

[WPFGUI] ColorBlindnessEffect

Status	IN PRE-PRODUCTION
Owner	@Jad Deeb
Contributors	
Last Edited	09 Nov 2021

This is a high level overview on how to use the color blindness shader for the UI elements inside Blend for visual studio.

Below is a sample online on how colors should behave to the different types of color blindness. This will serve as our quality goal.

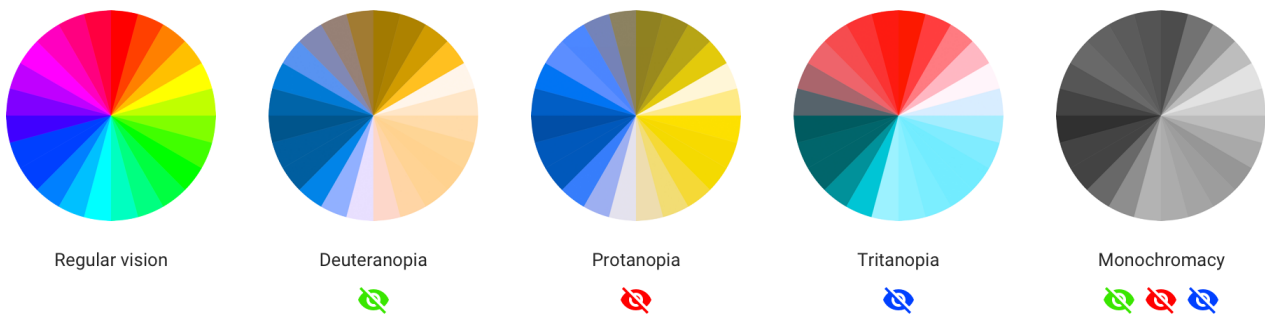


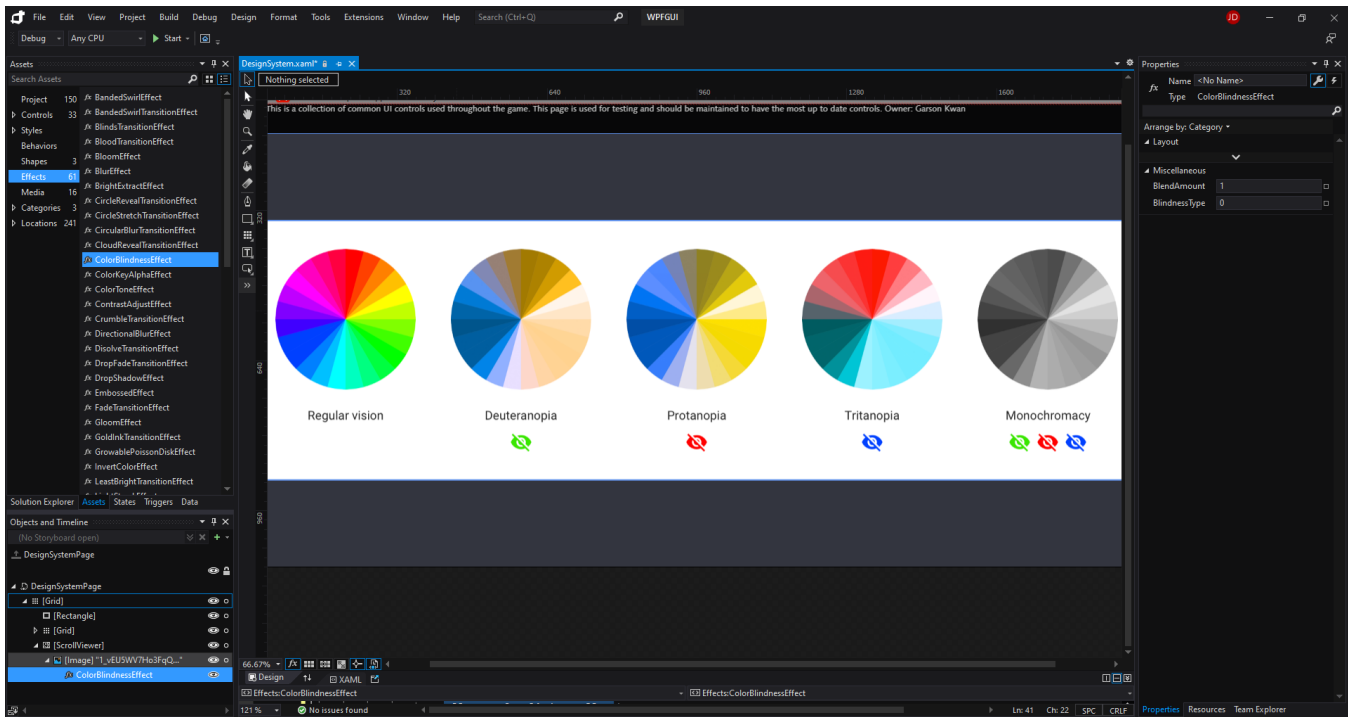
Image source: [Color blindness: how to design an accessible user interface | by Ivan Tuchkov | UX Collective \(uxdesign.cc\)](#)



