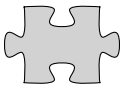
The jigsaw package

Drawing jigsaw pieces in TikZ



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https://github.com/samcarter/jigsaw
https://www.ctan.org/pkg/jigsaw

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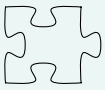
1 Introduction

The jigsaw package allows to draw adjustable jigsaw pieces in TikZ, to combine them and even to automatically create complete jigsaws. It is based on the TeX.Stackexchange answers https://tex.stackexchange.com/a/446296/36296.

The package is included in both TeXLive and MiKTeX and available from CTAN (https://ctan.org/pkg/jigsaw). The development version of this package is located at github.com/samcarter/jigsaw. If you have any problems, ideas or other feedback, please make constructive use of its bug tracker.

2 Usage

An individual jigsaw piece can be drawn with

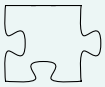
Jigsaw piece	
`\piece{<bottom>}{<right>}{<top>}{<left>}`	

wherein arguments specify for each side if it should be a tab (-1), a straight line (0) or a slot (1).

The following example will produce a jigsaw piece with one tab sticking out, one straight boarder and two slots:

Jigsaw piece

```
\begin{tikzpicture}
  \piece{1}{-1}{0}{1}
\end{tikzpicture}
```



With an optional argument, a fill colour can be passed to the piece:

Filled piece

```
\begin{tikzpicture}
  \piece[teal]{-1}{1}{-1}{1}
\end{tikzpicture}
```

Or to change the line colour:

Coloured piece

```
\begin{tikzpicture}
  \color{teal}\piece{-1}{-1}{1}{1}
\end{tikzpicture}
```

The piece shape is also available as Ti*k*Z `pic`:

pic

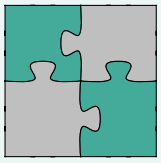
```
\begin{tikzpicture}
  \path (2,-3) pic[
    fill=lightgray, draw=teal, thick,
    scale=2, pic text={Some Text},
    pic text options={text=violet}
  ]{piece={1}{-1}{1}{0}};
\end{tikzpicture}
```

Using the Ti*k*Z `pic` allows to apply various Ti*k*Z option like `scale` or add text in the centre of the piece via `pic text={...}`.

The shapes of the jigsaw pieces are designed to seamlessly fit into each other which allows to produce tile patters in various ways:

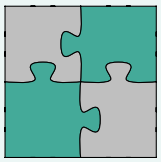
Manual tile pattern

```
\begin{tikzpicture}
\begin{scope}
  \piece[teal]{1}{1}{0}{0}
\end{scope}
\begin{scope}[xshift=1cm]
  \piece[lightgray]{1}{0}{0}{-1}
\end{scope}
\begin{scope}[yshift=-1cm]
  \piece[lightgray]{0}{-1}{-1}{0}
\end{scope}
\begin{scope}[xshift=1cm,yshift=-1cm]
  \piece[teal]{0}{0}{-1}{1}
\end{scope}
\end{tikzpicture}
```



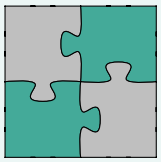
Manual pattern using \pic

```
\begin{tikzpicture}
  \pic at (0,1) [fill=lightgray,draw]
    {piece={1}{1}{0}{0}};
  \pic at (1,1) [fill=teal,draw]
    {piece={1}{0}{0}{-1}};
  \pic at (0,0) [fill=teal,draw]
    {piece={0}{-1}{-1}{0}};
  \pic at (1,0) [fill=lightgray,draw]
    {piece={0}{0}{-1}{1}};
\end{tikzpicture}
```



Manual pattern using TikZ matrix

```
% \usetikzlibrary{matrix}
\begin{tikzpicture}
  \matrix [nodes=draw]{
    \pic [fill=lightgray]
      {piece={-1}{1}{0}{0}}; &
    \pic [fill=teal]
      {piece={1}{0}{0}{-1}}; \\
    \pic [fill=teal]
      {piece={0}{-1}{1}{0}}; &
    \pic [fill=lightgray]
      {piece={0}{0}{-1}{1}};\\
  };
\end{tikzpicture}
```

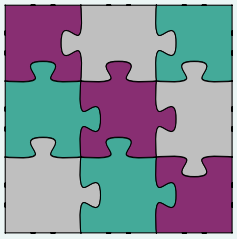


Manually position each jigsaw piece at the correct position can be tedious, therefore the command `\tile[<colour>]{<bottom>}{<right>}{<top>}{<left>}` was added. It can be used outside of of the `tikzpicture` environment to place the pieces besides each other like normal letters in a text. Line breaks have to be added at the appropriate positions and one has to

be careful not to introduce additional spaces between the jigsaw pieces from unprotected line endings.

The tile command

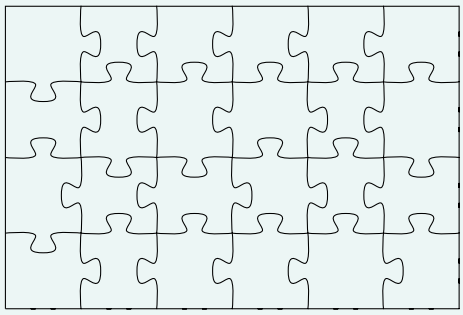
```
\tile[violet]{1}{1}{0}{0}%
\tile[lightgray]{1}{-1}{0}{-1}%
\tile[teal]{1}{0}{0}{1}

\tile[teal]{1}{-1}{-1}{0}%
\tile[violet]{1}{-1}{-1}{1}%
\tile[lightgray]{-1}{0}{-1}{1}

\tile[lightgray]{0}{-1}{-1}{0}%
\tile[teal]{0}{-1}{-1}{1}%
\tile[violet]{0}{0}{1}{1}
```



Finally there is also the possibility to automatically generate complete jigsaw puzzles using the command `\jigsaw{<x>}{<y>}`, with `<x>` and `<y>` the number of rows and columns, respectively.

Automatic jigsaw generation

```
\begin{tikzpicture}
  \jigsaw{6}{4}
\end{tikzpicture}
```



This automatically generated jigsaw can also be overlaid on a picture:

Overlaid image

```
\begin{tikzpicture}
  \clip (0,0) rectangle (6,4);
  \node at (3,2) {%
    \includegraphics[
      width=6cm,height=4cm
    ]{example-image-duck}%
  };
  \jigsaw{6}{4}
\end{tikzpicture}
```