures are organized and how to access them.

#suits

dictionary

A mapping of all **suit symbols** utilized in [DECKZ](#).

Primarily intended for internal use within higher-level functions, but can also be accessed directly, for example, to iterate over the four suits.

```
#stack(
  dir: ltr,
  spacing: 1em,
  ..deckz.suits.values().map(suit-data => {
    text(suit-data.color)[#suit-data.symbol]
  })
)
```

♥ ♦ ♣ ♠

#ranks

dictionary

A mapping of all **rank symbols** utilized in [DECKZ](#).

This dictionary is primarily intended for internal use within higher-level functions, but can also be accessed directly, for example, to iterate over the ranks.

```
#table(
  columns: 5 * (1fr, ),
  ..deckz.ranks.keys()
)
```

ace	two	three	four	five
six	seven	eight	nine	ten
jack	queen	king		

#cards52

dictionary

This is a dictionary of **all the cards in a deck**.

It is structured as `cards.<suit-k>.<rank-k>`, where:

- `<suit-k>` is one of the keys from the suits dictionary, and
- `<rank-k>` is one of the keys from the ranks dictionary.

The value associated with each (rank, suit) pair is the **card code**, which is a string in the format `<rank-s><suit-s>`, where `<rank-s>` is the rank symbol and `<suit-s>` is the first letter of the suit key in uppercase.

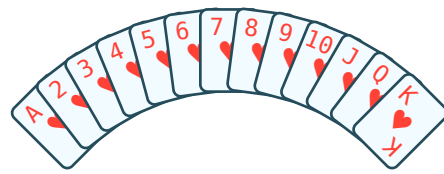
```
#deckz.cards52.heart.ace // Returns "AH"
#deckz.cards52.spade.king // Returns "KS"
#deckz.cards52.diamond.ten // Returns "10D"
#deckz.cards52.club.three // Returns "3C"
```

AH KS 10D 3C

This dictionary can be used to access any card in a standard deck of 52 playing cards by its suit and rank, and use it in various functions that require a card code.

Here is an example using the `#deckz.hand` function:

```
#deckz.hand(
  format: "small",
  width: 128pt,
  angle: 90deg,
  ..deckz.cards52.heart.values(),
)
```



#deck52

array

A list of all the cards in a standard deck of 52 playing cards. It is a *flat* list of **card codes**, where each code is a string in the format <rank-s><suit-s>, where <rank-s> is the rank symbol and <suit-s> is the first letter of the suit key in uppercase. It is created programmatically from the suits and ranks dictionaries.

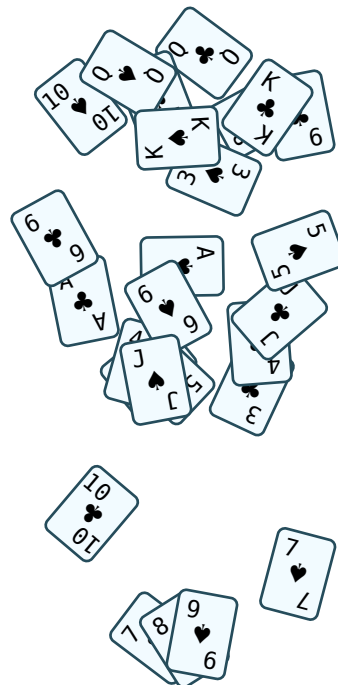
```
#table(
  columns: 13,
  align: center,
  stroke: none,
  ..deckz.deck52,
)
```

```
AH 2H 3H 4H 5H 6H 7H 8H 9H 10H JH QH KH
AD 2D 3D 4D 5D 6D 7D 8D 9D 10D JD QD KD
AC 2C 3C 4C 5C 6C 7C 8C 9C 10C JC QC KC
AS 2S 3S 4S 5S 6S 7S 8S 9S 10S JS QS KS
```

This array can be used in various functions that require a list of card codes, such as `#deckz.hand`, `#deckz.deck`, or `#deckz.heap`.

Here is an example using the `#deckz.heap` function:

```
#deckz.heap(
  format: "small",
  width: 128pt,
  height: 10cm,
  ..deckz.deck52.slice(26, 52),
)
```



II.4 Randomization

The `DECKZ` package includes essential **randomization features** for card games, such as shuffling and drawing random cards from a deck. However, since `Typst` is a pure functional language, true randomness is not available; instead, `DECKZ` uses the `SUIJI`⁵ package to generate pseudo-random numbers.

This section explains how to use these randomization tools within `DECKZ`, describes the underlying concepts, and provides practical guidance for integrating randomness into your projects. Randomization functions are available under the `deckz.mix` namespace, and they include:

`#deckz.mix.choose`

`#deckz.mix.shuffle`

`#deckz.mix.split`

`#deckz.mix.choose`(

```
{cards},
{n): 1,
{replacement): false,
{permutation): false,
{rng): auto
```

) → `array`

Choose `n` cards from the given array of cards, optionally allowing replacement and permutation. This is useful for drawing random cards from a deck or selecting cards from a hand.

The function behaves as follows in case of different values of `n`:

- If `n` is 1 (the default), it will return a single card chosen randomly from the given cards. The card will be contained in an array of length 1.
- If `n` is greater than 1, it will return an array of `n` cards chosen randomly from the given cards.
 - If `replacement` is `true`, the same card can be chosen multiple times. This means that the function can return duplicates in the resulting array.
- If `n` is greater than the number of cards and `replacement` is `false`, the function will return all cards (optionally shuffled, if `permutation` is `true`). This corresponds to drawing all cards from the deck.
- If `n` is 0 or less, the function will return an empty array.

This function uses the `suiji.choose-f` function from the `SUIJI`⁶ library to draw elements from the array. As such, it accepts a **random number generator** (`rng`) as an optional parameter (more information in the `#deckz.mix.choose.rng` parameter documentation).

The return value of this function depends on the `rng` parameter:

- If `rng` is set to `auto`, the function will return only the chosen cards, i.e. an array of cards.
- If `rng` is set to a specific `rng`, the function will return a tuple containing the updated `rng` and the chosen cards. *(This is useful if you want to use the same `rng` across multiple calls involving pseudo-randomness, or if you want to use a specific random number generator that you have already created.)*

⁵<https://typst.app/universe/package/suiji>

⁶<https://typst.app/universe/package/suiji>

Argument

`(cards)`

array

The cards to choose from.

Argument

`(n): 1`

int

The number of cards to choose. Default is 1, meaning that only one card will be chosen from the given cards.

If `n` is greater than the number of cards and `replacement` is `false`, the function will return an error. If `replacement` is `true`, the function will return `n` cards, possibly including duplicates. If `n` is 0 or less, the function will return an empty array.

Argument

`(replacement): false`

bool

Whether to allow replacement of cards. If `true`, the same card can be chosen multiple times. If `false`, each card can only be chosen once.

Argument

`(permutation): false`

bool

Whether the sample is permuted when choosing. If `true`, the order of the chosen cards is random. If `false`, the order of the chosen cards is the same as in the original array. According to the `suiji` library, `false` provides a faster implementation, but the order of the chosen cards will not be random.

Argument

`(rng): auto`

(suiji.rng)

The **random number generator** (`rng`) to use, from the `suiji`⁷ package.