Image source: <https://cruxcollaborative.com/insights/understanding-color-blindness-guide-to-accessible-design>

How to/Documentation :

The shader/Effect can be found under the Assets tab > Effects > ColorBlindnessEffect, you can assign the effect to a UI element by simply drag and dropping the element on the desired UI element.

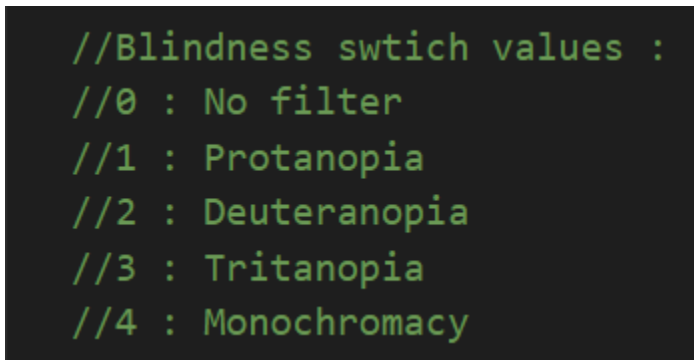


Two parameters are exposed : **BlendAmount** and **BlindnessType**

BlendAmount determines how much your blindness filter will blend with the original image, defaults to 1 in which the blindness filter substitutes the image, 0 would mean the original image is unchanged. This is based on lerp() function.

BlindnessType determines which blindness type will be used in the shader.

Key attached :



This shader's math is based on the following sources :

[Designing for Color Blindess - Martin Krzywinski / Genome Sciences Center \(bcgsc.ca\)](#)

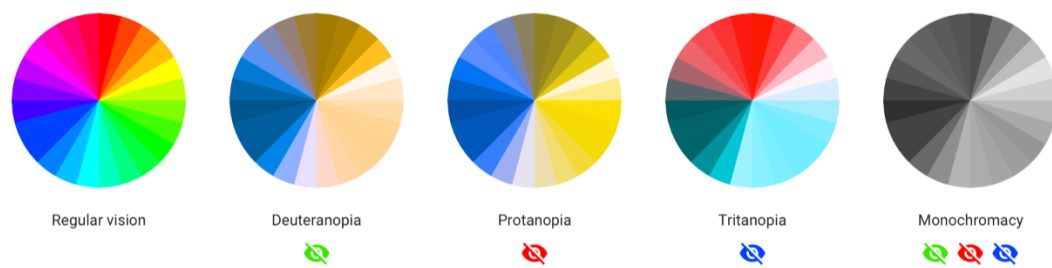
[A Physiologically-based Model for Simulation of Color Vision Deficiency \(ufrgs.br\)](#)

[Color Blindness Simulation Research | ixora.io](#)

Preview and quality test :

Please note that all the present algorithms are 'approximations' mostly based on surveying people. Some small contrast/brightness values may and will differ from one algorithm to another.

