

pgf-go



Manual for version 0.2025.03.10

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1 Introduction

1.1 Motivation

The following package offers a collection of macros designed to represent Go boards and positions, fully implemented in PGF. This project, although still under development, incorporates innovative features aimed at simplifying and streamlining the creation of Go-related diagrams:

- Profile management for boards and players.
- Loading multiple coordinates simultaneously using a syntax that some might find familiar.

The development of PGFGostems from frustration with not finding packages that met my needs. The packages I explored allow for the representation of black-and-white boards, suitable for printing, but impractical when combined with technologies like `beamer` or in documents where a color presentation is desired.

Initially, PGFGOWas intended to be limited to these tasks; however, I now envision it more as an interface for managing styles and states, avoiding excessive use of direct formatting. This will be reflected primarily in the structure of the *keys* tree.

Regarding the name, although the macros are implemented in PGFand L3, the board is built on `\tikzpicture` so that users familiar with this environment can take advantage of its macros.

1.2 What's New

- 0.2025.03.10:
 - The *keys* `inner` and `outer` have been added for the *rounded corner* of the board.
 - Three new coordinate operators have been added: `*` for all intersections, `L` for vertical lines, and `N` for horizontal lines.
- 0.2025.03.07: First release.

2 The Boards of Kāru

2.1 Board and Stones

Kāru is writing an article to share with his students. He has noticed that diagramming *software* does not offer satisfactory formats or results. Therefore, he decides to try PGFGO and starts by representing a game like the one shown in Figure 1.

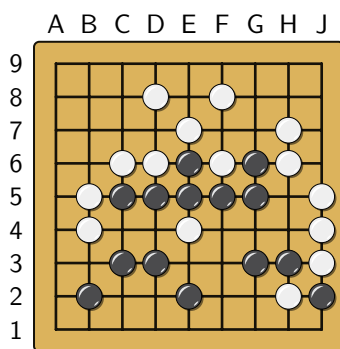
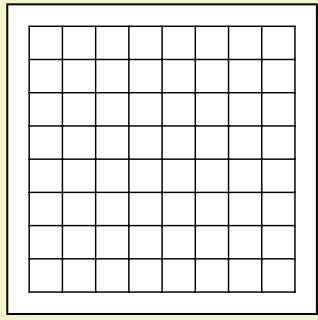


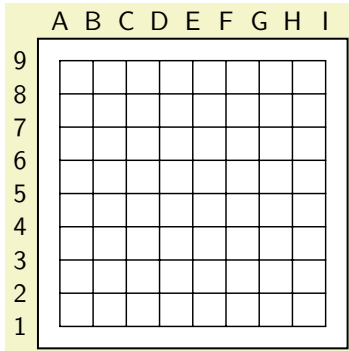
Figure 1

Kāru must start with the board. In PGFGO, there is currently a single environment where elements can be placed: `goban`. This environment controls by default the size and color of the board, the position and type of labels, among other properties. It also allows partial board representations.



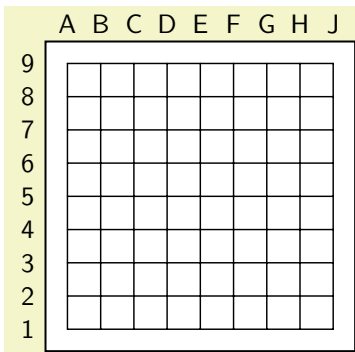
```
\begin{goban}
\end{goban}
```

Kāru is satisfied. The environment provides a default 9×9 board, which is exactly what he needs, but he must add side labels. The `goban` environment does not require mandatory parameters, although it accepts an optional one: a list of `keys` or `key=values` for configuration. Kāru consults the section on `goban` (p. 21) and decides to add labels to the environment. He knows that the `keys` controlling the objects in the goban are divided into three groups: `grid`, for the central grid; `background`, for the border and board fill; and `label`, for coordinate labels. The latter is the one that interests him. This `key`, among other options, can take the `key at` to define the label position with values such as `above`, `west`, `below`, `right`, `all`, or `none`. Cardinal points can also be used. Since he only wants labels above and to the left of the goban, he will use the `keys` `above` and `left`.



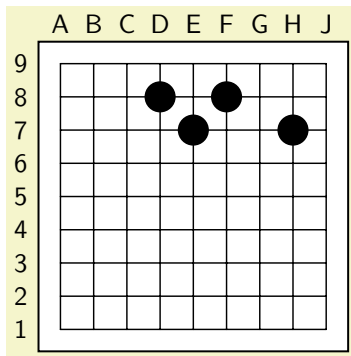
```
\begin{goban}[label = {at = {above, left}}]
\end{goban}
```

Kāru feels that everything is going well, but he notices that his board includes an I instead of omitting it and going directly to J. By default, in PGFGO, "I" exists and is used both as a coordinate and in the side labels, although it is possible to remove it. There are two ways to do this: setting the global `key use i` to `false` (`\pgfgoset{use i = false}`), which would prevent Kāru from worrying about this throughout the rest of the article, or applying it directly to the board with the same `key` and value.



```
\pgfgoset{use i = false}
\begin{goban}[label = {at = {above, left}}]
\end{goban}
```

Now he is ready to place the stones. For this, Kāru has several macros. Let's start with the most basic one: `\stone[options]{intersection}`. This command accepts two parameters: the first, optional, controls the appearance and additional elements of the stones (such as marks); the second, mandatory, is the intersection. Kāru does not need to convert intersections to numbers since he can specify them alphanumerically. By default, the stones are neutral, but he can choose the first player by passing the `key` `black` or `b`.



```
\begin{goban}[label = {at = {above, left}}, use i = false]
\stone[black] {D8}
\stone[black] {F8}
\stone[b] {E7}
\stone[b] {H7}
\end{goban}
```

3 The keystone

3.1 The \let Game

To enable the use of the macros `\mark` and `\marks`, these primitives have been reassigned to `\pgfgo_old_mark` and `\pgfgo_old_marks`, respectively. This is done to avoid conflicts with previous definitions and ensure that the new functionalities of the PGFGO package can be seamlessly integrated into existing documents. In practice, if a user needs to access the original versions, they can still do so using the renamed commands.

3.2 Configuration

The macro `\pgfgoset{...}` allows defining general configurations for the package. It is equivalent to `\keys_set:nn{pgfgo}{...}`, meaning it uses the LaTeX3 key system to set options in a structured and hierarchical manner. This macro is particularly useful for customizing the package's global behavior, such as the appearance of the board, stones, or moves, without needing to repeat configurations in each individual environment. For example, a user could define custom colors for players or adjust the board's design to apply to all diagrams in the document. It also serves as a gateway to direct formatting.¹

`\pgfgoset{<options>}`

`/pgfgo/goban = <goban options>` (no default)

Sets general options for the board. This includes properties such as size, background color, visibility of grid lines, or coordinate labels. For example, it can be used to create partial boards or modify the visual style of the border.

`/pgfgo/stone = <stone options>` (no default)

Defines general options for stones, such as their fill color, outline, or default markings. It is useful for establishing a consistent style across all stones in a document (neutral, white, or black).

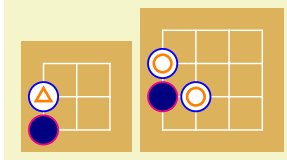
`/pgfgo/use i = <boolean>` (default **true**)

Allows deciding whether or not to use the "I" label on the board. By default, it is enabled ("true"), meaning coordinates include the letter "I". If disabled ("false"), the system skips this letter and jumps directly from "H" to "J", which is common in certain Go game representations.

`/pgfgo/players = <players options>` (no default)

Allows defining options for each player (including neutral ones). This *key* acts as a container encompassing specific configurations for black, white, and neutral players, facilitating customization based on the user's rules or preferences. All available options and how to customize stone styles will be detailed in another section.

¹Use with discretion...unlike footnotes.



```

\pgfgoset{
  goban = {
    background = {
      fill = {color = pgfgo},
      line = false},
    grid = {line = {color = white}},
    players = {
      black = {
        stone = {
          line = {color = magenta},
          fill = {color = blue!50!black}},
      white = {
        stone = {line = {color = blue}},
        mark = {line = {color = orange}}
      }
    }
  }

\begin{goban}[3]
  \stone[black] {A1}
  \stone[white, mark = {triangle}] {A2}
\end{goban}

\begin{goban}[4]
  \stone[black] {A2}
  \stones[white, mark = {circle}] {B2,A3}
\end{goban}

```

Subsequent goban environments inherit these configurations, although they can be overridden locally if necessary.

3.3 Coordinate Syntax

One feature that distinguishes PGFGO from other packages is the ability to input coordinates using various syntaxes, offering flexibility to represent positions on the board intuitively.

- Multiple entries can be separated by commas.
- Stones can be removed by adding a subtractive group after a semicolon («;»).

However, for performance and consistency reasons, some freedoms that were initially unrestricted have been limited. For example, to refer to an intersection, the alphabetical coordinate must be written in uppercase and without spaces. Thus, the B5 intersection must be entered as B5, not as B 5, B 5, or b5, since spaces between the letter and number are invalid in this context. Restrictions will be explained in each case.

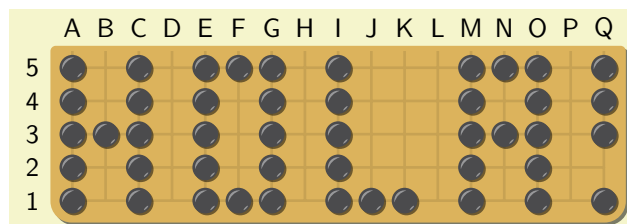
When PGFGO has to read the coordinate argument, it may encounter something like this:

```

\stones{<item>, <item>, ...; <item>, <item>, ...; ...}

```

The first thing it will try to do is split the argument at the ; and build two groups: the additive group and the subtractive group. The additive group is responsible for adding stones using our syntax. The subtractive group is responsible for removing them. These groups alternate automatically when a ; is placed. This is explained in more detail in the corresponding subsection. If no ; is placed, PGFGO will add all the stones to the additive group. Multiple stones or multiple groups separated by , can be added. Together, all this provides an interface to create complex groups with few *tokens*:



```

\pgfgouseprofile{pgfgosmooth}

\begin{goban}[17, partial = {from = A1 to Q5}, label = {at = {north, west}}]
  \stones[b]{*;B,D,H,L,Q2,P,F2:4,J2rK5,N1:2,N4;B3}
\end{goban}

```

3.3.1 Stone Groups

All the stones on the board (*Why not?*)

Adds all the **visible** intersections of the board to the corresponding group. That is, if it is a partial board, only those corresponding to the visible region will be added. It is important to clarify this in case it is used in combination with **remember**. Its syntax is *****.

4	●	●	●
3	●	●	●
2	●	●	●
	B	C	D

```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}[3, label = {at = {south, west}}]  
  \stones[b]{*}  
\end{goban}
```

Intersection

Intersections are specified by indicating the letter followed by the number, with no spaces between the alphabetic and numeric components.

4	○		●
3			●
2		●	
	B	C	D

```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}[label = {at = {south, west}}]  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
  \stone[w]{B 3} % Not recognized because it has a space.  
\end{goban}
```

In the example, B 3 is not recognized due to the space, while B4 is correctly drawn as a white stone.

Vertical or Horizontal Lines

Lines are groups of vertical or horizontal stones implicitly delimited by the size of the board.

- For horizontal lines, the syntax is L.
- For vertical lines, the syntax is N.

●	●	●
●	●	●
●	●	●

●	●	●
●	●	●
●	●	●

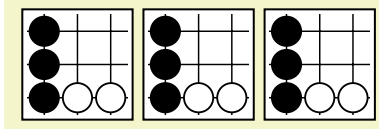
●	●	●
●	●	●
●	●	●

```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{B2,B3,B4}  
  \stones[fill = {color = red}]{D}  
\end{goban}  
  
\begin{goban}  
  \stones[b]{B2,C2,D2}  
  \stones[fill = {color = blue}]{4}  
\end{goban}  
  
\begin{goban}  
  % Adding lines C and 3. Then removing C3.  
  \stones[fill = {color = orange}]{C, 3; C3} % NOTE: C,3 != C3.  
\end{goban}
```

Segments

Segments are explicitly delimited groups of vertical or horizontal stones. Since they are unidirectional (either vertical or horizontal), one of their coordinates remains constant and does not need to be repeated; only the range of the other variable is specified.