- **Default value** is `auto`, which corresponds to creating a new `rng` internally and automatically, using a seed derived from the cards. (*This means that the choice will be deterministic based on the input cards, and the same cards will always produce the same selection.*) Using the `auto` value is recommended for most use cases, especially when this is the only time you need a pseudo-random number generator in your code.
- The other option is to provide an **externally-defined** `rng`, which will be used and updated according to the `Suiji` library's conventions. This is useful when you want to use the same `rng` across multiple calls, or when you want to use a specific random number generator that you have already created.

The value of this parameter also influences the return value of the function:

- If `rng` is set to `auto`, the function will return **only the chosen cards**, i.e. an array of cards.

⁷<https://typst.app/universe/package/suiji>

- If `rng` is set to a specific `rng`, the function will return a **tuple** containing the updated `rng` and the chosen cards.

`#deckz.mix.shuffle((cards), (rng): auto) → array`

Shuffle the given cards and return the **shuffled array**, i.e. a new array with the same elements in a different (random) order.

To handle randomness, this function accepts a **random number generator** (`rng`) as an optional parameter. This `rng` follows the conventions of the [suiji](#)⁸ library, which provides a random number generator. See the `#deckz.mix.shuffle.rng` parameter documentation for more information.

This function also relies on the `suiji.shuffle-f` function from the [suiji](#)⁹ library to shuffle the cards.

The return value of this function depends on the `rng` parameter:

- If `rng` is set to `auto`, the function will return only the shuffled cards, i.e. an array of cards in a random order.
- If `rng` is set to a specific `rng`, the function will return a tuple containing the updated `rng` and the shuffled cards. *(This is useful if you want to use the same `rng` across multiple calls to the `shuffle` function, or if you want to use a specific random number generator that you have already created.)*

Argument

`(cards)`

array

The cards to shuffle.

Argument

`(rng): auto`

(`suiji.rng`)

The **random number generator** (`rng`) to use, from the [suiji](#)¹⁰ package.

- **Default value** is `auto`, which corresponds to creating a new `rng` internally and automatically, using a seed derived from the cards. *(This means that the shuffling will be deterministic based on the input cards, and the same cards will always produce the same shuffled order.)* Using the `auto` value is recommended for most use cases, especially when this is the only time you need a pseudo-random number generator in your code.
- The other option is to provide an **externally-defined** `rng`, which will be used and updated according to the Suiji library's conventions. This is useful when you want to use the same `rng` across multiple calls to the `shuffle` function, or when you want to use a specific random number generator that you have already created.

⁸<https://typst.app/universe/package/suiji>

⁹<https://typst.app/universe/package/suiji>

¹⁰<https://typst.app/universe/package/suiji>

The value of this parameter also influences the return value of the function:

- If `rng` is set to `auto`, the function will return **only the shuffled cards**.
- If `rng` is set to a specific `rng`, the function will return **a tuple** containing the updated `rng` and the shuffled cards.

`#deckz.mix.split({cards}, {size}: 1, {rest}: true, {rng}: auto) → array`

Split the given deck of cards into groups of specified sizes. This is useful for dealing cards to players or creating smaller decks from a larger one.

The split is governed by the `#deckz.mix.split.size` parameter, which can be a *single integer* (if only one group of cards should be split from the original deck array) or an *array of integers* (if multiple groups should be dealt from the same original deck array). With this function, cards are guaranteed to be dealt **in-place**, meaning that the order of the cards in the original deck is preserved in the output groups. If you want to shuffle the cards before splitting them, you can use the `#deckz.mix.shuffle` function before calling this function.

The function produces an array containing **the groups of cards**, with some important warnings:

- if the `#deckz.mix.split.rest` is `true`, the returned array will contain all cards in the input deck, with the remaining cards (i.e. those which were not split into groups of the specified sizes) at the end of the array, in one single group.
- if the `#deckz.mix.split.rest` is `false`, the returned array will contain only the split cards, and those which are not contained in the split groups will be discarded.

Also, the function accepts a **random number generator** (`rng`) as an optional parameter. This `rng` follows the conventions of the `suiji`¹¹ library, which provides a random number generator. See the `#deckz.mix.split.rng` parameter documentation for more information.

The return value of this function depends on the `rng` parameter:

- If `rng` is set to `auto`, the function will return only the split groups, i.e. an array of arrays of cards.
- If `rng` is set to a specific `rng`, the function will return a tuple containing the updated `rng` and the split groups. *(This is useful if you want to use the same `rng` across multiple calls involving pseudo-randomness, or if you want to use a specific random number generator that you have already created.)*

Argument

`{cards}`

array

The deck of cards to split.

Argument

`{size}: 1`

int | array

The size of the groups that the deck will be split into. This parameter can accept:

- An **integer**, which will be used as the size of only one group.

¹¹<https://typst.app/universe/package/suiji>

```
1 #deckz.split(cards, size: 5) // Splits the deck into a group of 5
   cards, and the rest of the cards.
```

- An **array of sizes** (where “sizes” are integers or array of integers), which will be used as the sizes of the groups.

```
#deckz.split(cards, size: (5, 3, 2)) // Splits the deck into three
1 groups of 5, 3, and 2 cards respectively, and the rest of the
   cards in a fourth group.
#deckz.split(cards, size: (5, (3, 2))) // Splits the deck into a
2 first group of 5 cards, a second group with of 6 cards structured
   as a _bidimensional matrix_ of dimensions 3x2, and a last group
   with the remaining cards.
```

Argument

(rest): **true**

bool

Whether or not the function should return the rest of the cards after splitting. If **true**, the returned array will contain all cards in the input deck, with the remaining cards (i.e. the non-split cards) at the end. Default is **true**. If **false**, the returned array will contain only the split cards, and those which are not contained in the split size will be discarded.

Argument

(rng): **auto**

(suiji.rng)

The **random number generator** (rng) to use, from the [suiji](https://typst.app/universe/package/suiji)¹² package.

- **Default value** is **auto**, which corresponds to creating a new rng internally and automatically, using a seed derived from the cards. (*This means that the split will be deterministic based on the input cards, and the same cards will always produce the same groups.*) Using the **auto** value is recommended for most use cases, especially when this is the only time you need a pseudo-random number generator in your code.
- The other option is to provide an **externally-defined** rng, which will be used and updated according to the Suiji library’s conventions. This is useful when you want to use the same rng across multiple calls, or when you want to use a specific random number generator that you have already created.

The value of this parameter also influences the return value of the function:

- If rng is set to **auto**, the function will return **only the produced groups**, i.e. an array of arrays of cards.
- If rng is set to a specific rng, the function will return **a tuple** containing the updated rng and the produced content.

¹²<https://typst.app/universe/package/suiji>

II.5 Arranging hands

This section covers the **sorting and organizing functions** available in the `arr` module in the `DECKZ` package. It explains how to sort cards by rank, suit, and other criteria, providing a foundation for building more complex card games and applications.

<code>#deckz.arr.count-ranks</code>	<code>#deckz.arr.group-ranks</code>	<code>#deckz.arr.sort</code>
<code>#deckz.arr.count-suits</code>	<code>#deckz.arr.group-suits</code>	<code>#deckz.arr.sort-by-order</code>
<code>#deckz.arr.find-ranks</code>	<code>#deckz.arr.order-comparator</code>	<code>#deckz.arr.sort-by-score</code>
<code>#deckz.arr.find-suits</code>	<code>#deckz.arr.score-comparator</code>	

`#deckz.arr.count-ranks`(`{cards}`, `{add-zero}`: `false`, `{allow-invalid}`: `false`) → `dictionary`

Get the count of each rank in the given cards. This function returns a dictionary where the keys are the ranks and the values are the counts of how many times each rank appears in the provided cards.

