The oktasymb package*

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Abstract

This humble package introduces ten commands to generate all the okta symbols (○, ◴, ◔, ◑, ◕, ●, ⊗) used in meteorology to describe the sky coverage fraction. Each symbol is created using the tikz package, which is thus a dependency of oktasymb.

Contents

1 Introduction

The okta unit is used to characterize the fraction of the sky covered by clouds. A value of 0 okta corresponds to a completely clear sky, whereas 8 oktas indicates an overcast situation. As of August 12, 2021, there are no dedicated Unicode symbols for all of the ten symbols used to characterize the different integer okta numbers. And to the best of my knowledge, no LaTeX package provides a uniform set of these ten symbols either[1].

This humble package is a direct attempt to remedy –in part– to this sad state of affair. It relies on the tikz package to generate all ten okta symbols.

*This document corresponds to oktasymb v0.1, dated 2021/08/12.
[1]If you know of one, please let me know !

2 Usage

Using the `oktasymb` package is straightforward. By importing it via a not-so-surprising `\usepackage{oktasymb}` in the preamble of your documents, you will gain access to the commands listed in Table 1.

Table 1: Exhaustive list of the `oktasymb` commands.

Okta value	TEX command	Output
0	`\zerookta`	○
1	`\oneokta`	◴
2	`\twooktas`	◔
3	`\threeoktas`	◕
4	`\fouroktas`	◑
5	`\fiveoktas`	◒
6	`\sixoktas`	◕
7	`\sevenoktas`	◓
8	`\eightoktas`	●
9	`\nineoktas`	⊗

3 Code development and bug reports

The `oktasymb` package is being developed inside a dedicated Github repository under the MeteoSwiss organization, located at: https://github.com/MeteoSwiss/oktasymb. User contributions are welcome and will be examined in details. So are bug reports, which are best submitted as *Github Issues* directly on the code's repo at: https://github.com/MeteoSwiss/oktasymb/issues

4 License and copyright

The copyright (2021) of `oktasymb` is owned by MeteoSwiss. The code, originally written by Frédéric P.A. Vogt, is released under the terms of the BSD-3-Clause License, available at https://opensource.org/licenses/BSD-3-Clause.

5 Ackowledgments

The following resources proved immensely useful to assemble the first version of this package:

- *How to Package Your LaTeXPackage*, Scott Pakin (2015): https://mirror.foobar.to/CTAN/info/dtxtut/dtxtut.pdf

- *Good things coime in little packages: An introduction to writing* `.ins` *and* `.dtx` *files*, Scott Pakin, TUGboat, Volume 29 (2008): http://tug.org/TUGboat/tb29-2/tb92pakin.pdf

Several StackOverflow posts also proved extremely helpful when building `oktasymb`, including:

- the reply of Steven B. Segletes to this question on `tikz` symbols, and
- the reply of ebosi to this question of embedding `tikzpictures` in text.

6 Implementation

`oktasymb` begins by defining the high-level okta symbol parameters. These allow to easily adjust the overall look of the individual symbols coherently. The baseline value of `-0.6ex` results in a pleasing vertical alignment of the symbols given their radius of `1ex`[2].

```
1
2 \tikzset{okta style/.style={line width=0.2ex, radius=1ex, baseline=-0.6ex}}
3
```

Next, each okta symbol is being defined individually.

`\zerookta` The 0 okta symbol:

```
4 \newcommand{\zerookta}{%
5   \begin{tikzpicture}[okta style]
6   \draw  (0, 0) circle;
7   \end{tikzpicture}%
8 }
```

`\oneoktas` The 1 okta symbol:

```
9 \newcommand{\oneokta}{%
10 \begin{tikzpicture}[okta style]
11 \draw (0, 0) circle;
12 \draw (0, -1ex) -- (0, 1ex);
13 \end{tikzpicture}%
14 }
```

`\twooktas` The 2 oktas symbol:

```
15 \newcommand{\twooktas}{%
16 \begin{tikzpicture}[okta style]
17 \draw (0,0) circle;
18 \filldraw (0, 1ex) -- (0, 0) -- (1ex, 0) arc [start angle=0, end angle=90];
19 \end{tikzpicture}%
20 }
```

[2] Surely, there is a way to *formally demonstrate*, from basic principles, that this is expected. But that proof eludes me for now.

`\threeoktas` The 3 oktas symbol:

```
\newcommand{\threeoktas}{%
\begin{tikzpicture}[okta style]
\draw (0, 0) circle;
\filldraw (0, 1ex) -- (0, 0) -- (1ex, 0) arc [start angle=0, end angle=90];
\draw (0, -1ex) -- (0, 0);
\end{tikzpicture}%
}
```

`\fouroktas` The 4 oktas symbol:

```
\newcommand{\fouroktas}{%
\begin{tikzpicture}[okta style]
\draw (0,0) circle;
\filldraw (0, 1ex) -- (0, -1ex) arc [start angle=-90, end angle=90];
\end{tikzpicture}%
}
```

`\fiveoktas` The 5 oktas symbol:

```
\newcommand{\fiveoktas}{%
\begin{tikzpicture}[okta style]
\draw (0,0) circle;
\filldraw (0, 1ex) -- (0, -1ex) arc [start angle=-90, end angle=90];
\draw (-1ex, 0) -- (0, 0);
\end{tikzpicture}%
}
```

`\sixoktas` The 6 oktas symbol:

```
\newcommand{\sixoktas}{%
\begin{tikzpicture}[okta style]
\draw (0,0) circle;
\filldraw (0, 1ex) -- (0, 0) -- (-1ex, 0) arc [start angle=-180, end angle=90];
\end{tikzpicture}%
}
```

`\sevenoktas` The 7 oktas symbol:

```
\newcommand{\sevenoktas}{%
\begin{tikzpicture}[okta style]
\draw [fill=black] (0,0) circle;
\draw [color=white] (0, -1ex) -- (0, 1ex);
\draw (0, 0) circle; % To properly crop the white bar extremities
\end{tikzpicture}%
}
```

`\eightoktas` The 8 oktas symbol:

```
\newcommand{\eightoktas}{%
\begin{tikzpicture}[okta style]
\draw [fill=black] (0,0) circle;
\end{tikzpicture}%
}
```

`\nineoktas` The 9 oktas symbol:

```
\newcommand{\nineoktas}{%
\begin{tikzpicture}[okta style]
\draw (0,0) circle;
\draw [rotate=45] (-1ex, 0) -- (1ex, 0);
\draw [rotate=-45] (-1ex, 0) -- (1ex, 0);
\end{tikzpicture}%
}
```