- For horizontal segments, the syntax is L:LN or L:L N.
- For vertical segments, the syntax is LN:N or L N:N.



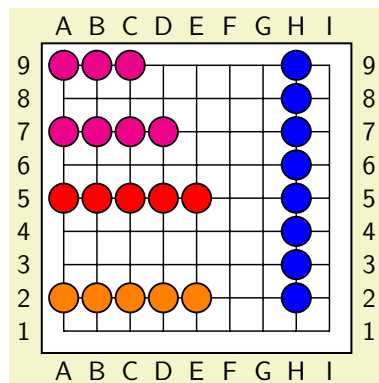
```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}
```

```
\begin{goban}
\stones[b]{B2,B3,B4}
\stones[w]{C2,D2}
\end{goban}
```

```
\begin{goban}
\stones[b]{B2:4}
\stones[w]{C:D2}
\end{goban}
```

```
\begin{goban}
\stones[b]{B 2:4} % Spaces work between distinct elements.
\stones[w]{C:D 2}
\end{goban}
```

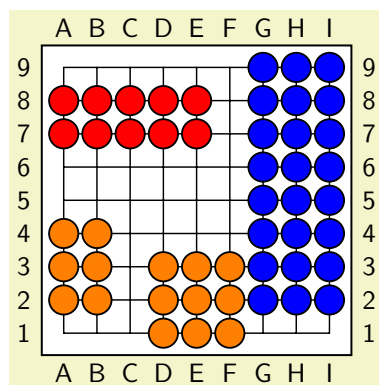
Here, B2:4 represents a horizontal segment from B2 to B4, while C:D2 indicates a horizontal segment from C2 to D2.



```
\begin{goban}[label = {at = all}]
\stones[fill = {color = red}]{A:E5}
\stones[fill = {color = blue}]{H9:2}
\stones[fill = {color = orange}]{E:A2}
\stones[fill = {color = magenta}]{A:D7, A:C9} % Can be combined.
\end{goban}
```

Rectangle: An Artificial Consequence

The segment syntax allows creating ranges between coordinates to insert stones. I found it useful to extend it to include two ranges, offering a first approximation to rectangles (though it's not my favorite method, here it is). In this case, the syntax is L:L N:N or L:LN:N.



```
\begin{goban}[label = {at = all}]
\stones[fill = {color = red}]{A:E 7:8} % Space is not mandatory.
\stones[fill = {color = blue}]{I:G 9:2}
\stones[fill = {color = orange}]{A:B 2:4, F:D 1:3}
\end{goban}
```

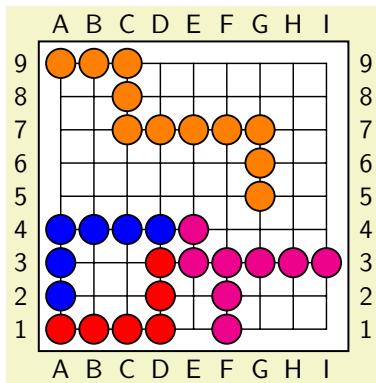
For example, A:E 7:8 creates a rectangle spanning columns A to E in rows 7 and 8, while I:G 9:2 descends from I9 to G2. Although functional, this syntax can be less intuitive, leading to more specific operators we'll see later.

So far, we've covered commands for intersections that cannot be combined with others in the same instruction and therefore **must** be separated by commas. Now, we'll explore commands that can be chained together, offering greater flexibility for complex patterns.

Horizontal-Vertical and Vertical-Horizontal

Given two intersections that are neither vertically nor horizontally aligned, these commands generate the intersections connecting the first to the second via a "horizontal-vertical" or "vertical-horizontal" path. This may remind you of the TikZ -| operator, from which I borrowed the idea. The syntax is LN -| LN (for

the first case) or LN |- LN (for the second), with or without spaces. These commands, along with the next one, can be chained to form ladders or paths typical of the Manhattan metric.

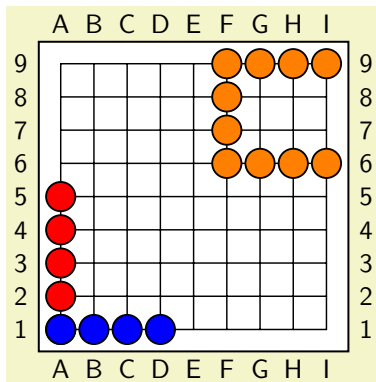


```
\begin{goban}[label = {at = all}]
\stones[fill = {color = red}]{A1 -| D3}
\stones[fill = {color = blue}]{D4 -| A2}
\stones[fill = {color = orange}]{A9 -| C7 -| G5} % Chained.
\stones[fill = {color = magenta}]{F1 |- I3 -
| E4} % Try to guess.
\end{goban}
```

In this example, A1 -| D3 goes horizontally from A1 to D1 and then vertically to D3.

Horizontal or Vertical Line

Given two intersections aligned vertically or horizontally, this operator connects them with a straight line of stones. Its syntax is LN -- LN. It can be chained with the previous two commands to form more elaborate patterns. If the intersections are not aligned, the operator draws nothing (who knows, maybe in the future it will generate ladders ;)).



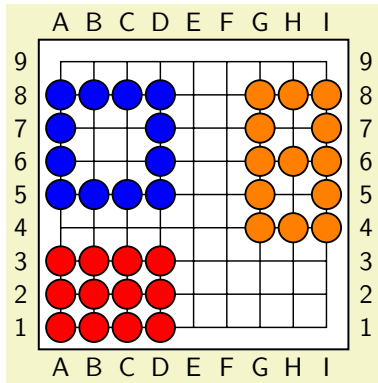
```
\begin{goban}[label = {at = all}]
\stones[fill = {color = red}]{A1 -- A5}
\stones[fill = {color = blue}]{A1 -- D1}
\stones[fill = {color = magenta}]{A6 -- B9} % Doesn't draw because they're not aligned
\stones[fill = {color = orange}]{I9 -| F6 -- I6} % Chained.
\end{goban}
```

Here, A1 -- A5 draws a vertical line, while I9 -| F6 -- I6 combines a "horizontal-vertical" path with an additional horizontal line.

Beware! A1 -- D1 -| F3 is a permitted chain, while A:D1 -| F3 is not, because : is not a chain operator. This might change in future versions of the package.

Filled and Empty Rectangles

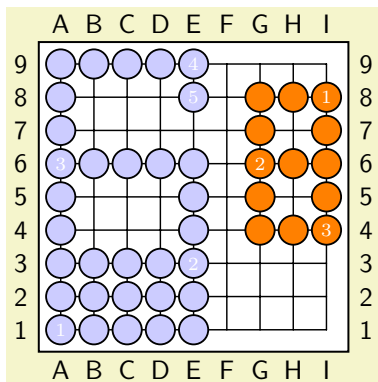
The previous rectangle syntax L:L N:N is unintuitive and more of a legacy of bounded segments. Therefore, there are two more direct operators for creating rectangles: R and r. The difference is that R generates a filled rectangle, while r only draws its outline. Given two diametrically opposite vertices of the rectangle, the syntax is LN R LN or LN r LN. Although spaces are not currently mandatory, I recommend using them for better readability.



```
\begin{goban}[label = {at = all}]
\stones[fill = {color = red}]{A1 R D3}
\stones[fill = {color = blue}]{A5 r D8}
\stones[fill = {color = orange}]{I8 r G4, H6} % It's alive!
\end{goban}
```

For example, A1 R D3 fills a rectangle from A1 to D3, while A5 r D8 draws only the border of a larger rectangle.

Rectangles are also chain operators and can be used as such to create more complex patterns.

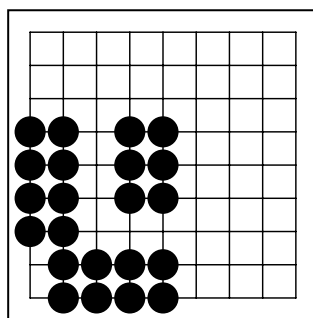


```
\begin{goban}[label = {at = all}]
\stones[fill = {color = orange}]{I8 r G6 r I4} % You guess.
\marks[sequence]{I8, G6, I4}
\stones[fill = {color = blue!20}]{A1 R E3 r A6 |- E9 -- E8} % Wow!
\marks[sequence]{A1, E3, A6, E9, E8}
\end{goban}
```

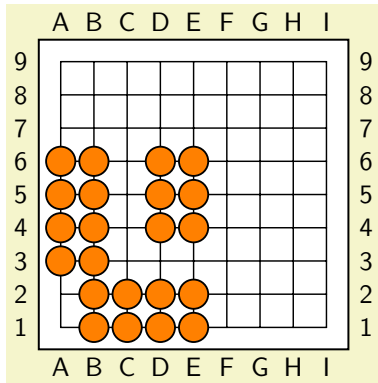
In this case, I8 r G6 r I4 chains two outline rectangles, while A1 R E3 r A6 |- E9 -- E8 combines a filled rectangle, an outline, a "vertical-horizontal" path, and a line, showcasing the power of chaining.

3.3.2 Additive and Subtractive Groups

Suppose we want to draw the following diagram:

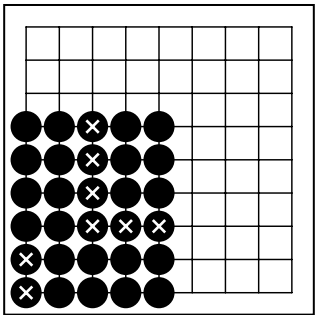


This can be achieved with the operators already seen, breaking the pattern into several parts:

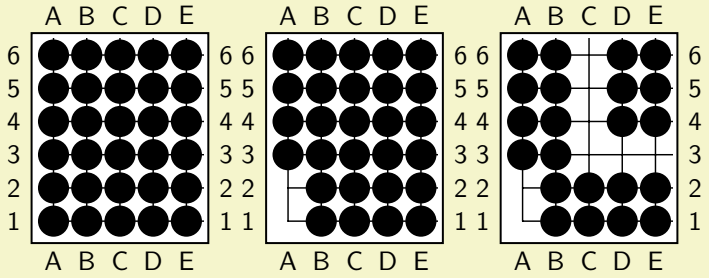


```
\begin{goban}[label = {at = all}]
\stones[fill = {color = orange}] {A6 R B3, B2 R E1, D4 R E6}
\end{goban}
```

But we could also imagine starting from a complete rectangle from which we've removed the marked stones, offering a more conceptual perspective:



This is what additive and subtractive groups are about. An additive group adds intersections to the list, while a subtractive group removes them. By default, commands always begin processing additive groups, which explains why they draw stones directly. In PGFGO, we can switch between both types using ;.



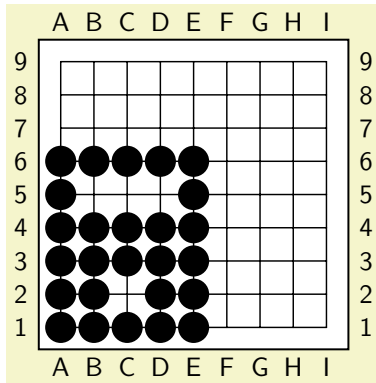
```
\begin{goban}[label = {at = all}, partial = {from = A1 to E6}]
\stones[b]{A1 R E6} % Additive group.
\end{goban}

\begin{goban}[label = {at = all}, partial = {from = A1 to E6}]
\stones[b]{A1 R E6; A 1:2} % Additive group; subtractive group.
\end{goban}

\begin{goban}[label = {at = all}, partial = {from = A1 to E6}]
\stones[b]{A1 R E6; A 1:2, C6 |- E3} % Additive group; subtractive group.
\end{goban}
```

In this sequence, a full rectangle is drawn first (A1 R E6), then the horizontal segment A1:2 is removed, and finally, the path C6 |- E3 is subtracted. This results in the same diagram as the initial example but with a more compact approach.

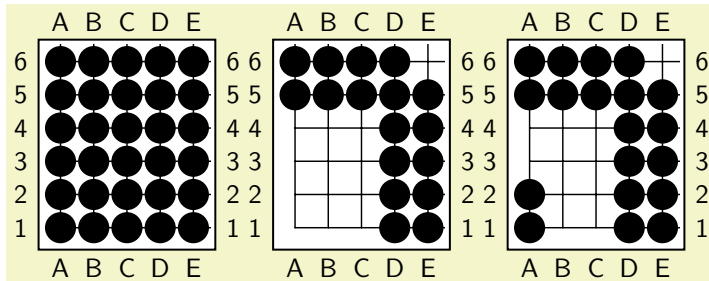
The advantage of this system is that it allows adjustments when needed. Sometimes, an additive pattern is ideal except for one or two stones; in those cases, we can remove them with a subtractive group without redesigning everything.



```
\begin{goban}[label = {at = all}]
\stones[b]{A1 R E6; B:D 5, C2}
\end{goban}
```

Here, B:D 5 removes a horizontal segment in row 5, and C2 removes a specific stone, adjusting the initial rectangle.