Argument —

`{cards}` `array`

The cards to check for rank counts. This can be a list or any iterable collection of card codes.

Argument —

`{add-zero}`: `false` `bool`

If true, the function will add a zero count for ranks that do not appear in the cards.
Default: `false`

Argument —

`{allow-invalid}`: `false` `bool`

If true, the function will also count cards that are not valid according to the `extract-card-data` function. This is useful for debugging or when you want to include all cards regardless of their validity. Default: `false`

`#deckz.arr.count-suits`(`{cards}`, `{add-zero}`: `false`, `{allow-invalid}`: `false`) → `dictionary`

Get the count of each suit in the given cards. This function returns a dictionary where the keys are the suits and the values are the counts of how many times each suit appears in the provided cards.

Argument —

`{cards}` `array`

The cards to check for suit counts. This can be a list or any iterable collection of card codes.

Argument

`(add-zero): false`

bool

If true, the function will add a zero count for suits that do not appear in the cards.
Default: false

Argument

`(allow-invalid): false`

bool

If true, the function will also count cards that are not valid according to the `extract-card-data` function. This is useful for debugging or when you want to include all cards regardless of their validity Default: false

`#deckz.arr.find-ranks({cards}, {allow-invalid}: false) → dictionary`

For each rank, check if it is present in the given cards. This function returns a dictionary where the keys are the ranks and the values are booleans indicating whether that rank is present in the provided cards. This is more efficient than counting the ranks with the function `#deckz.arr.count-ranks`, as it only checks for presence and does not count occurrences.

Argument

`(cards)`

array

The cards to check for rank presence. This can be a list or any iterable collection of card codes.

Argument

`(allow-invalid): false`

bool

If true, the function will also count cards that are not valid according to the `extract-card-data` function. This will add one entry with the key `none` to the result if there are invalid cards. If false, the function will panic if it finds an invalid card, returning `none`. Default: false

`#deckz.arr.find-suits({cards}, {allow-invalid}: false) → dictionary`

For each suit, check if it is present in the given cards. This function returns a dictionary where the keys are the suits and the values are booleans indicating whether that suit is present in the provided cards. This is more efficient than counting the suits with the function `#deckz.arr.count-suits`, as it only checks for presence and does not count occurrences.

Argument

`(cards)`

array

The cards to check for suit presence. This can be a list or any iterable collection of card codes.

Argument

`(allow-invalid): false`

bool

If true, the function will also count cards that are not valid (i.e. whose rank symbol does not correspond to any of the known ranks). This will add one entry with the key

none to the result if there are invalid cards. If false, the function will panic if it finds an invalid card, returning none. Default: false

#deckz.arr.group-ranks(**{cards}**, **{add-zero}**: false, **{allow-invalid}**: false) → **dictionary**

Sort the given cards by their rank. This function returns a dictionary where the keys are the ranks and the values are arrays of cards that have that rank.

Argument

{cards}

array

The cards to sort by rank. This can be a list or any iterable collection of card codes.

Argument

{add-zero}: false

bool

If true, the function will add an entry for each rank, even if the rank does not appear in the cards. This entry will have the rank as the key and an empty array as the value. Default: false

Argument

{allow-invalid}: false

bool

If true, the function will also count cards that are not valid according to the `extract-card-data` function. If false, the function will simply ignore invalid cards. (No error will be raised.) Default: false

#deckz.arr.group-suits(**{cards}**, **{add-zero}**: false, **{allow-invalid}**: false) → **dictionary**

Sort the given cards by their suit. This function returns a dictionary where the keys are the suits and the values are arrays of cards that have that suit.

Argument

{cards}

array

The cards to sort by suit. This can be a list or any iterable collection of card codes.

Argument

{add-zero}: false

bool

If true, the function will add an entry for each suit, even if the suit does not appear in the cards. This entry will have the suit as the key and an empty array as the value. Default: false

Argument

{allow-invalid}: false

bool

If true, the function will also count cards that are not valid according to the `extract-card-data` function. If false, the function will simply ignore invalid cards. (No error will be raised.) Default: false

#deckz.arr.order-comparator((card-it)) → (key, key)

Compare two cards based on their order in a standard sorted deck. The order compares two cards by their suit (first) and rank (second). Suits and ranks are ordered according to their attributes “suit-order” and “rank-order”. These are defined by default as:

- Suits: Hearts, Diamonds, Clubs, Spades
- Ranks: A, 2, 3, 4, 5, 6, 7, 8, 9, 10, J, Q, K

Argument

{card-it}

card

The iterator of the card, from which the suit and rank are extracted.

#deckz.arr.score-comparator((card-it)) → key

Compare two cards based on their score, given the card data. The score is determined by the rank of the card, where Ace comes first, followed by King, Queen, Jack, and then numbered cards from 10 to 2: A, K, Q, J, 10, 9, 8, 7, 6, 5, 4, 3, 2.

Argument

{card-it}

card

The iterator of the card, from which the rank is extracted.

#deckz.arr.sort((cards), {by}: auto) → array

Sort a list of cards based on a specified key. The key can be “score”, “order”, or any other attribute of the card. If the key is “score”, the cards are sorted by their score (see `#deckz.arr.sort-by-score`). If the key is “order”, the cards are sorted by their order in a standard sorted deck (see `#deckz.arr.sort-by-order`). If the key is not specified or is **auto**, the behavior defaults to sorting by **order**. Other keys will be interpreted as attributes of the card and sorted accordingly, as if using the `sorted` method with that key.

Argument

{cards}

array

The cards to sort.

Argument

{by}: auto

str | auto

The key to sort by. Can be “score”, “order”, or any other attribute of the card. Defaults to “order” if not specified.

#deckz.arr.sort-by-order((cards)) → cards

Sort a list of cards by their order in a standard sorted deck. The cards are sorted in ascending order based on their suit and rank.

Argument

{cards}

array

The cards to sort.

#deckz.arr.sort-by-score({cards}) → **cards**

Sort a list of cards by their score. The cards are sorted in descending order based on their score, which is determined by the rank of the card. The order is as follows: Ace, King, Queen, Jack, 10, 9, 8, 7, 6, 5, 4, 3, 2.

Argument

{cards}

array

The cards to sort.

