

cedargrove_palettefader

PaletteFader is a CircuitPython driver class for brightness-adjusting color *lists* and *displayio* palettes. Normalization is optionally applied to the palette prior to brightness and gamma adjustments. Transparency index values are preserved and associated with the adjusted palette. Creates an adjusted *displayio* color palette object (*displayio.Palette*) property that can also be read as a color *list*.

Two versions of PaletteFader are contained in the *cedargrove_palettefader* package folder, *palettefader* and *palettefader_ulab*. The faster of the two is *palettefader_ulab*, but requires CircuitPython with *ulab* as a built-in module. Certain CircuitPython distributions and versions may not support *ulab*; check your specific implementation. A list of built-in modules are listed for each distribution on the <https://circuitpython.org/downloads> page. For example, *ulab* is not included in MatrixPortal distributions after CircuitPython version 7.3.2.

To adjust a single color value, create a color *list* or a palette containing a single color. Also, the *cedargrove_unit_converter.color.colorfader.color_fader()* helper function can be used for adjusting a single color value.

- Author(s): JG Cedar Grove Maker Studios

Implementation Notes

The *ulab*-based reference palette creation code was adapted from the Adafruit *Ocean Epoxy Lightbox* project's *Reshader* class; Copyright 2020 J Epler and L Fried: <https://learn.adafruit.com/ocean-epoxy-resin-lightbox-with-rgb-led-matrix-image-scroller>

Hardware:

Software and Dependencies:

- Adafruit CircuitPython firmware for the supported boards: <https://circuitpython.org/downloads>

```
class palettefader.PaletteFader(*, source_palette, brightness=1.0, gamma=1.0, normalize=False)
```

Class representing the CedarGrove PaletteFader, a *displayio* palette fader with normalization, brightness (fading), and gamma control. Creates an adjusted *displayio* palette object property. *ulab* IS NOT required for this version of the class.

Parameters:	• source_palette – The color <i>list</i> or <i>displayio</i> palette object. No default.
	• brightness – The brightness floating point value for palette adjustment. Value range is 0.0 to 1.0. Default is 1.0 (maximum brightness).
	• gamma – The gamma floating point value for palette adjustment. Value range is 0.0 to 2.0. Default is 1.0 (no gamma adjustment).
	• normalize – The boolean normalization state. <i>True</i> to normalize; <i>False</i> to skip normalization. Default is <i>False</i> (no normalization).

palette

A class getter property.

Parameters:	palette – Get the adjusted <i>displayio</i> palette object.
-------------	--

brightness

A class getter and setter property.

Parameters: **brightness** – Set or get the palette's overall brightness level, 0.0 to 1.0.

gamma

A class getter property.

Parameters: **gamma** – Get the adjusted palette's gamma value, typically from 0.0 to 2.0. The gamma adjustment is applied after the palette is normalized and brightness-adjusted.

normalize

A class getter property.

Parameters: **normalize** – Get the palette's normalization mode state; **True** for normalization applied; **False** for no normalization.

```
class palettefader_ulab.PaletteFader(*, source_palette, brightness=1.0, gamma=1.0, normalize=False)
```

Class representing the CedarGrove PaletteFader, a **displayio** palette fader with normalization, brightness (fading), and gamma control. Creates an adjusted **displayio** palette object property. **ulab** IS required for this version of the class.

Parameters:

- **source_palette** – The color **list** or **displayio** palette object. No default.
- **brightness** – The brightness floating point value for palette adjustment. Value range is 0.0 to 1.0. Default is 1.0 (maximum brightness).
- **gamma** – The gamma floating point value for palette adjustment. Value range is 0.0 to 2.0. Default is 1.0 (no gamma adjustment).
- **normalize** – The boolean normalization state. **True** to normalize; **False** to skip normalization. Default is **False** (no normalization).

palette

A class getter property.

Parameters: **palette** – Get the adjusted **displayio** palette object.

brightness

A class getter and setter property.

Parameters: **brightness** – Set or get the palette's overall brightness level, 0.0 to 1.0.

gamma

A class getter property.

Parameters: **gamma** – Get the adjusted palette's gamma value, typically from 0.0 to 2.0. The gamma adjustment is applied after the palette is normalized and brightness-adjusted.

normalize

A class getter property.

Parameters: **normalize** – Get the palette's normalization mode state; ***True*** for normalization applied; ***False*** for no normalization.