Note that additive and subtractive groups can be chained, separated by ;, allowing alternation between adding and removing elements in a single line as many times as desired.



```
\begin{goban}[label = {at = all}, partial = {from = A1 to E6}]
\stones[b]{A1 R E6} % AD
\end{goban}

\begin{goban}[label = {at = all}, partial = {from = A1 to E6}]
\stones[b]{A1 R E6; A1 R C4, E6} % AD, SU
\end{goban}

\begin{goban}[label = {at = all}, partial = {from = A1 to E6}]
\stones[b]{A1 R E6; A1 R C4, E6; A 1:2} % AD, SU, AD
\end{goban}
```

In this last example, a rectangle is created, two regions are removed (A1 R C4 and E6), and then a segment is added (A 1:2).

3.4 Profiles

Profiles are equivalent to styles in TikZ. In short, they allow saving a board and stone configuration under a name and recalling it whenever desired.

`\pgfgobandefinegoban[options]{goban name}{goban options}`

Allows assigning a name to a group of goban options. It has two optional settings.

`/pgfgo/profiles/goban/from = goban name` (no default)

Allows defining a goban based on a copy of another.

```
\pgfgobandefinegoban[from = gobanA]{gobanB}{...}
```

It's possible to copy itself to add options, though it's not the best alternative.

```
\pgfgobandefinegoban[from = gobanB]{gobanB}{...}
```

`/pgfgo/profiles/goban/append`

(no value)

Allows expanding the options of a goban.

```
\pgfgodefinegoban[append]{gobanB}{...}
```

It is equivalent to:

```
\pgfgodefinegoban[from = gobanB]{gobanB}{...}
```

`\pgfgodefineplayer[options]{(player name)}{(player options)}`

Allows assigning a name to a group of stone options. Its options and *keys* are equivalent to those of `\pgfgodefinegoban`.

`\pgfgousegoban{(goban name)}`

Locally applies the options of the goban defined by `goban name`.

`\pgfgouseneutral{(player name)}`

Locally applies the stone options defined by `player name` to the neutral player.

`\pgfgouseblack{(player name)}`

Locally applies the stone options defined by `player name` to the black player.

`\pgfgousewhite{(player name)}`

Locally applies the stone options defined by `player name` to the white player.

`\pgfgouseplayers{(neutral player name)}{(black player name)}{(white player name)}`

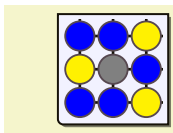
Locally applies the stone options defined by `neutral player name`, `black player name`, and `white player name` to the corresponding players.

`\pgfgouseprofile{(name)}`

This macro is equivalent to:

```
\pgfgousegoban{name}
\pgfgouseplayers{name-neutral}{name-black}{name-white}
```

Note that stones named `name-neutral`, `name-black`, and `name-white` must exist. For example, when we previously ran `\pgfgouseprofile{pgfgo}`, it worked because there is a goban called `pgfgo`, and stones named `pgfgo-neutral`, `pgfgo-black`, and `pgfgo-white`.



```
\pgfgodefinegoban{example}{background = {fill = {color = blue!05}}}
\pgfgodefineplayer[from = default-neutral]{example-neutral}
{stone = {
  fill = {color = gray},
  line = {color = magenta!20!black}}
}

\pgfgodefineplayer[from = example-neutral]{example-white}
{stone = {fill = {color = yellow}}}

\pgfgodefineplayer[from = example-neutral]{example-black}
{stone = {fill = {color = blue}}}

\pgfgouseprofile{example}

\begin{goban}[partial = {from = A1 to C3}]
\moves{A1:3}
\stones[b]{B1,B3,C2}
\stones[w]{C1,C3}
\stone{B2}
\end{goban}
```

3.5 Changing Options on the Fly

When you want to change a board option with `\pgfgoset`, it can be done directly with `\pgfgoset{goban = {...}}`. For players, the situation is slightly different. For this, the following *keys* are available:

`/pgfgo/players` = \langle *players options* \rangle (no default)

Allows adjusting player options. By default, there are three: **neutral**, **black**, and **white**. Players should not be confused with stone profiles. Once a stone profile is loaded, a change can be made with these *keys*.

Player options can be configured all at once with the *key* **all**, or separately. Changes made here will not affect the profile definitions. That is, if we load the **pgfgo-black** profile and modify the black player, this won't affect the definition of **pgfgo-black**, but rather the player's own options first.

`/pgfgo/players/all` = \langle *all player options* \rangle (no default)

`/pgfgo/players/neutral` = \langle *neutral player options* \rangle (no default)

`/pgfgo/players/black` = \langle *first player options* \rangle (no default)

`/pgfgo/players/white` = \langle *second player options* \rangle (no default)

Each player has access to the same key tree. For this reason, the following, although they mention **white**, apply to all players. Each is explained in the section corresponding to the object type, but they are briefly illustrated here.

`/pgfgo/players/white/stone` = \langle *stone options* \rangle (no default)

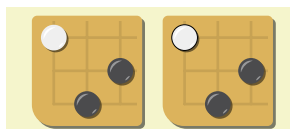
Controls the options for the second player's stones.

`/pgfgo/players/white/stone/line` = \langle *stone line options* \rangle (no default)

Controls the options for the borders of the second player's stones.

`/pgfgo/players/white/stone/line/true` (no value)

Determines whether the stone's border appears or not.



```
\pgfgooseprofile{pgfgosmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

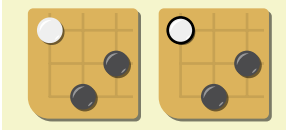
\pgfgoset{players = {white = {stone = {line = true}}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}
```

`/pgfgo/players/white/stone/line/false` (no value)

`/pgfgo/players/white/stone/line/width` = \langle *dimension* \rangle (no default)

Determines the thickness of the stone's border.



```

\pgfgouseprofile{pgfgosmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

\begin{goban}
\stones[b]{B1,C2}
\stone[w]{A3}
\end{goban}

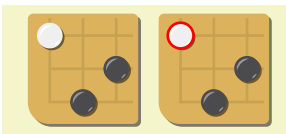
\pgfgoset{players = {white = {stone = {line = {true, width = 1pt}}}}}

\begin{goban}
\stones[b]{B1,C2}
\stone[w]{A3}
\end{goban}

```

`/pgfgo/players/white/stone/line/color = $\langle color \rangle$` (no default)

Determines the color of the stone's border.



```

\pgfgouseprofile{pgfgosmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

\begin{goban}
\stones[b]{B1,C2}
\stone[w]{A3}
\end{goban}

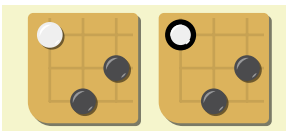
\pgfgoset{players = {white = {stone = {line = {true, width = 1pt, color = red}}}}}

\begin{goban}
\stones[b]{B1,C2}
\stone[w]{A3}
\end{goban}

```

`/pgfgo/players/white/stone/line/opacity = $\langle float \rangle$` (no default)

Determines the opacity of the stone's border.



```

\pgfgouseprofile{pgfgosmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

\begin{goban}
\stones[b]{B1,C2}
\stone[w]{A3}
\end{goban}

\pgfgoset{players = {white = {stone = {line = {true, width = 2pt, opacity = 0.25}}}}}

\begin{goban}
\stones[b]{B1,C2}
\stone[w]{A3}
\end{goban}

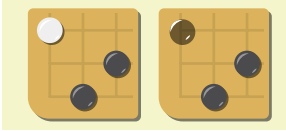
```

`/pgfgo/players/white/stone/fill = $\langle stone fill options \rangle$` (no default)

Controls options related to the stone's fill.

`/pgfgo/players/white/stone/fill/true` (no value)

`/pgfgo/players/white/stone/fill/false` (no value)



```

\pgfgouseprofile{pgfgosmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

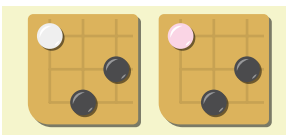
\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

\pgfgoset{players = {white = {stone = {fill = false}}}}
% What's visible in the figure is what remains of the stone: shadows and highlights.

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

```

`/pgfgo/players/white/stone/fill/color = $\langle color \rangle$` (no default)



```

\pgfgouseprofile{pgfgosmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

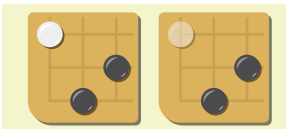
\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

\pgfgoset{players = {white = {stone = {fill = {color = magenta!20}}}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

```

`/pgfgo/players/white/stone/fill/opacity = $\langle float \rangle$` (no default)
Sets the opacity of the stone's fill.



```

\pgfgouseprofile{pgfgosmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

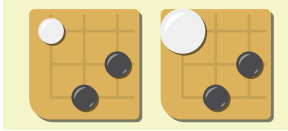
\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

\pgfgoset{players = {white = {stone = {fill = {opacity = 0.5}}}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

```

`/pgfgo/players/white/stone/radius = $\langle dimension \rangle$` (no default)
Sets the stone's radius.



```

\pgfouseprofile{pgfgosmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

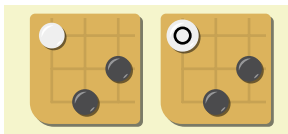
\pgfgoset{players = {white = {stone = {radius = 0.3cm}}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

```

`/pgfgo/players/white/stone/scale = $\langle float \rangle$` (no default)

Controls the stone's scale, which also affects markings.



```

\pgfouseprofile{pgfgosmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

\pgfgoset{players = {white = {stone = {scale = 1.25}}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w, mark = circle]{A3}
\end{goban}

```

`/pgfgo/players/white/stone/drop shadow = $\langle stone\ drop\ shadow\ options \rangle$` (no default)

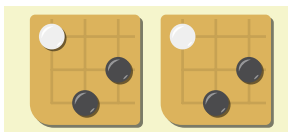
Controls options specific to shadows on stones.

`/pgfgo/players/white/stone/drop shadow/true` (no value)

Enables the shadow on the stone.

`/pgfgo/players/white/stone/drop shadow/false` (no value)

Disables the shadow on the stone.



```

\pgfouseprofile{pgfgosmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

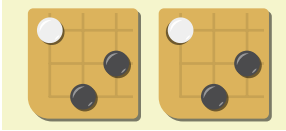
\pgfgoset{players = {white = {stone = {drop shadow = false}}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

```

`/pgfgo/players/white/stone/drop shadow/angle = $\langle float \rangle$` (no default)

Sets the shadow's angle.



```

\pgfgouseprofile{pgfgosmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

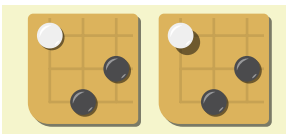
\pgfgoset{players = {white = {stone = {drop shadow = {angle = 225}}}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

```

`/pgfgo/players/white/stone/drop shadow/offset = $\langle dimension \rangle$` (no default)

Sets the shadow's offset from the center.



```

\pgfgouseprofile{pgfgosmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

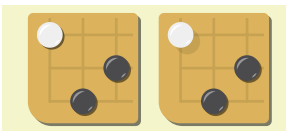
\pgfgoset{players = {white = {stone = {drop shadow = {offset = 0.125cm}}}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

```

`/pgfgo/players/white/stone/drop shadow/opacity = $\langle float \rangle$` (no default)

Controls the shadow's opacity.



```

\pgfgouseprofile{pgfgosmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

\pgfgoset{players = {white = {stone = {drop shadow = {offset = 0.125cm, opacity = 0.1}}}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

```

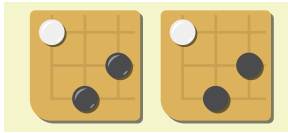
`/pgfgo/players/white/stone/drop shine = $\langle stone\ drop\ shine\ options \rangle$` (no default)

Controls highlights on stones.