II.6 Evaluating hands

This section provides an overview of the **scoring functions** from the `val` module of the `DECKZ` package, which are essential for evaluating hands in card games. Such functions are helpful for assessing the value of a hand based on various criteria and combinations, such as n-of-a-kind, flushes, and straights.

```
#deckz.val.extract          #deckz.val.has-five-of-a-kind #deckz.val.is-flush
#deckz.val.extract-five-of-a-kind #deckz.val.has-flush      #deckz.val.is-four-of-a-kind
#deckz.val.extract-flush      #deckz.val.has-four-of-a-kind #deckz.val.is-full-house
#deckz.val.extract-four-of-a-kind #deckz.val.has-full-house #deckz.val.is-high-card
#deckz.val.extract-high-card #deckz.val.has-high-card #deckz.val.is-n-of-a-kind
#deckz.val.extract-highest    #deckz.val.has-n-of-a-kind #deckz.val.is-pair
#deckz.val.extract-n-of-a-kind #deckz.val.has-pair      #deckz.val.is-straight
#deckz.val.extract-pair       #deckz.val.has-straight    #deckz.val.is-straight-flush
#deckz.val.extract-straight   #deckz.val.has-straight-flush #deckz.val.is-three-of-a-kind
#deckz.val.extract-straight-flush #deckz.val.has-three-of-a-kind #deckz.val.is-two-pairs
#deckz.val.extract-three-of-a-kind
#deckz.val.extract-two-pairs
```

#deckz.val.extract((scoring-combination), (cards)) → array

Extract a scoring combination from the given cards. This function accepts a scoring combination name as a string and returns the corresponding hand. The scoring combinations are defined as follows:

- “high-card”: A single card with a valid rank.
- “pair”: Two cards of the same rank.
- “two-pairs”: Two distinct pairs of cards, each of the same rank.
- “three-of-a-kind”: Three cards of the same rank.
- “straight”: Five consecutive ranks, regardless of suit.
- “flush”: Five cards of the same suit.
- “full-house”: Three of a kind and a pair.
- “four-of-a-kind”: Four cards of the same rank.
- “straight-flush”: A straight and a flush at the same time.
- “five-of-a-kind”: Five cards of the same rank.

If the scoring combination is not recognized, the function will panic. If the scoring combination is recognized, but the cards don’t have such combination, the function will return an empty array.

Argument

(scoring-combination)

str

The scoring combination to extract.

Argument

{cards}

array

The cards to check for the scoring combination. This can be an array or any iterable collection of card codes.

#deckz.val.extract-five-of-a-kind({cards}) → array

Get all five of a kind from the given cards. This function returns an array of arrays, where each inner array is a **hand** that contains five cards of the same rank. If there are no five of a kind, it returns an empty array.

Argument

{cards}

array

The cards to check for five of a kind. This can be an array or any iterable collection of card codes.

#deckz.val.extract-flush({cards}, (n): 5) → array

Get all flushes from the given cards. This function returns an array of arrays, where each inner array is a **hand** that contains n cards of the same suit. If there are no flushes, it returns an empty array.

Argument

{cards}

array

The cards to check for a flush. This can be an array or any iterable collection of card codes.

Argument

{n): 5

int

The number of cards required for a flush. Default: 5

#deckz.val.extract-four-of-a-kind({cards}) → array

Get all four of a kind from the given cards. This function returns an array of arrays, where each inner array is a **hand** that contains four cards of the same rank. If there are no four of a kind, it returns an empty array.

Argument

{cards}

array

The cards to check for four of a kind. This can be an array or any iterable collection of card codes.

#deckz.val.extract-high-card({cards}) → array

Get all “high card” hands from the given cards. This function returns an array of arrays, where each inner array is a **hand** that contains a single card with a valid rank. If there are no high card hands, it returns an empty array.

Argument

`{cards}`

array

The cards to check for high card. This can be a list or any iterable collection of card codes.

#deckz.val.extract-highest(`{cards}`, `{sort}: true`) → array

Return all the combinations of the first valid scoring combination found in the given cards, starting from the highest scoring combination. This function checks the cards for the highest scoring combination and returns the corresponding hand. If the cards do not contain any valid scoring combination, the function will return an empty array.

Argument

`{cards}`

array

The cards to check for the highest scoring combination. This can be an array or any iterable collection of card codes.

Argument

`{sort}: true`

If true, the function will first sort the cards by their score. This is needed if you want the highest combination among multiple combinations of the same type. E.g. if you have more than one pair, the function will return the pair with the highest rank (i.e. the card with the highest score). Default: true

#deckz.val.extract-n-of-a-kind(`{cards}`, `{n}: 2`) → array

Returns all possible n-of-a-kind hands from the given cards. This function returns an array of arrays, where each inner array is a **hand** that contains n cards of the same rank. Hands are sorted by the rank of the cards, according to the order defined in the ranks module. If there are no n-of-a-kind hands, it returns an empty array.

Argument

`{cards}`

array

The cards from which we try to extract a n-of-a-kind.

Argument

`{n}: 2`

The number of cards that must have the same rank to count as n-of-a-kind. Default: 2

#deckz.val.extract-pair(`{cards}`) → array

Get all pairs from the given cards. This function returns an array of arrays, where each inner array is a **hand** that contains two cards of the same rank. If there are no pairs, it returns an empty array.

Argument

`{cards}`

array

The cards to check for pairs. This can be an array or any iterable collection of card codes.

#deckz.val.extract-straight(**{cards}**, **{n}: 5**) → **array**

Get all straights from the given cards. This function returns an array of strings, where each string is a **hand** that contains n consecutive ranks. If there are no straights, it returns an empty array.

Argument

{cards}

array

The cards to check for a straight. This can be an array or any iterable collection of card codes.

Argument

{n}: 5

int

The number of consecutive ranks required for a straight. Default: 5

#deckz.val.extract-straight-flush(**{cards}**, **{n}: 5**) → **array**

Get all straight flushes from the given cards. This function returns an array of arrays, where each inner array is a **hand** that contains n consecutive ranks of the same suit. If there are no straight flushes, it returns an empty array.

Argument

{cards}

array

The cards to check for a straight flush. This can be an array or any iterable collection of card codes.

Argument

{n}: 5

int

The number of cards required for a straight flush. Default: 5

#deckz.val.extract-three-of-a-kind(**{cards}**) → **array**

Get all three of a kind from the given cards. This function returns an array of arrays, where each inner array is a **hand** that contains three cards of the same rank. If there are no three of a kind, it returns an empty array.

Argument

{cards}

array

The cards to check for three of a kind. This can be an array or any iterable collection of card codes.

#deckz.val.extract-two-pairs(**{cards}**) → **array**

Get all two pairs from the given cards. This function returns an array of arrays, where each inner array is a **hand** that contains two distinct pairs of cards, each of the same rank. If there are no two pairs, it returns an empty array.

Argument	
{ cards }	array
The cards to check for two pairs. This can be an array or any iterable collection of card codes.	

#deckz.val.has-five-of-a-kind({ cards }) → bool

Check if the given cards contain five of a kind. Five of a kind is defined as five cards of the same rank.

Argument	
{ cards }	array
The cards to check for five of a kind. This can be an array or any iterable collection of card codes.	

#deckz.val.has-flush({ cards }, { n }: 5) → bool

Check if the given cards contain a flush. A flush is defined as having at least n cards of the same suit.

Argument	
{ cards }	array
The cards to check for a flush. This can be an array or any iterable collection of card codes.	

Argument	
{ n }: 5	int
The number of cards required for a flush. Default: 5	

#deckz.val.has-four-of-a-kind({ cards }) → bool

Check if the given cards contain four of a kind. Four of a kind is defined as four cards of the same rank.

Argument	
{ cards }	array
The cards to check for four of a kind. This can be an array or any iterable collection of card codes.	

#deckz.val.has-full-house({ cards }) → bool

Check if the given cards contain a full house. A full house is defined as having three of a kind and a pair.

Argument	
{ cards }	array

The cards to check for a full house. This can be an array or any iterable collection of card codes.

#deckz.val.has-high-card({cards}) → bool

Check if the given cards contain a high card. A high card is defined as having at least one card with a valid rank, regardless of which rank it is.

Argument

{cards}

array

The cards to check for high card. This can be a list or any iterable collection of card codes.