Original image:



Arrange by: Category ▾

Layout ▾

Miscellaneous ▾

BlendAmount 1 □

BlindnessType 0 □



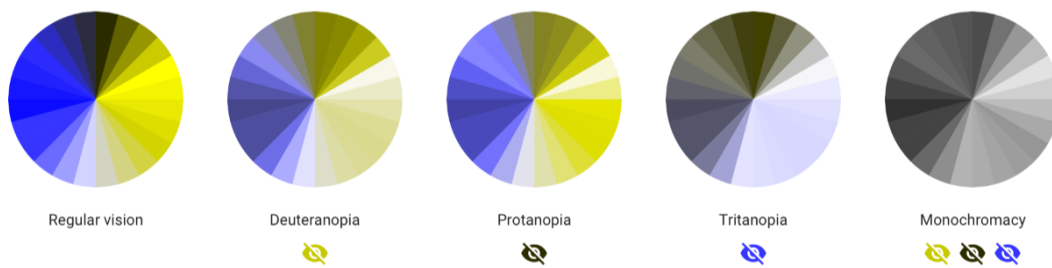
Layout ▾

Miscellaneous ▾

BlendAmount 1 □

BlindnessType 0 □

Protanopia:



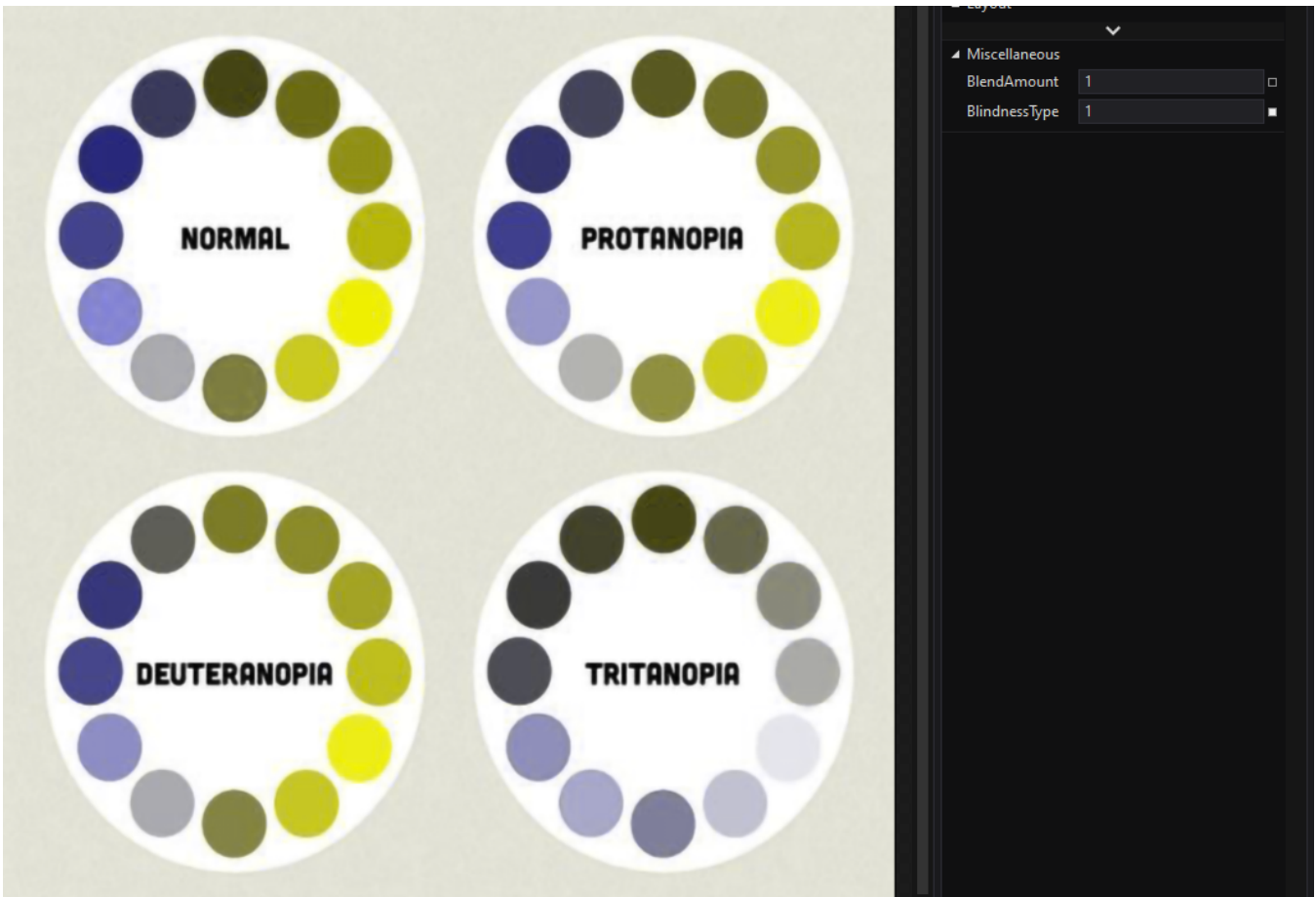
Arrange by: Category ▾

Layout ▾

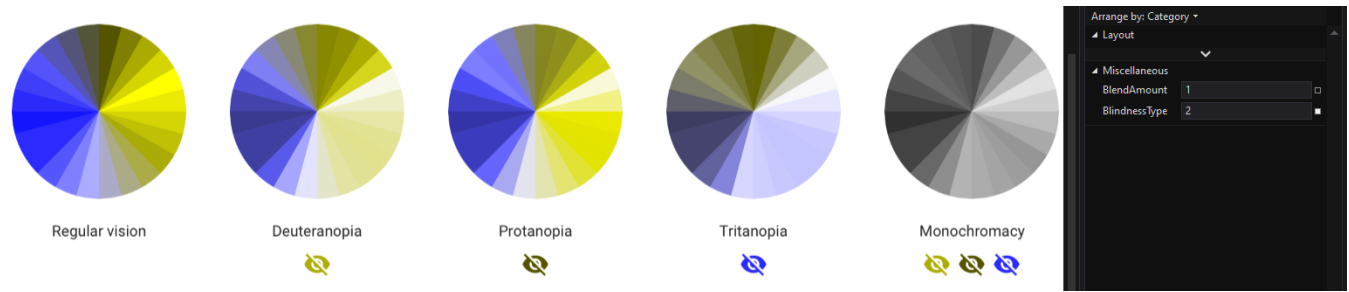