`/pgfgo/players/white/stone/drop shine/true` (no value)

`/pgfgo/players/white/stone/drop shine/false` (no value)

Hides highlights on stones.



```

\pgfgouseprofile{pgfgsmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

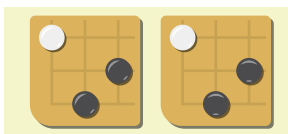
\pgfgoset{players = {black = {stone = {drop shine = false}}}}
% On black, where it's more noticeable.

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

```

`/pgfgo/players/white/stone/drop shine/angle = $\langle float \rangle$` (no default)

Controls the highlight's angle.



```

\pgfgouseprofile{pgfgsmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

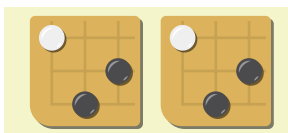
\pgfgoset{players = {black = {stone = {drop shine = {angle = 0}}}}}
% On black, where it's more noticeable.

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

```

`/pgfgo/players/white/stone/drop shine/opacity = $\langle float \rangle$` (no default)

Controls the highlight's opacity.



```

\pgfgouseprofile{pgfgsmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

\pgfgoset{players = {black = {stone = {drop shine = {opacity = 0.5}}}}}
% On black, where it's more noticeable.

\begin{goban}
  \stones[b]{B1,C2}
  \stone[w]{A3}
\end{goban}

```

`/pgfgo/players/white/stone/prisoner = $\langle stone options \rangle$` (no default)

Controls the appearance of prisoners.

`/pgfgo/players/white/move = $\langle stone options \rangle$` (no default)

`/pgfgo/players/white/move/label = $\langle stone options \rangle$` (no default)

`/pgfgo/players/white/move/label/font size = $\langle stone options \rangle$` (no default)

`/pgfgo/players/white/move/label/color = $\langle stone options \rangle$` (no default)

`/pgfgo/players/white/move/label/format` = *<stone options>* (no default)

`/pgfgo/players/white/move/label/format/arabic` = *<stone options>* (no default)

`/pgfgo/players/white/move/label/format/alph` = *<stone options>* (no default)

`/pgfgo/players/white/move/label/format/Alph` = *<stone options>* (no default)

`/pgfgo/players/white/move/label/format/roman` = *<stone options>* (no default)

`/pgfgo/players/white/move/label/format/Roman` = *<stone options>* (no default)

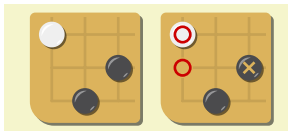
`/pgfgo/players/white/mark` = *<stone options>* (no default)

Controls the options for markings associated with the corresponding player.

`/pgfgo/players/white/mark/line` = *<stone mark line options>* (no default)

`/pgfgo/players/white/mark/line/color` = *<color>* (no default)

Controls the line color of markings.



```
\pgfouseprofile{pgfgosmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

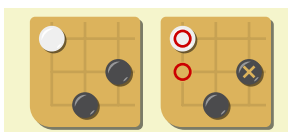
\begin{goban}
\stones[b]{B1,C2}
\stone[w]{A3}
\end{goban}

\pgfgoset{players = {white = {mark = {line = {color = red!80!black}}}}}

\begin{goban}
\stones[b] {B1}
\stone [b, mark] {C2}
\stone [w, mark = circle] {A3}
\mark [w, circle] {A2}
\end{goban}
```

`/pgfgo/players/white/mark/line/width` = *<dimension>* (no default)

Controls the line thickness of markings.



```
\pgfouseprofile{pgfgosmooth}
\pgfgoset{goban = {partial = {from = A1 to C3}}}

\begin{goban}
\stones[b]{B1,C2}
\stone[w]{A3}
\end{goban}

\pgfgoset{players = {white = {mark = {line = {color = red!80!black}}}}}

\begin{goban}
\stones[b] {B1}
\stone [b, mark] {C2}
\stone [w, mark = circle] {A3}
\mark [w, circle] {A2}
\end{goban}
```

`/pgfgo/players/white/mark/fill` = *<stone mark fill options>* (no default)

`/pgfgo/players/white/mark/fill/true` (no value)

`/pgfgo/players/white/mark/fill/false` (no value)

`/pgfgo/players/white/mark/fill/color` = *<color>* (no default)

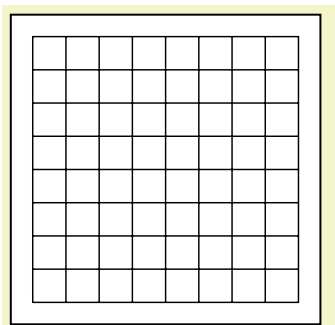
<code>/pgfgo/players/white/mark/label</code>	= \langle stone mark label options \rangle	(no default)
Controls label options for markings that have them.		
<code>/pgfgo/players/white/mark/label/color</code>	= \langle color \rangle	(no default)
<code>/pgfgo/players/white/mark/sequence</code>	= \langle stone mark sequence options \rangle	(no default)
Controls sequence options.		
<code>/pgfgo/players/white/mark/sequence/format</code>	= \langle stone mark sequence format choice \rangle	(no default)
<code>/pgfgo/players/white/mark/sequence/format/arabic</code>		(no value)
<code>/pgfgo/players/white/mark/sequence/format/alph</code>		(no value)
<code>/pgfgo/players/white/mark/sequence/format/Alph</code>		(no value)
<code>/pgfgo/players/white/mark/sequence/format/roman</code>		(no value)
<code>/pgfgo/players/white/mark/sequence/format/Roman</code>		(no value)

4 The Board

When we refer to the "board," we mean an environment or *scope* in which both the goban (the game grid) and its contents—stones, coordinate labels, and other relevant information—are rendered. This environment is designed to be flexible and customizable, allowing users to adapt its appearance and functionality according to the needs of the diagram, whether to represent full games, specific sections, or even add visual annotations.

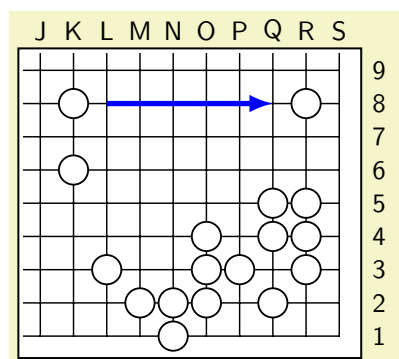
```
\begin{goban}[\langle options \rangle]
  \langle environment contents \rangle
\end{goban}
```

Initializes the goban environment. By default, it draws a square 9×9 intersection board with a visible border, white background, and no labels on the sides.



```
\begin{goban}
\end{goban}
```

Since the board is the only macro that utilizes the TikZ layer, each intersection can be accessed using its alphanumeric coordinate (as in PGF) or numeric values in the TikZ coordinate system. This allows combining Go's intuitive syntax with TikZ's graphical capabilities, which is especially useful for adding custom elements, such as arrows or marks, directly onto the board.

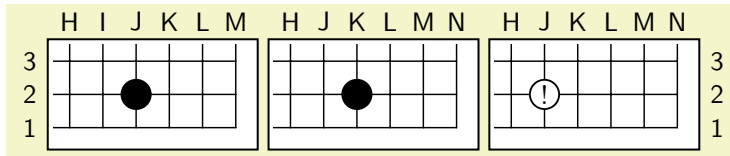


```
\begin{goban}[19, partial = {from = J1 to S9},
  label = {at = {north, east}}]
  \stones {K8,R8,Q5,R5,O4,Q4,L3,O3,M2,N2}
  \mark[black, circle] {K8}
  \stones[white] {K6,R4,R3,P3,N1,O2,Q2}

  \tikzset{flecha/.style = {-{latex[]}, line width = 2pt, blue}}
  \draw[flecha] (12,8)--(17,8);
\end{goban}
```

`/pgfgo/goban/use i=<boolean>` (default true, initially true)

Enables or disables the use of the letter "I" in the board's coordinates and labels. When disabled ("false"), any reference to "I" is interpreted as "J".



```

\pgfset{goban = {13, label = {at = north}}}

\begin{goban}[label = {at = west}, partial = {from = H1 to M3}]
  \stone[b]{J2}
\end{goban}

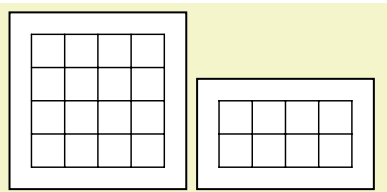
\begin{goban}[use i = false, partial = {from = H1 to N3}]
  \stone[b]{J2}
\end{goban}

\begin{goban}[use i = false, label = {at = east}, partial = {from = H1 to N3}]
  \stone[white, mark = {custom = !}] {I2} % If it's I, it shifts to J.
\end{goban}

```

`/pgfgo/goban/size=<nlines or nlines x nlines>` (no default, initially 9)

Defines the number of vertical and horizontal lines on the board. The word "size" can be omitted, and the value specified directly. If a single integer (e.g., 9) is provided, the board will be square (9×9). If an expression like 5x3 is used, a rectangular board with 5 columns and 3 rows will be created.



```

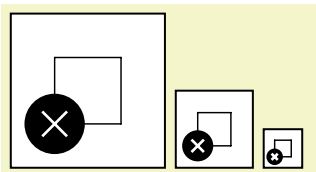
\begin{goban}[5]
\end{goban}

\begin{goban}[5x3]
\end{goban}

```

`/pgfgo/goban/scale=<float>` (no default, initially 1)

Controls the global scale of the board, affecting both its overall dimensions and the thickness of certain elements (e.g., the "line width" of the lines).



```

\begin{goban}[2, scale = 2]
  \stone[b, mark]{A1}
\end{goban}

\begin{goban}[2, scale = 1]
  \stone[b, mark]{A1}
\end{goban}

\begin{goban}[2, scale = 0.5]
  \stone[b, mark]{A1}
\end{goban}

```

4.1 Grid

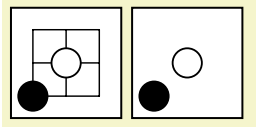
The grid refers to the central lines that form the board's intersections.

`/pgfgo/goban/grid=<options>` (no default)

Controls the behavior and appearance of the board's central lines. This set of options allows modifying their visibility, color, thickness, and spacing, offering a high degree of customization.

`/pgfgo/goban/grid/false` (style, no value)

Disables the central lines, leaving only the border and stones visible.



```
\begin{goban}[3]
\stone[b]{A1}
\stone[w]{B2}
\end{goban}

\begin{goban}[3, grid = false]
\stone[b]{A1}
\stone[w]{B2}
\end{goban}
```

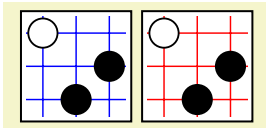
The first board shows the default grid.

`/pgfgo/goban/grid/line=<options>` (no default)

Allows controlling the grid lines.

`/pgfgo/goban/grid/line/color =<color>` (no default, initially black)

Allows changing the color of the grid lines.



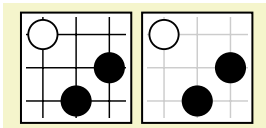
```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}

\begin{goban}[grid = {line = {color = blue}}, new remember]
\stones[b]{C2,D3}
\stone[w]{B4}
\end{goban}

\begin{goban}[grid = {line = {color = red}}, resume]
\end{goban}
```

`/pgfgo/goban/grid/line/opacity =<float>` (no default, initially 1)

Sets the opacity of the grid lines, from 0 (transparent) to 1 (opaque).



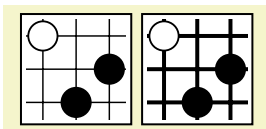
```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}

\begin{goban}[new remember]
\stones[b]{C2,D3}
\stone[w]{B4}
\end{goban}

\begin{goban}[grid = {line = {opacity = 0.2}}, resume]
\end{goban}
```

`/pgfgo/goban/grid/line/width =<dimension>` (no default, initially 0.55pt)

Defines the thickness of the grid lines.



```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}

\begin{goban}[new remember]
\stones[b]{C2,D3}
\stone[w]{B4}
\end{goban}

\begin{goban}[grid = {line = {width = 1.5pt}}, resume]
\end{goban}
```

`/pgfgo/goban/grid/x sep =<dimension>` (no default, initially 1.25em)

Sets the spacing between vertical lines, adjusting the width of the board's columns.

`/pgfgo/goban/grid/y sep = $\langle dimension \rangle$` (no default, initially 1.25em)

Sets the spacing between horizontal lines, adjusting the height of the rows.

`/pgfgo/goban/grid/sep = $\langle dimension \rangle$` (no default, initially 1.25em)

Simultaneously defines the vertical and horizontal spacing of the lines, ensuring uniform spacing in both directions. This is a convenient option for maintaining balanced proportions.