#deckz.val.has-n-of-a-kind({cards}, {n}: 2) → bool

Check if the given cards contain n-of-a-kind. n-of-a-kind is defined as having at least n cards of the same rank

Argument

{cards}

array

The cards to check for n-of-a-kind. This can be a list or any iterable collection of card codes.

Argument

{n}: 2

int

The number of cards that must have the same rank to count as n-of-a-kind. Default: 2

#deckz.val.has-pair({cards}) → bool

Check if the given cards contain a pair. A pair is defined as two cards of the same rank.

Argument

{cards}

array

The cards to check for a pair. This can be an array or any iterable collection of card codes.

#deckz.val.has-straight({cards}, {n}: 5) → bool

Check if the given cards contain a straight. A straight is defined as five consecutive ranks, regardless of suit.

Argument

{cards}

array

The cards to check for a straight. This can be an array or any iterable collection of card codes.

Argument

{n}: 5

int

The number of consecutive ranks required for a straight. Default: 5

#deckz.val.has-straight-flush(**{cards}**, **{n}: 5**) → **bool**

Check if the given cards contain a straight flush. A straight flush is defined as having a straight and a flush at the same time.

Note: This function may accept more than n cards (default: more than 5 cards). This means that it will return true if there is a straight and if there is a flush, regardless of the number of cards. This means that the two conditions may not be met by the same cards.

Argument

{cards}

array

The cards to check for a straight flush. This can be an array or any iterable collection of card codes.

Argument

{n}: 5

int

The number of cards required for a straight flush. Default: 5

#deckz.val.has-three-of-a-kind(**{cards}**) → **bool**

Check if the given cards contain three of a kind. Three of a kind is defined as three cards of the same rank.

Argument

{cards}

array

The cards to check for three of a kind. This can be an array or any iterable collection of card codes.

#deckz.val.has-two-pairs(**{cards}**) → **bool**

Check if the given cards contain two pairs. Two pairs are defined as two distinct pairs of cards, each of the same rank.

Argument

{cards}

array

The cards to check for two pairs. This can be an array or any iterable collection of card codes.

#deckz.val.is-five-of-a-kind(**{cards}**) → **bool**

Check if the given cards correspond to five of a kind, i.e. if they are five cards of the same rank.

Argument

{cards}

array

The cards to check for five of a kind. This can be an array or any iterable collection of card codes.

#deckz.val.is-flush(**{cards}**, **{n}: 5**) → **bool**

Check if the given cards correspond to a flush, i.e. the hand is composed by n cards of the same suit. This is done by checking that there are n cards in total, and that there is only one suit present in the hand.

Argument —

`{cards}` array

The cards to check for a flush. This can be an array or any iterable collection of card codes.

Argument —

`{n}: 5` int

The number of cards required for a flush. Default: 5

#deckz.val.is-four-of-a-kind({cards}) → bool

Check if the given cards correspond to four of a kind, i.e. if they are four cards of the same rank.

Argument —

`{cards}` array

The cards to check for four of a kind. This can be an array or any iterable collection of card codes.

#deckz.val.is-full-house({cards}) → bool

Check if the given cards correspond to a full house. A full house is defined as having three of a kind and a pair.

Argument —

`{cards}` array

The cards to check for a full house. This can be an array or any iterable collection of card codes.

#deckz.val.is-high-card({cards}) → bool

Check if the given cards correspond to a high card. A high card is defined as a single card with a valid rank.

Argument —

`{cards}` array

The cards to check for high card. This can be a list or any iterable collection of card codes.

#deckz.val.is-n-of-a-kind({cards}, {n}: 2) → bool

Check if the given cards correspond to a “ n -of-a-kind”, i.e. if they are n cards of the same rank. This is a stricter version of the `has-n-of-a-kind` function, as it checks that all cards correspond to the requested hand.

Argument —

`{cards}` array

The cards to check for n-of-a-kind. This can be a list or any iterable collection of card codes.

Argument

`{n}: 2`

int

The number of cards that must have the same rank to count as n-of-a-kind. Default: 2

#deckz.val.is-pair({cards}) → bool

Check if the given cards correspond to a pair, i.e. if they are two cards of the same rank.

Argument

`{cards}`

array

The cards to check for a pair. This can be an array or any iterable collection of card codes.

#deckz.val.is-straight({cards}, {n}: 5)

Check if the given cards correspond to a straight. A straight is defined as having exactly n consecutive ranks, regardless of suit.

Argument

`{cards}`

array

The cards to check for a straight. This can be an array or any iterable collection of card codes.

Argument

`{n}: 5`

int

The number of consecutive ranks required for a straight. Default: 5

#deckz.val.is-straight-flush({cards}, {n}: 5) → bool

Check if the given cards correspond to a straight flush, i.e. a straight and a flush at the same time.

Argument

`{cards}`

array

The cards to check for a straight flush. This can be an array or any iterable collection of card codes.

Argument

`{n}: 5`

int

The number of cards required for a straight flush. Default: 5

#deckz.val.is-three-of-a-kind({cards}) → bool

Check if the given cards correspond to three of a kind, i.e. if they are three cards of the same rank.

Argument

`{cards}`

array

The cards to check for three of a kind. This can be an array or any iterable collection of card codes.

#deckz.val.is-two-pairs({cards}) → **bool**

Check if the given cards correspond to two pairs, i.e. if they are four cards with two distinct pairs of the same rank. This is done by checking that there are four cards in total, and that there are two distinct pairs of the same rank.

Argument

`{cards}`

array

The cards to check for two pairs. This can be an array or any iterable collection of card codes.

II.7 Language-aware card symbols

DECKZ automatically adapts the rendering of card rank symbols based on the document's language. This process is seamless: users only need to set the desired language using the `text` command, and **DECKZ** will adjust the symbols accordingly. No additional configuration is required.

This feature is powered by the **LINGUIFY**¹³ package.

Currently supported languages and their rank symbols:

- **English:** A, 2, 3, 4, 5, 6, 7, 8, 9, 10, J, Q, K
- **Italian:** A, 2, 3, 4, 5, 6, 7, 8, 9, 10, J, Q, K
- **French:** A, 2, 3, 4, 5, 6, 7, 8, 9, 10, V, D, R

```
#let seq = ("10C", "JH", "QS", "KD",  
"AC")
```

```
#set text(lang: "en")  
#deckz.line(..seq, format: "small")
```

```
#set text(lang: "it")  
#deckz.line(..seq, format: "small")
```

```
#set text(lang: "fr")  
#deckz.line(..seq, format: "small")
```



¹³<https://typst.app/universe/package/linguify>

Part III

Examples

The following examples showcase more advanced and interesting **use cases** of **DECKZ**. In this Section, you can find how **DECKZ** can be used to represent real game states, compare card formats, and display entire decks in creative ways.

