

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*.

For adjusting a single color value, create a *list* containing a single color or use the *set_single_color_brightness()* function.

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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>

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class cedargrove_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.

Parameters:	<ul style="list-style-type: none">• 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).
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palette

A class getter property.

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

A class getter and setter property.

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

set_single_color_brightness(source_color=None, brightness=1.0, gamma=1.0)

A secondary function of the PaletteFader class. Scale a 24-bit RGB source color value in proportion to the brightness setting (0 to 1.0). The adjusted color's gamma value is typically from 0.0 to 2.0 with a default of 1.0 for no gamma adjustment. Returns an adjusted 24-bit RGB color value or None if the source color is None (transparent).

Parameters:

- **source_color** – The color value to be adjusted. Default is **None**.
- **brightness** – The brightness floating point value for color value adjustment. Value range is 0.0 to 1.0. Default is 1.0 (maximum brightness).
- **gamma** – The gamma floating point value for color value adjustment. Value range is 0.0 to 2.0. Default is 1.0 (no gamma adjustment).