4.2 Border

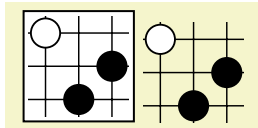
The board's border is the outline that frames the grid and stones, providing a clear visual boundary. By default, it is active, has a white background, and a black outline.

`/pgfgo/goban/background= $\langle options \rangle$` (default true)

Controls the properties of the board's border, such as its visibility, color, thickness, and shape, allowing detailed customization.

`/pgfgo/goban/background/false` (style, no value)

Completely disables the board's border, removing both the outline and fill. This is useful for minimalist diagrams or when the document's background already provides sufficient contrast.



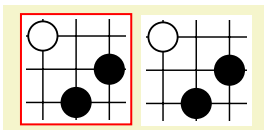
```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}[new remember]  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}[background = false, resume]  
\end{goban}
```

`/pgfgo/goban/background/fill= $\langle options \rangle$` (no default, initially true)

Controls options related to the board's background fill.

`/pgfgo/goban/background/fill= $\langle boolean \rangle$` (no default, initially true)

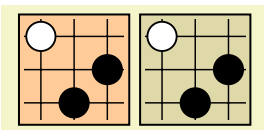
Determines whether the board's background fill is active. If disabled, the area inside the border will be transparent, showing only the outline (if enabled).



```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}[background = {line = {color = red}}, new remember]  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}[background = {line = false}, resume]  
\end{goban}
```

`/pgfgo/goban/background/fill/color = $\langle color \rangle$` (default white)

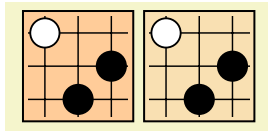
Defines the fill color of the board.



```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}[background = {fill = {color = orange!40}}, new remember]  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}[background = {fill = {color = olive!30}}, resume]  
\end{goban}
```


`/pgfgo/goban/background/fill/opacity` = $\langle float \rangle$ (no default, initially 1)

Controls the opacity of the fill, from 0 (transparent) to 1 (opaque).



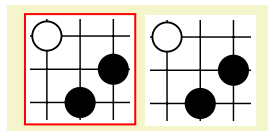
```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}[background = {fill = {color = orange!40}}, new remember]  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}[background = {fill = {color = orange!40}, fill = {opacity = 0.5}}, resume]  
\end{goban}
```

`/pgfgo/goban/background/line`= $\langle options \rangle$ (default true)

Controls the options for the background's outline.

`/pgfgo/goban/background/line`= $\langle boolean \rangle$ (no default)

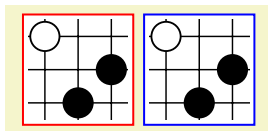
Enables or disables the border line.



```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}[background = {line = {color = red}}, new remember]  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}[background = {line = false}, resume]  
\end{goban}
```

`/pgfgo/goban/background/line/color` = $\langle color \rangle$ (default black)

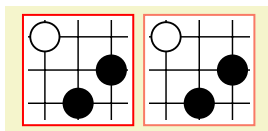
Defines the color of the border line, allowing it to stand out from the background or grid lines.



```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}[background = {line = {color = red}}, new remember]  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}[background = {line = {color = blue}}, resume]  
\end{goban}
```

`/pgfgo/goban/background/line/opacity` = $\langle float \rangle$ (default 1)

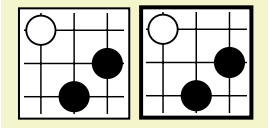
Adjusts the opacity of the border line.



```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}[background = {line = {color = red}}, new remember]  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}[background = {line = {color = red}, line = {opacity = 0.5}}, resume]  
\end{goban}
```

`/pgfgo/goban/background/line/width` = $\langle dimension \rangle$ (default 0.75pt)

Controls the thickness of the border line.



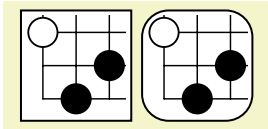
```
\pgfset{goban = {5, partial = {from = B2 to D4}}}

\begin{goban}[new remember]
\stones[b]{C2,D3}
\stone[w]{B4}
\end{goban}

\begin{goban}[background = {line = {width = 1.5pt}}, resume]
\end{goban}
```

`/pgfgo/goban/background/rounded corners = <dimension>` (default 1pt)

Adjusts the rounding of the border corners, from 0pt (straight corners) to larger values for a smoother, more stylized effect.



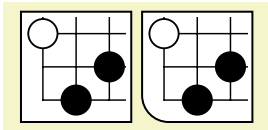
```
\pgfset{goban = {5, partial = {from = A1 to C3}}}

\begin{goban}[new remember]
\stones[b]{B1,C2}
\stone[w]{A3}
\end{goban}

\begin{goban}[background = {rounded corners = 10pt}, resume]
\end{goban}
```

`/pgfgo/goban/background/rounded corners/outer = <dimension>` (default 1pt)

Adjusts only the rounding of the outer corners of the border.



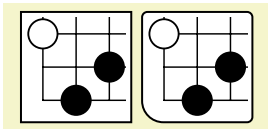
```
\pgfset{goban = {5, partial = {from = A1 to C3}}}

\begin{goban}[background = {rounded corners = 0pt}, new remember]
\stones[b]{B1,C2}
\stone[w]{A3}
\end{goban}

\begin{goban}[background = {rounded corners = {outer = 10pt}}, resume]
\end{goban}
```

`/pgfgo/goban/background/rounded corners/inner = <dimension>` (default 1pt)

Adjusts only the rounding of the inner corners of the board (only visible on partial boards).



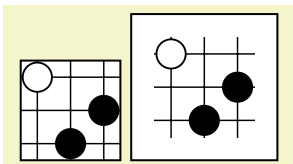
```
\pgfset{goban = {5, partial = {from = A1 to C3}}}

\begin{goban}[background = {rounded corners = 0pt}, new remember]
\stones[b]{B1,C2}
\stone[w]{A3}
\end{goban}

\begin{goban}[background = {rounded corners = {outer = 8pt, inner = 2pt}}, resume]
\end{goban}
```

`/pgfgo/goban/background/sep = <dimension>` (default /pgfgo/goban/stone/radius * 1.5)

Defines the separation between the grid and the border, based by default on the stone radius multiplied by 1.5. This adjustment ensures that stones near the border do not overlap with it.



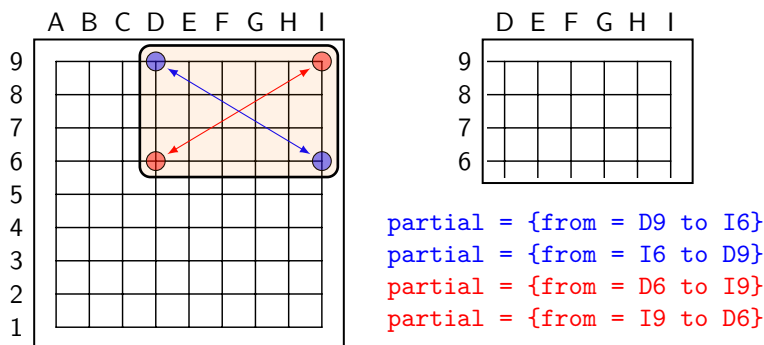
```
\pgfset{goban = {5, partial = {from = B2 to D4}}}

\begin{goban}[background = {sep = 0.625em}, new remember]
\stones[b]{C2,D3}
\stone[w]{B4}
\end{goban}

\begin{goban}[background = {sep = 1.5em}, resume]
\end{goban}
```

4.3 Partial Board

In many cases, it's not necessary to represent a full board, but rather just a rectangular section—whether due to space constraints, to focus attention on a specific area, or to simplify diagram creation. The `goban` environment includes the `key partial`, which allows defining this region using the sub-`key from`. This specifies the opposite vertices of a rectangle, regardless of the order in which they are provided, making it easy to use. For example, `from = A1 to D3` is equivalent to `from = D3 to A1`.

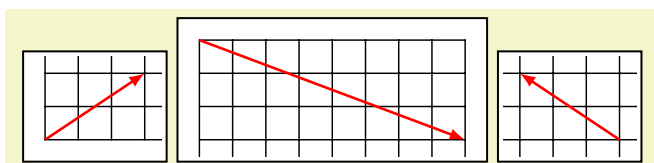


`/pgfgo/goban/partial=<options>` (no default)

Controls options for representing partial boards, allowing the delimitation of a specific region of the goban.

`/pgfgo/goban/partial/from=<intersection to intersection>` (no default)

Specifies the opposite vertices of the rectangle defining the partial board. These intersections can be any pair of points forming a diagonal of the desired area.



```
\tikzset{flecha/.style = {-{latex[]}, line width = 1pt, red}}

\begin{goban}[partial = {from = A1 to D3}]
\draw[flecha] (1,1)--(4,3); % From A1 to D3
\end{goban}

\begin{goban}[partial = {from = A9 to I6}]
\draw[flecha] (1,9)--(9,6); % From A9 to I6
\end{goban}

\begin{goban}[partial = {from = E2 to B4}]
\draw[flecha] (5,2)--(2,4); % From E2 to B4
\end{goban}
```

4.4 Board Labels

Labels are the alphanumeric indicators (letters and numbers) that appear on the sides of the board to identify intersections.

`/pgfgo/goban/label=<options>` (no default)

Controls the properties of the labels, such as their position and format.

`/pgfgo/goban/label/false` (no value)

Disables all labels.

`/pgfgo/goban/label/at =`*<options>* (no default)

Defines on which sides of the board the labels appear. Options include combinations of cardinal positions or predefined values like "all" or "none".

`/pgfgo/goban/label/at/all` (style, no value)

Displays labels on all sides of the board (north, south, east, and west).

`/pgfgo/goban/label/at/none` (style, no value)

Equivalent to `label=false`, removing all labels.

`/pgfgo/goban/label/at/east` (style, no value)

Places labels only on the right side (vertical numbers).

`/pgfgo/goban/label/at/right` (style, no value)

Equivalent to `east`.

`/pgfgo/goban/label/at/north` (style, no value)

Places labels only at the top (horizontal letters).

`/pgfgo/goban/label/at/above` (style, no value)

Equivalent to `north`.

`/pgfgo/goban/label/at/south` (style, no value)

Places labels only at the bottom (horizontal letters).

`/pgfgo/goban/label/at/below` (style, no value)

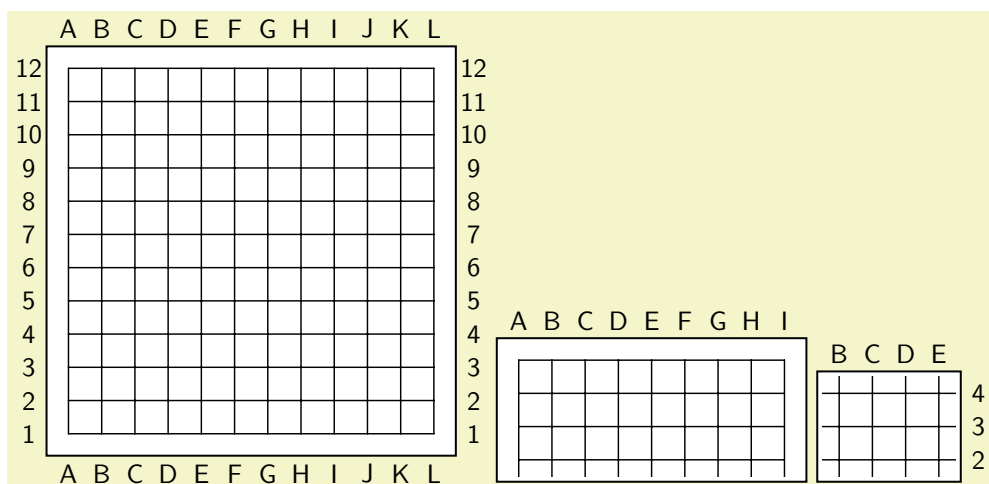
Equivalent to `south`.

`/pgfgo/goban/label/at/west` (style, no value)

Places labels only on the left side (vertical numbers).

`/pgfgo/goban/label/at/left` (style, no value)

Equivalent to `west`.



```
\begin{goban}[12, label = {at = {all}}]
\end{goban}

\begin{goban}[partial = {from = A6 to I9}, label = {at = north}]
\end{goban}

\begin{goban}[partial = {from = B2 to E4}, label = {at = {north, east}}]
\end{goban}
```

`/pgfgo/goban/label/sep =` *<dimension>* (no default, initially 0.5em)

Controls the distance between the labels and the board's border.