III.1 Displaying the current state of a game

You can use **DECKZ** to display the **current state of a game**, such as the cards in hand, the cards on the table, and the deck.

```
#let player-mat(body) = box(
  stroke: olive.darken(20%),
  fill: olive.lighten(10%),
  radius: (top: 50%, bottom: 5%),
  inset: 15%,
  body
)

#text(white, font: "Roboto Slab", weight: "semibold")[
  #box(fill: olive,
    width: 100%, height: 12cm,
    inset: 4mm, radius: 2mm
  )[

    #place(center + bottom)[
      #player-mat[
        #deckz.hand(format: "small", width: 3cm, "9S", "10H", "4C", "4D", "2D")
        Alice
      ]
    ]
    #place(left + horizon)[
      #rotate(90deg, reflow: true)[
        #player-mat[
          #deckz.hand(format: "small", width: 3cm, "AS", "JH", "JC", "JD", "3D")
          #align(center)[Bob]
        ]
      ]
    ]
    #place(center + top)[
      #rotate(180deg, reflow: true)[
        #player-mat[
          #deckz.hand(format: "small", width: 3cm, "KH", "8H", "7H", "5C", "3C")
          #rotate(180deg)[Carol]
        ]
      ]
    ]
  ]
]
```

```

]
#place(right + horizon)[
  #rotate(-90deg, reflow: true)[
    #player-mat[
      #deckz.hand(format: "small", width: 3cm, "6S", "3H", "2H", "QC", "9C")
      #align(center)[Dave]
    ]
  ]
]
#place(center + horizon)[
  #deckz.deck(format: "small", angle: 80deg, height: 8mm, "back")
]
]
]

```

In this situation, Alice has a ***Pair of Four*** (`#deckz.inline("4C")`, `#deckz.inline("4D")`). *_What should the player do?_*



In this situation, Alice has a **Pair of Four** (4♣, 4♦). *What should the player do?*

III.2 Comparing different formats

You can use `DECKZ` to **compare different formats** of the same card, or to show how a card looks in different contexts.

```
#let cards-window(body) = block(fill: white, width: 100%, inset: 5pt, body)

#block(fill: gray.lighten(60%), inset: 5pt, breakable: false)[

  #let example-cards = ("AS", "5H", "10C", "QD")

  #text(blue)[`inline`] --- A minimal format where the rank and suit are
  displayed directly within the flow of text; perfect for quick references.
  #cards-window[
    #deckz.line(..example-cards, format: "inline", width: 100%)
  ]

  #text(blue)[`mini`] --- The smallest visual format: a compact rectangle
  showing the rank at the top and the suit at the bottom.
  #cards-window[
    #deckz.line(..example-cards, format: "mini", width: 100%)
  ]

  #text(blue)[`small`] --- A slightly larger card with rank indicators on
  opposite corners and a central suit symbol; ideal for tight layouts with
  better readability.
  #cards-window[
    #deckz.line(..example-cards, format: "small", width: 100%)
  ]

  #text(blue)[`medium`] --- A fully structured card layout featuring proper suit
  placement and figures. Rank and suit appear in two opposite corners, offering
  a realistic visual.
  #cards-window[
    #deckz.line(..example-cards, format: "medium", width: 100%)
  ]

  #text(blue)[`large`] --- The most detailed format, with corner summaries on all
  four corners and an expanded layout; great for presentations or printable decks.
  #cards-window[
    #deckz.line(..example-cards, format: "large", width: 100%)
  ]
]
```

inline — A minimal format where the rank and suit are displayed directly within the flow of text; perfect for quick references.



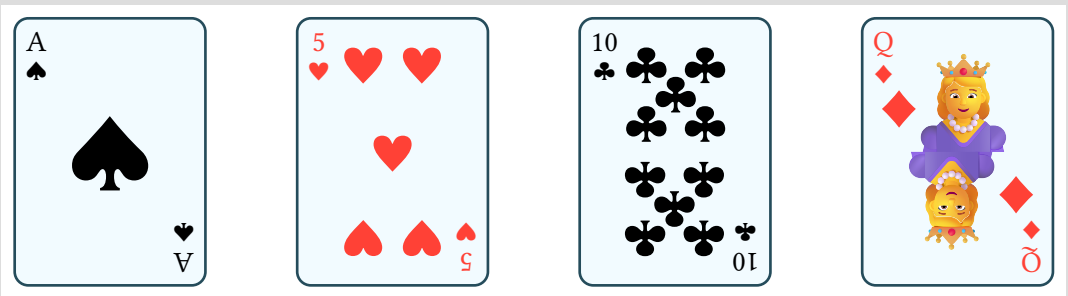
mini — The smallest visual format: a compact rectangle showing the rank at the top and the suit at the bottom.



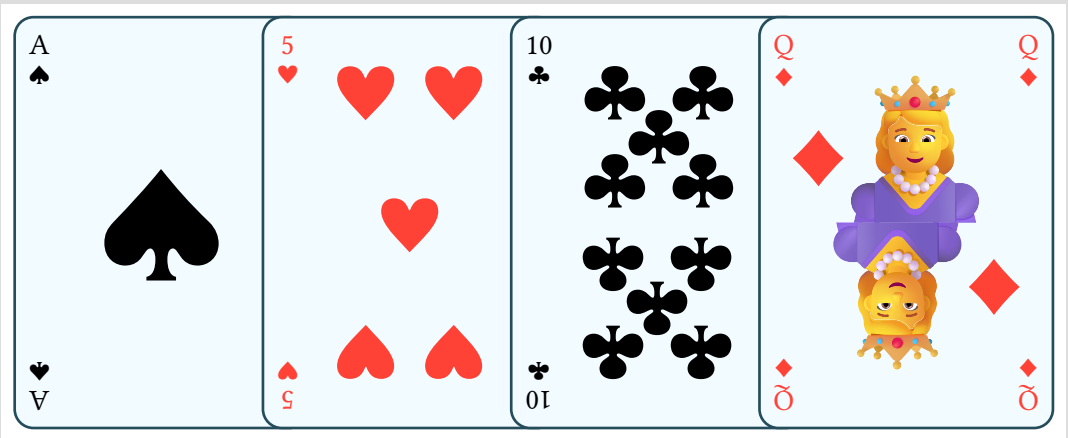
small — A slightly larger card with rank indicators on opposite corners and a central suit symbol; ideal for tight layouts with better readability.



medium — A fully structured card layout featuring proper suit placement and figures. Rank and suit appear in two opposite corners, offering a realistic visual.



large — The most detailed format, with corner summaries on all four corners and an expanded layout; great for presentations or printable decks.



III.3 Displaying a full deck

You can use `DECKZ` to display a **full deck of cards**, simply by retrieving the `deckz.deck52` array, which contains all 52 standard playing cards.

```
#text(white, font: "Oldenburg", size: 10pt)[
  #block(fill: aqua.darken(40%), inset: 4mm, radius: 2mm)[
    #deckz.hand(
      angle: 270deg,
      width: 5.8cm,
      format: "large",
      noise: 0.05,
      ..deckz.deck52
    )
    #place(center + horizon)[#text(size: 20pt, baseline: 8pt)[Deckz]]
  ]
]
```



III.4 Randomized game with card scoring

You can use [DECKZ](#) to create a **randomized *Texas Hold'em*-like game**, where players are dealt random hands and their best hands are determined based on the cards on the table.

```
// Defining players and their hands
#let players = ("Alice", "Bob", "Carol", "David")
#let (players-hands, board-cards) = deckz.mix.split(
  deckz.deck52, // Start with a standard deck of 52 cards
  size: ((players.len(), 2), 5), // 2 cards per player + 5 board cards
  rest: false,
)

#set align(center)
#set text(fill: white, size: 13pt, font: "Arvo")

#block(
  fill: olive,
  inset: 15pt,
  radius: 5pt,
  breakable: false,
)[]
  // Board cards
  *Board*
  #deckz.hand(
    format: "small",
    width: 4cm,
    angle: 20deg,
    noise: 0.2,
    ..board-cards
  )
  // Displaying the deck of cards
  #place(right + top)[
    #deckz.deck(
      format: "small",
      angle: 90deg,
      noise: 0.2,
      "back"
    )
  ]

#v(1cm)
#set table.cell(
  fill: olive.darken(20%),
  stroke: olive.darken(10%) + 2pt,
)

// Players' hands
#table(
  columns: players.len(),
```

```

column-gutter: 1fr,

..players-hands
.zip(players)
.map((hand, player)) => [
  #player
  #deckz.hand(
    format: "small",
    width: 1cm,
    angle: 30deg,
    noise: 0.4,
    ..hand
  )
]
)
]

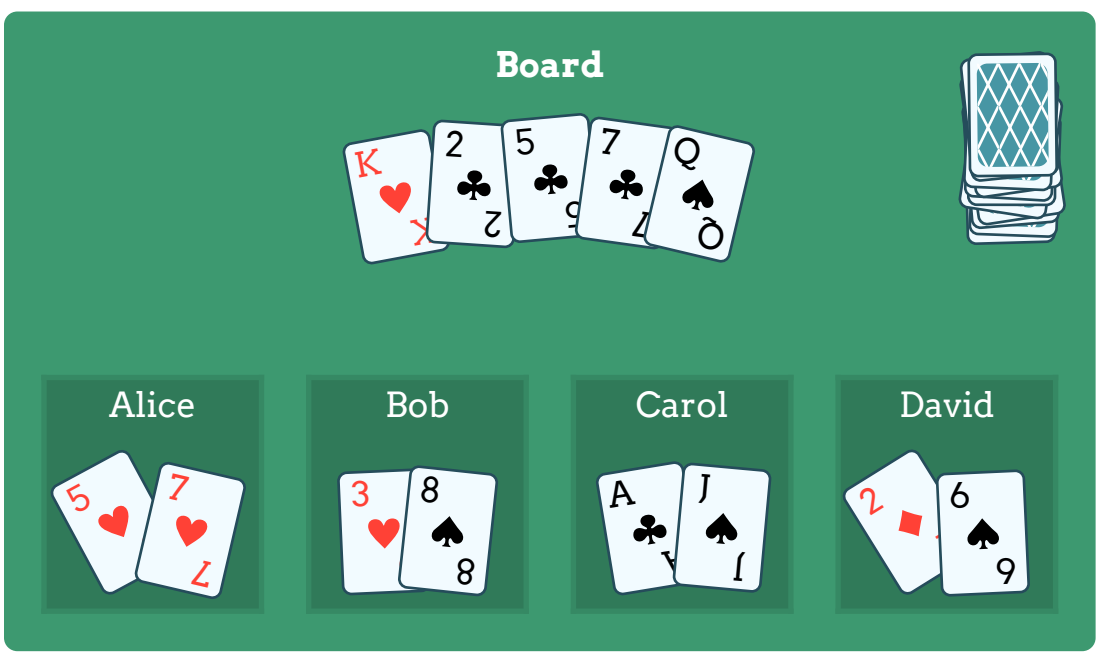
#set align(left)
#set text(fill: black, size: 12pt)

Which is the *best hand* each player can make?
#for (player, hand) in players.zip(players-hands) [

- *#player*
#box(
  fill: olive,
  inset: 8pt,
  radius: 15%,
)[
  #(hand + board-cards).map(deckz.mini).join(" ")
]
$stretch(=>)^" Best hand "$
#let best = deckz.val.extract-highest(hand + board-cards, sort: true).first()
#box(
  fill: none,
  stroke: (paint: green, thickness: 3pt, dash: "dashed"),
  inset: 8pt,
  radius: 45%,
)[
  #best.map(deckz.mini).join(" ")
]
]

```

Board



Which is the **best hand** each player can make?


- **Alice**




- **Bob**



- **Carol**



- **David**



III.5 Scoring hands

You can use `DECKZ` to **score hands** in a game, such as Poker, by extracting combinations of cards that form specific hands, such as pairs, three-of-a-kinds, straights, flushes, and so on.

```
// Define and sort the initial hand
#let my-hand = deckz.arr.sort-by-score(("8S", "9S", "10S", "JS", "QS", "9H",
"9D", "9C", "QD", "3D", "4D", "5D"))

#set text(font: "Roboto Slab")
My current *hand*:

#deckz.hand(..my-hand,
  format: "small",
  angle: 10deg,
  width: 12cm,
)

#let show-combination(combination) = [

  Which *#combination* can I make?

  #let combinations = deckz.val.extract(combination, my-hand)
  #if combinations.len() == 0 {
    [None.]
  } else {
    for combo in combinations {
      box(
        fill: eastern,
        inset: 6pt,
        radius: 12pt,
      ){
        #deckz.line(..combo, format: "mini", spacing: 6pt)
      }
      h(1mm)
    }
  }
]

#show-combination("high-card")
#show-combination("pair")
#show-combination("two-pairs")
#show-combination("three-of-a-kind")
#show-combination("straight")
#show-combination("flush")
#show-combination("full-house")
#show-combination("four-of-a-kind")
#show-combination("straight-flush")
#show-combination("five-of-a-kind")
```

My current **hand**:



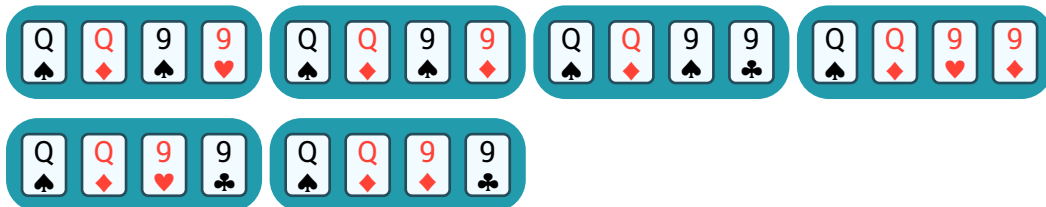
Which **high-card** can I make?



Which **pair** can I make?



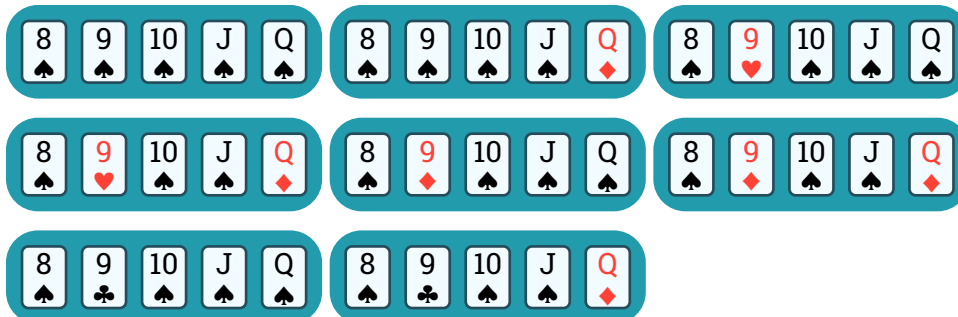
Which **two-pairs** can I make?



Which **three-of-a-kind** can I make?