`/pgfgo/goban/label/text color = $\langle color \rangle$` (no default, initially black)
 Defines the text color of the labels.

4.5 Remembering a Board

The "remember" system allows storing and reusing a board's state across different `goban` environments. This functionality is highly experimental and, strictly speaking, should not yet be documented.

`/pgfgo/goban/new remember` (style, no value)
 Starts a new memory state, saving the current board's stones and configurations for later use.

`/pgfgo/goban/add to remember` (style, no value)
 Adds elements to the memorized state without erasing the previous content, allowing incremental diagram construction.

`/pgfgo/goban/forget` (style, no value)
 Erases the memorized state, resetting the memory system.

`/pgfgo/goban/resume` (style, no value)
 Retrieves and renders the memorized state, useful for continuing from a previous point without rewriting the code.

5 Stones, Moves, and Prisoners

Stones are the fundamental elements. In PGFGO, commands and options are provided to draw them flexibly, allowing customization of their appearance and behavior according to the needs of the diagram.

5.1 Stones

`\stone[$\langle options \rangle$]{ $\langle intersection \rangle$ }`

This command draws an individual stone at the specified intersection. The mandatory argument is the coordinate (e.g., "C2"), while optional options allow adjusting its style, such as color, size, or markings, following the convention of the first player in Go.

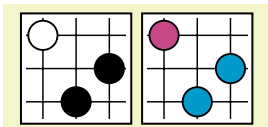
`\stones[$\langle options \rangle$]{ $\langle intersection , intersection, ... \rangle$ }`

Similar to `\stone`, but allows placing multiple stones using the corresponding syntax (see Coordinate Syntax).

It is possible to change an option for all players using `\pgfgoset{stone = {...}}`. This is equivalent to `\pgfgoset{players = {all = {stone = {...}}}}`.

`/pgfgo/stone/fill = $\langle option \rangle$` (default true)
 Controls the fill options of a stone.

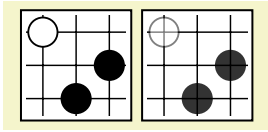
`/pgfgo/stone/fill/color = $\langle color \rangle$` (no default)
 Defines the fill color of a stone.



```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[fill = {color = cyan!80!black}]{C2,D3}  
  \stone[fill = {color = magenta!80!black}]{B4}  
\end{goban}
```

`/pgfgo/stone/fill/opacity` = $\langle float \rangle$ (no default, initially 1)

Controls the opacity of the stone's fill, ranging from 0 (transparent) to 1 (opaque).



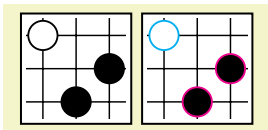
```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b, fill = {opacity = 0.8}]{C2,D3}  
  \stone[w, fill = {opacity = 0.5}]{B4}  
\end{goban}
```

`/pgfgo/stone/line` = $\langle option \rangle$ (no default, initially true)

Controls the border options of a stone.

`/pgfgo/stone/line/color` = $\langle color \rangle$ (no default, initially black)

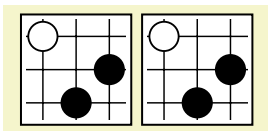
Sets the border color of the stone, which is black by default for all stones.



```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b, line = {color = magenta}]{C2,D3}  
  \stone[w, line = {color = cyan}]{B4}  
\end{goban}
```

`/pgfgo/stone/line/opacity` = $\langle float \rangle$ (no default, initially 1)

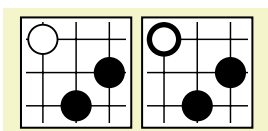
Defines the opacity of the stone's border, allowing it to be more subtle or transparent.



```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b, line = {opacity = 0.5}]{C2,D3}  
  \stone[w, line = {opacity = 0.8}]{B4}  
\end{goban}
```

`/pgfgo/stone/line/width` = $\langle dimension \rangle$ (no default, initially 0.9pt)

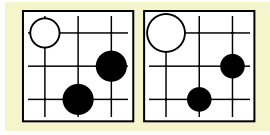
Controls the thickness of the stone's border.



```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w, line = {width = 2pt}]{B4}  
\end{goban}
```

`/pgfgo/stone/radius` = $\langle dimension \rangle$ (no default, initially 0.55em)

Sets the size of the stone by its radius.



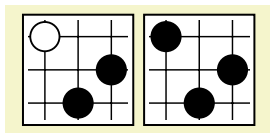
```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b, radius = 0.15cm]{C2,D3}  
  \stone[w, radius = 0.25cm]{B4}  
\end{goban}
```

`/pgfgo/stone/scale` = $\langle float \rangle$ (no default, initially 1)

Defines a scaling factor that affects all elements of the stone (radius, border, markings), maintaining their proportions.

`/pgfgo/stone/black` (no value)

Assigns the stone the characteristics of the first player (black by default), including fill and border color. This is the initial state of any stone unless another option is specified.



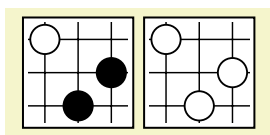
```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[black]{B4}  
\end{goban}
```

`/pgfgo/stone/b` (no value)

Abbreviation for "black," with identical functionality.

`/pgfgo/stone/white` (no value)

Assigns the stone the characteristics of the second player (white by default), with a white fill and black border.



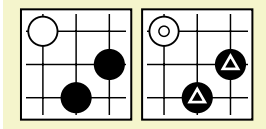
```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[white]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[white]{C2,D3}  
  \stone[white]{B4}  
\end{goban}
```

`/pgfgo/stone/w` (no value)

Abbreviation for "white," with the same functionality.

`/pgfgo/stone/mark` = $\langle mark keys \rangle$ (no default)

Places a mark on the stone (e.g., triangle, circle). Marks can be further customized with other keys, such as color or size.

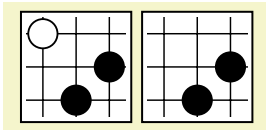


```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b, mark = triangle]{C2,D3}  
  \stone[w, mark = t-circle]{B4}  
\end{goban}
```

/pgfgo/stone/forget

(no value)

When the board uses a memory system (`new remember`, `resume`), this option indicates that the stone should not be remembered, allowing it to be excluded from subsequent states.

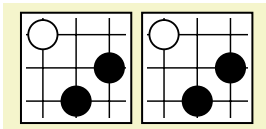


```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}[new remember]  
  \stones[b]{C2,D3}  
  \stone[w, forget]{B4}  
\end{goban}  
  
\begin{goban}[resume]  
  \end{goban}
```

/pgfgo/stone/remember

(no value)

In a board with active memory, ensures that the stone is remembered even if the general environment uses `forget`.

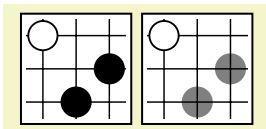


```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}[forget]  
  \stones[b]{C2,D3}  
  \stone[w, remember]{B4}  
\end{goban}  
  
\begin{goban}[resume]  
  \end{goban}
```

/pgfgo/stone/prisoner=*(prisoner options)*

(default fill opacity = 0.5)

Characterizes a stone as a prisoner, typically with reduced opacity (0.5 by default) to indicate it has been captured. Other options can be added to customize its appearance.



```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b, prisoner]{C2,D3}  
  \stone[white]{B4}  
\end{goban}
```

5.2 Moves

Move commands allow representing sequences of plays, automatically alternating between black and white. They include options for numbering the moves and customizing the associated stones.

`\move*[\options]{\intersection}`

Draws a stone as part of a move sequence, automatically alternating colors (black, white, black, etc.). The starred version (`\move*`) adds a numeric label to the stone.

`\moves*[\options]{\intersection , \intersection, ...}`

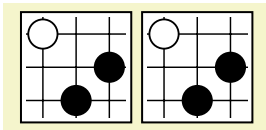
Similar to `\move`, but applies the sequence to multiple intersections in a single line.

It is possible to change options for all players using `\pgfgoset{move = {...}}`, which is equivalent to `\pgfgoset{players = {all = {move = {...}}}`.

`/pgfgo/move/black`

(no value)

Sets the move sequence to start with the black player, useful for forcing the start of a play in specific diagrams.

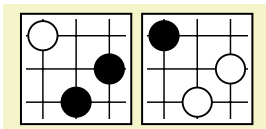


```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \moves[b]{C2,B4}  
  \move{D3}  
\end{goban}
```

`/pgfgo/move/white`

(no value)

Sets the sequence to start with the white player, altering the natural order of moves.

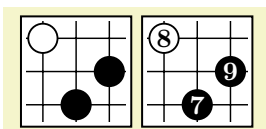


```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \moves[white]{C2,B4}  
  \move{D3}  
\end{goban}
```

`/pgfgo/move/from = \number`

(no default)

Defines the starting number of a numbered move sequence, allowing continuation from a specific point instead of starting at 1.



```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \moves*[from = 7]{C2,B4}  
  \move*{D3}  
\end{goban}
```

`/pgfgo/move/label = \options`

(no default)

Controls the properties of numeric labels in starred moves, such as size, color, or format.

`/pgfgo/move/label/format = \options`

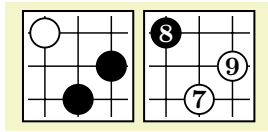
(no default, initially arabic)

Defines the numbering style of the labels.

`/pgfgo/move/label/format/arabic`

(no value)

Uses Arabic numerals, the default format for move labels.

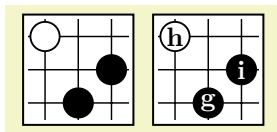


```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \moves*[from = 7]{C2,B4}  
  \move*{D3}  
\end{goban}
```

`/pgfgo/move/label/format/alph`

(no value)

Uses lowercase letters for the labels.

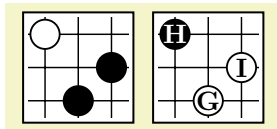


```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\pgfgoset{move={label = {format=alph}}}  
  
\begin{goban}  
  \moves*[from = 7]{C2,B4}  
  \move*{D3}  
\end{goban}
```

`/pgfgo/move/label/format/Alph`

(no value)

Uses uppercase letters.

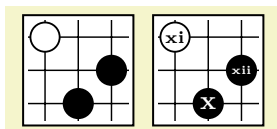


```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\pgfgoset{move = {label = {format = Alph}}}  
  
\begin{goban}  
  \moves*[from = 7]{C2,B4}  
  \move*{D3}  
\end{goban}
```

`/pgfgo/move/label/format/roman`

(no value)

Uses lowercase Roman numerals.

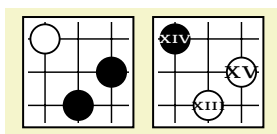


```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\pgfgoset{move = {label = {format = roman}}}  
  
\begin{goban}  
  \moves*{C2,B4}  
  \move*{D3}  
\end{goban}
```

`/pgfgo/move/label/format/Roman`

(no value)

Uses uppercase Roman numerals.

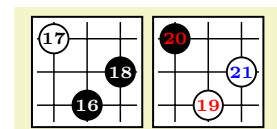


```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\pgfgoreset{move = {label = {format = Roman}}}  
  
\begin{goban}  
  \moves*{C2,B4}  
  \move*{D3}  
\end{goban}
```

`/pgfgo/move/label/color = $\langle color \rangle$`

(no default)

Defines the color of the labels.

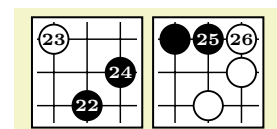


```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \moves*{C2,B4}  
  \move*{D3}  
\end{goban}  
  
\begin{goban}  
  \moves*[label = {color = red}]{C2,B4}  
  \move*[label = {color = blue}]{D3}  
\end{goban}
```

`/pgfgo/move/label/forget`

(no value)

Prevents move labels from being stored in the board's memory when using `remember`, allowing stones to persist without their numbers.



```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}[new remember]  
  \moves*[label = forget]{C2,B4,D3}  
\end{goban}  
  
\begin{goban}[resume]  
  \moves*{C:D4}  
\end{goban}
```

`/pgfgo/move/label/remember`

(no value)

Ensures that labels are stored in memory, even if the environment uses `forget`, maintaining their continuity in subsequent diagrams.

`/pgfgo/move/forget`

(no value)

Indicates that moves should not be remembered in the board's memory, removing them from future states when using `resume`.

`/pgfgo/move/remember`

(no value)

Ensures that moves are remembered, preserving them for reuse with `resume`.

5.3 Prisoners

PGFGO provides specific commands to represent prisoners, typically with reduced opacity to distinguish them from active stones.

`\prisoner[options]{intersection}`

Draws a prisoner stone at a specific intersection, with options to customize its style.

`\prisoners[options]{intersection , intersection , ...}`

Places multiple prisoner stones in a single line, efficient for showing captured groups.

`/pgfgo/prisoner=stone options` (default fill opacity = 0.5)

Defines the characteristics of prisoner stones, with a default fill opacity of 0.5 to indicate their status. Other `\stone` options, such as color or size, can be applied.

6 Marks

Marks are graphical elements placed at the intersections of the board to highlight specific positions, indicate points of interest, or number sequences without the need to add stones. PGFGO offers versatile commands and options to customize these marks, ranging from predefined shapes to custom labels.

`\mark[options]{intersection}`

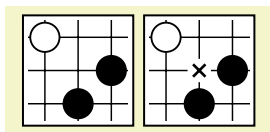
Draws an individual mark at the specified intersection (e.g., "C3"). Options allow defining its shape, color, and other attributes.

`\marks[options]{intersection , intersection , ...}`

Similar to `\mark`, but applies the same mark to multiple intersections using the coordinate syntax.

`/pgfgogo/mark =options` (default cross)

Defines the type of mark to be placed, with a cross ("cross") as the default value if no other option is specified.

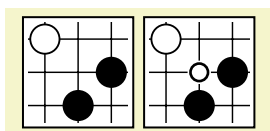


```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
  \mark{C3}  
\end{goban}
```

`/pgfgo/mark/circle`

(no value)

Places a hollow circle as a mark.

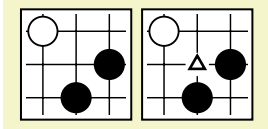


```
\pgfgoset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
  \mark[circle]{C3}  
\end{goban}
```

`/pgfgo/mark/triangle`

(no value)

Draws a hollow triangle.



```
\pgfset{goban = {5, partial = {from = B2 to D4}}}
```

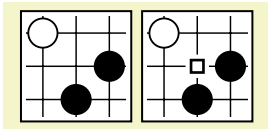
```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\end{goban}
```

```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\mark[triangle]{C3}
\end{goban}
```

/pgfgo/mark/square

(no value)

Places a hollow square.



```
\pgfset{goban = {5, partial = {from = B2 to D4}}}
```

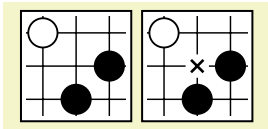
```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\end{goban}
```

```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\mark[square]{C3}
\end{goban}
```

/pgfgo/mark/cross

(no value)

Draws a cross.



```
\pgfset{goban = {5, partial = {from = B2 to D4}}}
```

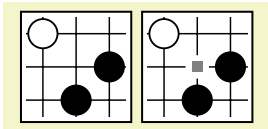
```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\end{goban}
```

```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\mark[cross]{C3}
\end{goban}
```

/pgfgo/mark/filled square

(no value)

Places a filled square.



```
\pgfset{goban = {5, partial = {from = B2 to D4}}}
```

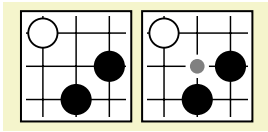
```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\end{goban}
```

```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\mark[filled square]{C3}
\end{goban}
```

/pgfgo/mark/filled circle

(no value)

Draws a filled circle.

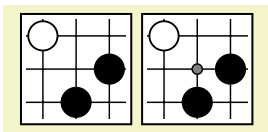


```
\pgfset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
  \mark{filled circle}{C3}  
\end{goban}
```

`/pgfgo/mark/t-circle`

(no value)

Places a small circle with a thicker border, specifically designed for marking territories.

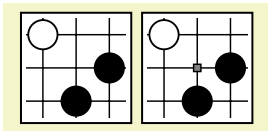


```
\pgfset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
  \mark{t-circle}{C3}  
\end{goban}
```

`/pgfgo/mark/t-square`

(no value)

Draws a small square with a thick border, similar to "t-circle," used to mark territories.

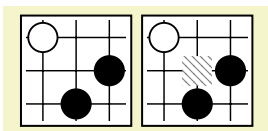


```
\pgfset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
  \mark{t-square}{C3}  
\end{goban}
```

`/pgfgo/mark/hatched lines`

(no value)

Places a pattern of crossed (hatched) lines.



```
\pgfset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
  \mark{hatched lines}{C3}  
\end{goban}
```

`/pgfgo/mark/sequence=<options>` (default false, initial false)

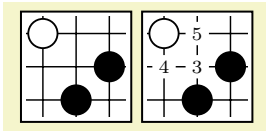
Allows numbering a series of marks in order.

`/pgfgo/mark/sequence/use` (no value)

Displays the `sequence` mark on the board.

`/pgfgo/mark/sequence/from=<number>` (no default)

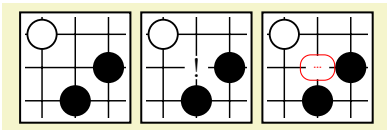
Sets the starting number of a numbered mark sequence, allowing continuation from a specific point instead of 1.



```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
  \marks[sequence = {use, from = 3}]{C3,B3,C4}  
\end{goban}
```

`/pgfgo/mark/custom=<token list>` (no default)

Allows defining a custom mark using text or symbols (e.g., "!" or "?") and even images.



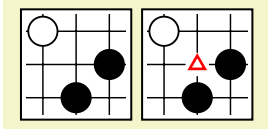
```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
  \mark[custom = {!}]{C3}  
\end{goban}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
  \mark[custom = {\tikz{\node[rounded corners, draw, inner sep = 1em, red]{\dots}};}] {C3}  
\end{goban}
```

`/pgfgo/mark/line =<option>` (default true)

Controls the outline of the mark.

`/pgfgo/mark/line/color = <color>` (no default)

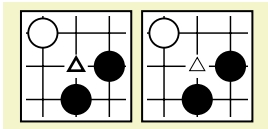
Defines the outline color of the mark.



```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
  \mark[triangle, line = {color = red}]{C3}  
\end{goban}
```

`/pgfgo/mark/line/width = $\langle dimension \rangle$` (no default)

Adjusts the thickness of the mark's outline.



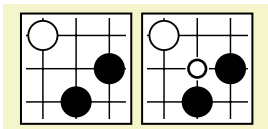
```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
  \mark[triangle]{C3}  
\end{goban}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
  \mark[triangle, line = {width = 0.1pt}]{C3}  
\end{goban}
```

`/pgfgo/mark/fill = $\langle options \rangle$` (default true)

Controls the fill of a mark.

`/pgfgo/mark/fill/color = $\langle color \rangle$` (no default)

Sets the fill color of a mark.



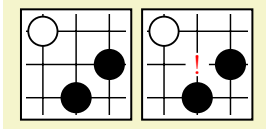
```
\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
\end{goban}  
  
\begin{goban}  
  \stones[b]{C2,D3}  
  \stone[w]{B4}  
  \mark[circle, fill = {color = red}]{C3}  
\end{goban}
```

`/pgfgo/mark/label = $\langle option \rangle$` (no default)

Controls the appearance of labels for marks that have them.

`/pgfgo/mark/label/color = $\langle color \rangle$` (no default)

Controls the color of the text or symbol in custom marks (e.g., with `custom`).



```
\pgfset{goban = {5, partial = {from = B2 to D4}}}
```

```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\end{goban}
```

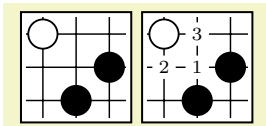
```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\mark[custom = {!}, label = {color = red}]{C3}
\end{goban}
```

`/pgfgo/mark/label/format=<options>` (default `arabic`)

Controls the numbering style of enumeration labels (e.g., `sequence`), with options such as Arabic numerals, letters, or Roman numerals.

`/pgfgo/mark/label/format/arabic` (no value)

Uses Arabic numerals for sequences.



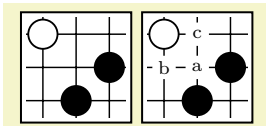
```
\pgfset{goban = {5, partial = {from = B2 to D4}}}
```

```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\end{goban}
```

```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\marks[label = {format = arabic}, sequence]{C3,B3,C4}
\end{goban}
```

`/pgfgo/mark/label/format/alph` (no value)

Uses lowercase letters for the sequence.



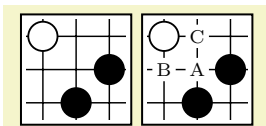
```
\pgfset{goban = {5, partial = {from = B2 to D4}}}
```

```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\end{goban}
```

```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\marks[label = {format = alph}, sequence]{C3,B3,C4}
\end{goban}
```

`/pgfgo/mark/label/format/Alph` (no value)

Uses uppercase letters.



```
\pgfset{goban = {5, partial = {from = B2 to D4}}}
```

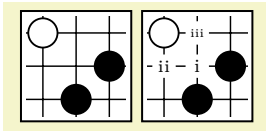
```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\end{goban}
```

```
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\marks[label = {format = Alph}, sequence]{C3,B3,C4}
\end{goban}
```

/pgfgo/mark/label/format/roman

(no value)

Uses lowercase Roman numerals.



```

\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}

\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\end{goban}

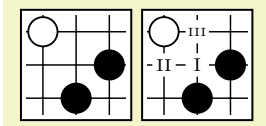
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\marks[label = {format = roman}, sequence]{C3,B3,C4}
\end{goban}

```

/pgfgo/mark/label/format/Roman

(no value)

Uses uppercase Roman numerals.



```

\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}

\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\end{goban}

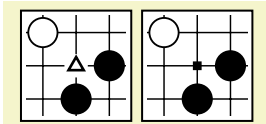
\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\marks[label = {format = Roman}, sequence]{C3,B3,C4}
\end{goban}

```

/pgfgo/mark/black

(no value)

Applies the properties of the first player (black) to the mark.



```

\pgfgoreset{goban = {5, partial = {from = B2 to D4}}}

\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\mark[triangle]{C3}
\end{goban}

\begin{goban}
\stones[b]{C2,D3}
\stone[w]{B4}
\mark[black, t-square]{C3}
\end{goban}

```

/pgfgo/mark/white

(no value)

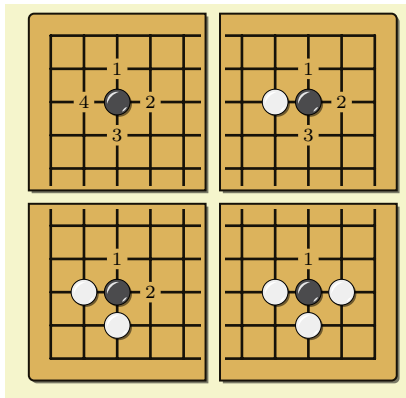
Applies the properties of the second player (white) to the mark.

/pgfgo/mark/neutral

(no value)

Keeps the mark unassociated with any player.