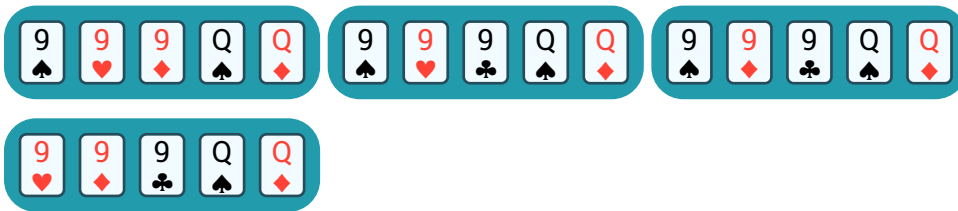
Which **straight** can I make?



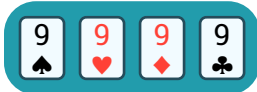
Which **flush** can I make?



Which **full-house** can I make?



Which **four-of-a-kind** can I make?



Which **straight-flush** can I make?



Which **five-of-a-kind** can I make?

None.

Credits

This package is created by [Michele Dusi](#)¹⁴ and is licensed under the [GNU General Public License v3.0](#)¹⁵.

The **name** is inspired by Typst's drawing package [CETZ](#)¹⁶: it mirrors its sound while hinting at its own purpose: rendering card decks.

All **fonts** used in this package are licensed under the [SIL Open Font License, Version 1.1](#)¹⁷ ([Oldenburg](#)¹⁸, [Arvo](#)¹⁹) or the [Apache License, Version 2.0](#)²⁰ ([Roboto Slab](#)²¹).

The **card designs** are inspired by the standard playing cards, with suit symbols taken from the [emoji library of Typst](#)²².

This project owes a lot to the creators of these **Typst packages**, whose work made [DECKZ](#) possible:

- [CETZ](#)²³, for handling graphics and for the name inspiration.
- [SUIJI](#)²⁴ and [DIGESTIFY](#)²⁵, for random number generation and hashing respectively.
- [LINGUIFY](#)²⁶, for localization.
- [MANTYS](#)²⁷, [TIDY](#)²⁸, and [CODLY](#)²⁹, for documentation.
- [OCTIQUE](#)³⁰ and [SHOWYBOX](#)³¹, for documentation styling.

Special thanks to everyone involved in the development of the [Typst](#)³² language and engine, whose efforts made the entire ecosystem possible.

Contributions are welcome!

Found a bug, have an idea, or want to contribute? Feel free to open an **issue** or **pull request** on the *GitHub* repository ([micheledusi/Deckz](#)³³).

Made something cool with Deckz? Let me know — I'd love to feature your work!

¹⁴<https://github.com/micheledusi>

¹⁵<https://www.gnu.org/licenses/gpl-3.0.en.html>

¹⁶<https://typst.app/universe/package/cetz>

¹⁷<https://openfontlicense.org>

¹⁸<https://fonts.google.com/specimen/Oldenburg>

¹⁹<https://fonts.google.com/specimen/Arvo>

²⁰<http://www.apache.org/licenses/>

²¹<https://fonts.google.com/specimen/Roboto+Slab>

²²<https://typst.app/docs/img/reference/symbols/emoji/>

²³<https://typst.app/universe/package/cetz>

²⁴<https://typst.app/universe/package/suiji>

²⁵<https://typst.app/universe/package/digestify>

²⁶<https://typst.app/universe/package/linguify>

²⁷<https://typst.app/universe/package/mantys>

²⁸<https://typst.app/universe/package/tidy>

²⁹<https://typst.app/universe/package/codly>

³⁰<https://typst.app/universe/package/octique>

³¹<https://typst.app/universe/package/showybox>

³²<https://typst.app/about/>

³³<https://github.com/micheledusi/Deckz>

Part IV

Index

B

`#deckz.back` 5, 22

C

`#cards52` 34

`#deckz.mix.choose` ... 16, 17, 36

`#deckz.mix.choose` 36

`#deckz.arr.count-ranks`..... 41, 42

`#deckz.arr.count-suits`..... 41, 42

D

`#deckz.deck` .. 5, 6, 13, 27, 35

`#deckz.deck` 6, 27

`#deck52` 35

E

`#deckz.val.extract` . 20, 46

`#deckz.val.extract` 20

`#deckz.val.extract-five-of-a-kind` 46, 47

`#deckz.val.extract-flush`. 46, 47

`#deckz.val.extract-four-of-a-kind` 46, 47

`#deckz.val.extract-high-card` 46, 47

`#deckz.val.extract-highest` 46, 48

`#deckz.val.extract-n-of-a-kind` 46, 48

`#deckz.val.extract-pair`... 46, 48

`#deckz.val.extract-straight` 46, 49

`#deckz.val.extract-`

`straight-flush` 46, 49

`#deckz.val.extract-three-of-a-kind` 46, 49

`#deckz.val.extract-two-pairs` 46, 49

F

`#deckz.arr.find-ranks` . 41, 42

`#deckz.arr.find-suits` . 41, 42

G

`#deckz.arr.group-ranks`..... 18, 41, 43

`#deckz.arr.group-suits`..... 18, 41, 43

H

`#deckz.hand` 8, 10, 13, 18, 27, 28, 35

`#deckz.hand` 8

`#deckz.val.has-five-of-a-kind` 46, 50

`#deckz.val.has-flush` ... 46, 50

`#deckz.val.has-four-of-a-kind` 46, 50

`#deckz.val.has-full-house` 46, 50

`#deckz.val.has-high-card`. 46, 51

`#deckz.val.has-n-of-a-kind` 46, 51

`#deckz.val.has-pair` 46, 51

`#deckz.val.has-straight`... 46, 51

`#deckz.val.has-straight-`

`flush` 46, 52

`#deckz.val.has-three-of-a-kind` 46, 52

`#deckz.val.has-two-pairs`. 46, 52

`#deckz.heap` 10, 11, 27, 29, 35

`#deckz.heap` 11, 29

I

`#deckz.inline` 4, 22

`#deckz.val.is-five-of-a-kind` 46, 52

`#deckz.val.is-flush` 46, 52

`#deckz.val.is-four-of-a-kind` 46, 53

`#deckz.val.is-full-house`. 46, 53

`#deckz.val.is-high-card`... 46, 53

`#deckz.val.is-n-of-a-kind` 46, 53

`#deckz.val.is-pair` . 46, 54

`#deckz.val.is-straight`.... 46, 54

`#deckz.val.is-straight-flush` 46, 54

`#deckz.val.is-three-of-a-kind` 46, 54

`#deckz.val.is-two-pairs`... 46, 55

L

`#deckz.large` 4, 22, 23

`#deckz.line` 6, 7, 27, 31

`#deckz.line` 7

M

`#deckz.medium` 4, 22, 23

`#deckz.mini` 4, 22, 24

O

`#deckz.arr.order-comparator` 41, 44

R

`#ranks` 34

`#deckz.render` 2, 4, 5, 22, 23, 24, 26

`#deckz.render` 3, 12

S

`#deckz.arr.score-comparator` 41, 44

`#deckz.mix.shuffle` . 16, 36, 38, 39

`#deckz.mix.shuffle` 38

`#deckz.small` 4, 22, 25

`#deckz.arr.sort` . 18, 41, 44

`#deckz.arr.sort-by-order`. 41, 44

`#deckz.arr.sort-by-score`. 41, 44, 45

`#deckz.mix.split` 17, 36, 39

`#deckz.mix.split` 39

`#deckz.square` 4, 22, 26

`#suits` 34