7 Other Examples

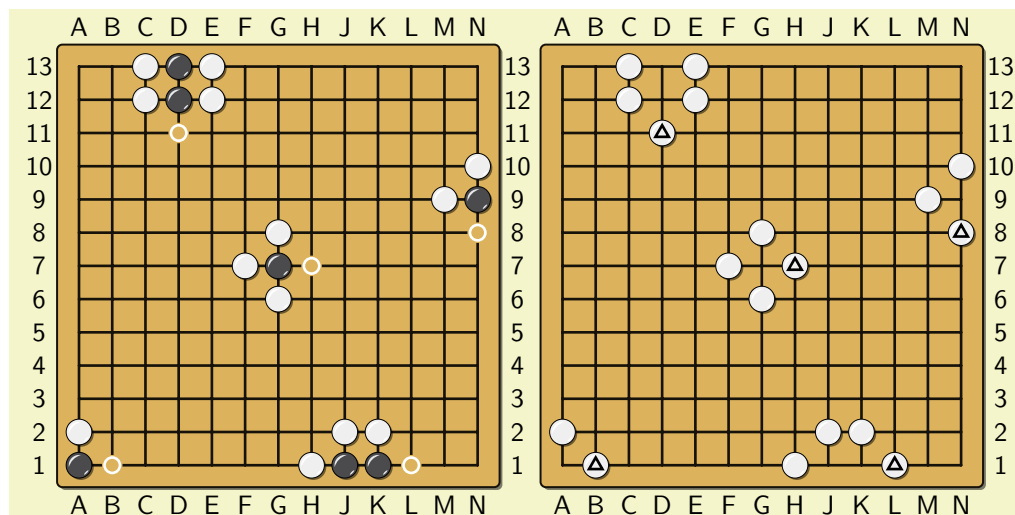


```

\setlength{\tabcolsep}{2pt}

\begin{tabular}{cc}
\begin{goban}[partial = {from = A9 to E5}]
\stone[b]{C7}
\marks[sequence]{C8, D7, C6, B7};
\end{goban} &
%
\begin{goban}[partial = {from = E9 to I5}]
\stone[b]{G7}
\stone[w]{F7}
\marks[sequence]{G8, H7, G6};
\end{goban} \\
%
\begin{goban}[partial = {from = A1 to E5}]
\stone[b]{C3}
\stones[w]{B3, C2}
\marks[sequence]{C4, D3};
\end{goban} &
%
\begin{goban}[partial = {from = E1 to I5}]
\stone[b]{G3}
\stones[w]{F3, G2, H3}
\marks[sequence]{G4};
\end{goban} \\
\end{tabular}

```

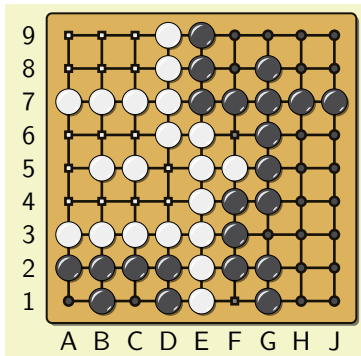


```

\pgfset{use i = false}

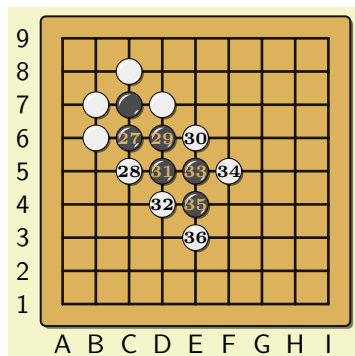
\begin{goban}[13, label = {at = {all}}]
\stones[b]{A1, J1, K1, G7, N9, D12, D13}
\stones[w]{A2, H1, J2, K2, G6, F7, G8, M9, N10, C12, C13, E12, E13}
\marks[circle, line = {color = white}]{B1, L1, N8, H7, D11}
\end{goban}
\begin{goban}[13, label = {at = {north, east, south}}]
\stones[w]{A2, H1, J2, K2, G6, F7, G8, M9, N10, C12, C13, E12, E13}
\stones[w,mark = triangle]{B1, L1, N8, H7, D11}
\end{goban}

```

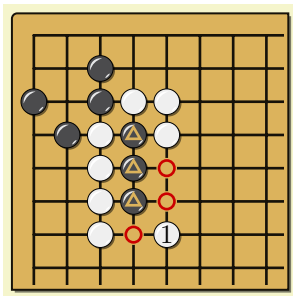


```
\pgfgoset{use i = false}

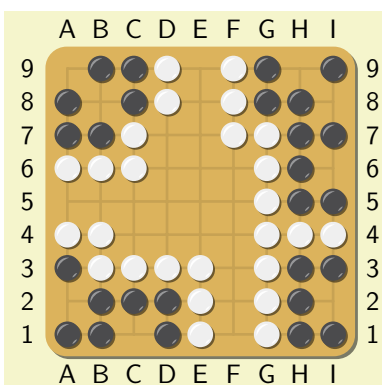
\begin{goban}[9, label = {at = {south, west}}]
\stones[b]{A2-|D1, B1, G1|-F2|-G4|-J7-|E9, G8}
\stones[w]{E1|-D6|-A7, D 8:9, F5, B:C 5, A:D 3}
\marks[b, t-circle]{J1 R H6, G3, F8 R J9; G8; A1, C1}
\marks[b, t-square, white]{A9 R C8, A4 R D6; B:C 5, D6}
\marks[t-square, neutral]{F1,F6}
\end{goban}
```



```
\begin{goban}[9, label = {at = {south, west}}]
\stones[b]{C7}
\stones[w]{B6,B7,C8,D7}
\moves*{C6, C5, D6, E6, D5, D4, E5, F5, E4, E3}
\end{goban}
```



```
\begin{goban}[9, partial = {from = A2 to H9}]
\stones[b]{A7,B6,C8,C7}
\stones[b, mark = triangle]{D6,D5,D4}
\stones[w]{C3,C4,C5,C6,D7,E7,E6}
\stone[w, mark = {custom = 1}]{E3}
\marks[b, circle, line = {color = red!80!black}] {D3,E4, E5}
\end{goban}
```



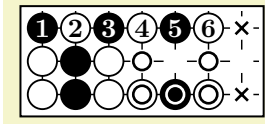
```
\pgfouseprofile{pgfgosmooth}

\begin{goban}[label = {at = all}]
\stones[b]{A8 |- B7, B9 -| C8, H:I 1:9, G8:9, A:D 1:2, A3; I2, I6, I8, H9, C1, A2, H:J4;}}
\stones[w]{E1 |- B3 |- A4, A6 -| C7 -| D9, G1 |- I4 -| G7 -| F9; D7;}}
\end{goban}
```

8 Catalog

8.1 Profiles

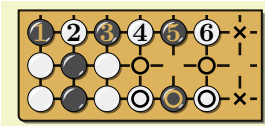
8.1.1 default



```
\pgfgouseprofile{default}

\begin{goban}[partial = {from = A1 to G3}]
\moves*[from = 1]{A:F 3}
\stones[w]{A1:2}
\stones[b]{B1:2}
\stones[n]{C1:2}
\stone[w, mark = circle]{D1}
\mark[w, circle]{D2}
\stone[b, mark = circle]{E1}
\mark[b, circle]{E2}
\stone[n, mark = circle]{F1}
\mark[n, circle]{F2}
\mark[w, tsquare]{G1}
\mark[b, tcircle]{G2}
\mark[n, tsquare]{G3}
\end{goban}
```

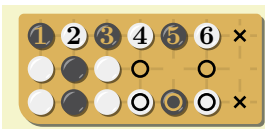
8.1.2 pgfgo



```
\pgfgouseprofile{pgfgo}

\begin{goban}[partial = {from = A1 to G3}]
\moves*[from = 1]{A:F 3}
\stones[w]{A1:2}
\stones[b]{B1:2}
\stones[n]{C1:2}
\stone[w, mark = circle]{D1}
\mark[w, circle]{D2}
\stone[b, mark = circle]{E1}
\mark[b, circle]{E2}
\stone[n, mark = circle]{F1}
\mark[n, circle]{F2}
\mark[w, tsquare]{G1}
\mark[b, tcircle]{G2}
\mark[n, tsquare]{G3}
\end{goban}
```

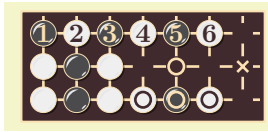
8.1.3 pgfgosmooth



```
\pgfgouseprofile{pgfgosmooth}

\begin{goban}[partial = {from = A1 to G3}]
\moves*[from = 1]{A:F 3}
\stones[w]{A1:2}
\stones[b]{B1:2}
\stones[n]{C1:2}
\stone[w, mark = circle]{D1}
\mark[w, circle]{D2}
\stone[b, mark = circle]{E1}
\mark[b, circle]{E2}
\stone[n, mark = circle]{F1}
\mark[n, circle]{F2}
\mark[w, tsquare]{G1}
\mark[b, tcircle]{G2}
\mark[n, tsquare]{G3}
\end{goban}
```

8.1.4 wain



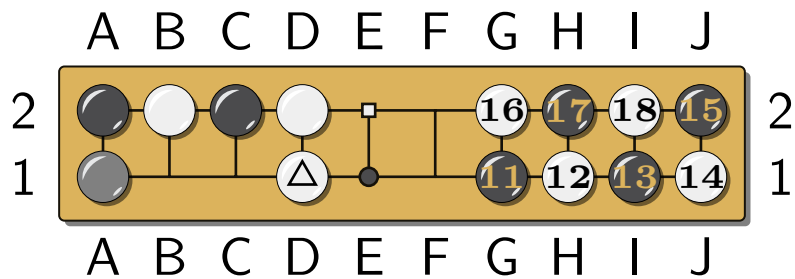
```
\pgfgouseprofile{wain}

\begin{goban}[partial = {from = A1 to G3}]
\moves*[from = 1]{A:F 3}
\stones[w]{A1:2}
\stones[b]{B1:2}
\stones[n]{C1:2}
\stone[w, mark = circle]{D1}
\mark[w, circle]{D2}
\stone[b, mark = circle]{E1}
\mark[b, circle]{E2}
\stone[n, mark = circle]{F1}
\mark[n, circle]{F2}
\mark[w, tsquare]{G1}
\mark[b, tcircle]{G2}
\mark[n, tsquare]{G3}
\end{goban}
```

9 Definitions of Stones and Boards

9.1 Stones and Players

9.1.1 pgfgo



We declare all players and start by defining the appearance of the neutral one.

```

\pgfdefineplayer{pgfgo-neutral}{
  stone = {
    radius = 0.19cm,
    line = {
      true,
      color = black,
      width = 0.3pt,
      opacity = 1,
    },
    fill = {
      true,
      color = gray,
      opacity = 1,
    },
    radius = 0.17cm,
    scale = 1,
    drop shadow = {true, opacity = 0.5, offset = 1pt, angle = -45},
    drop shine = {true, angle = 45}
  },
  move = {
    label = {
      color = black,
      format = arabic,
    }
  },
  mark = {
    line = {
      color = black,
      width = 1pt,
    },
    fill = {false},
    label = {
      color = black,
      format = arabic
    }
  }
}

```

Some properties such as line thickness, opacity, and others should be preserved for all stones, so we copy the neutral player template.

```

\pgfdefineplayer[from = pgfgo-neutral]{pgfgo-white}{
  stone = {
    fill = {
      color = wainwhite
    }
  },
  move = {
    label = {
      color = black
    }
  },
  mark = {
    line = {color = black},
    fill = {color = white},
    label = {color = black}
  }
}

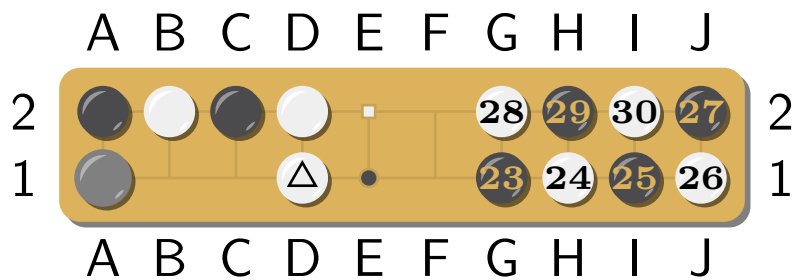
```

```

\pgfdefineplayer[from = pgfgo-neutral]{pgfgo-black}{
  stone = {
    fill = {
      color = wainblack
    }
  },
  move = {
    label = {
      color = pgfgo
    }
  },
  mark = {
    line = {
      color = pgfgo,
    },
    label = {color = black}
  }
}

```

9.1.2 pgfgosmooth



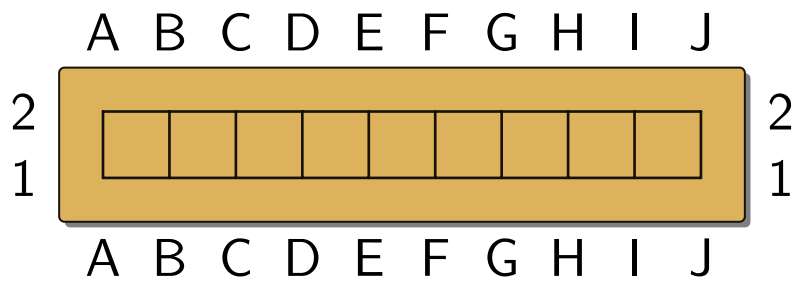
```

\pgfdefineplayer[from = pgfgo-neutral]{pgfgosmooth-neutral}{
  stone = {
    line = false,
    radius = 0.19cm,
    drop shine = {opacity = 0.5}}
}

```


9.2 Boards

9.2.1 pgfgo



```
\pgfdefinegoban{pgfgo}{  
  background = {  
    fill = {  
      color = pgfgo,  
      opacity = 1},  
    line = {  
      color = pgfgo!10!black,  
      opacity = 1},  
    drop shadow},  
  grid = {  
    line = {  
      color = pgfgo!10!black,  
      width = 1pt}},  
  label = {  
    text color = black  
  }  
}
```