Miscellaneous ▾

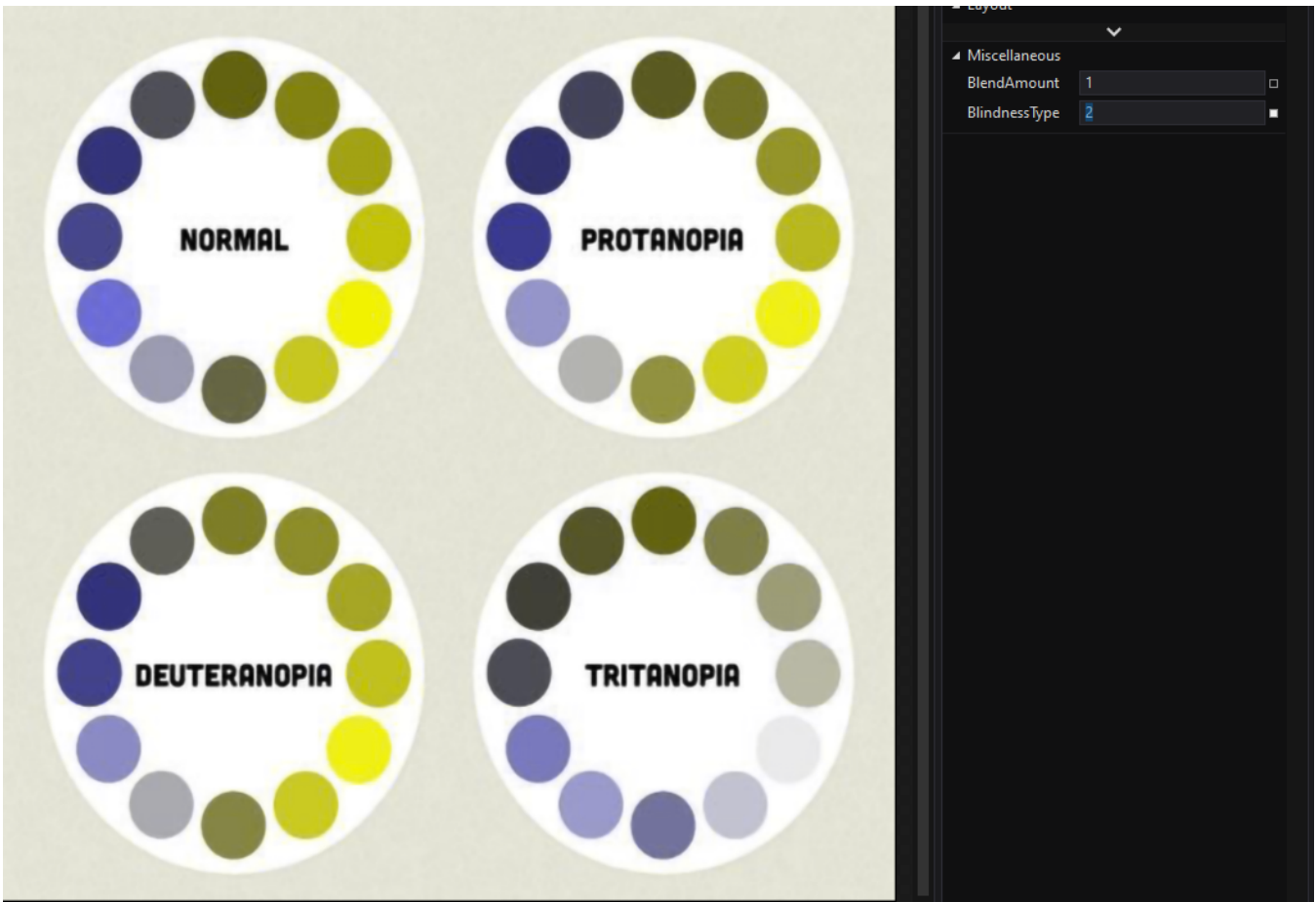
BlendAmount 1 □

BlindnessType 1 □

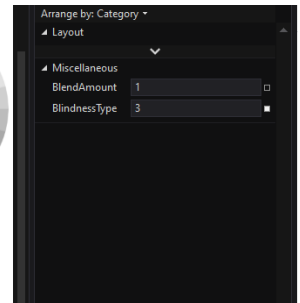
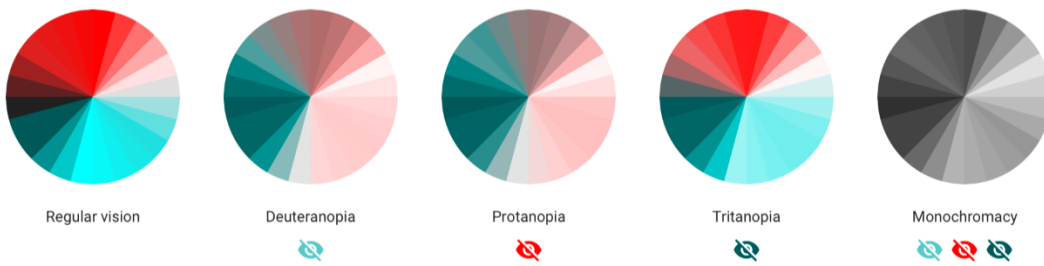


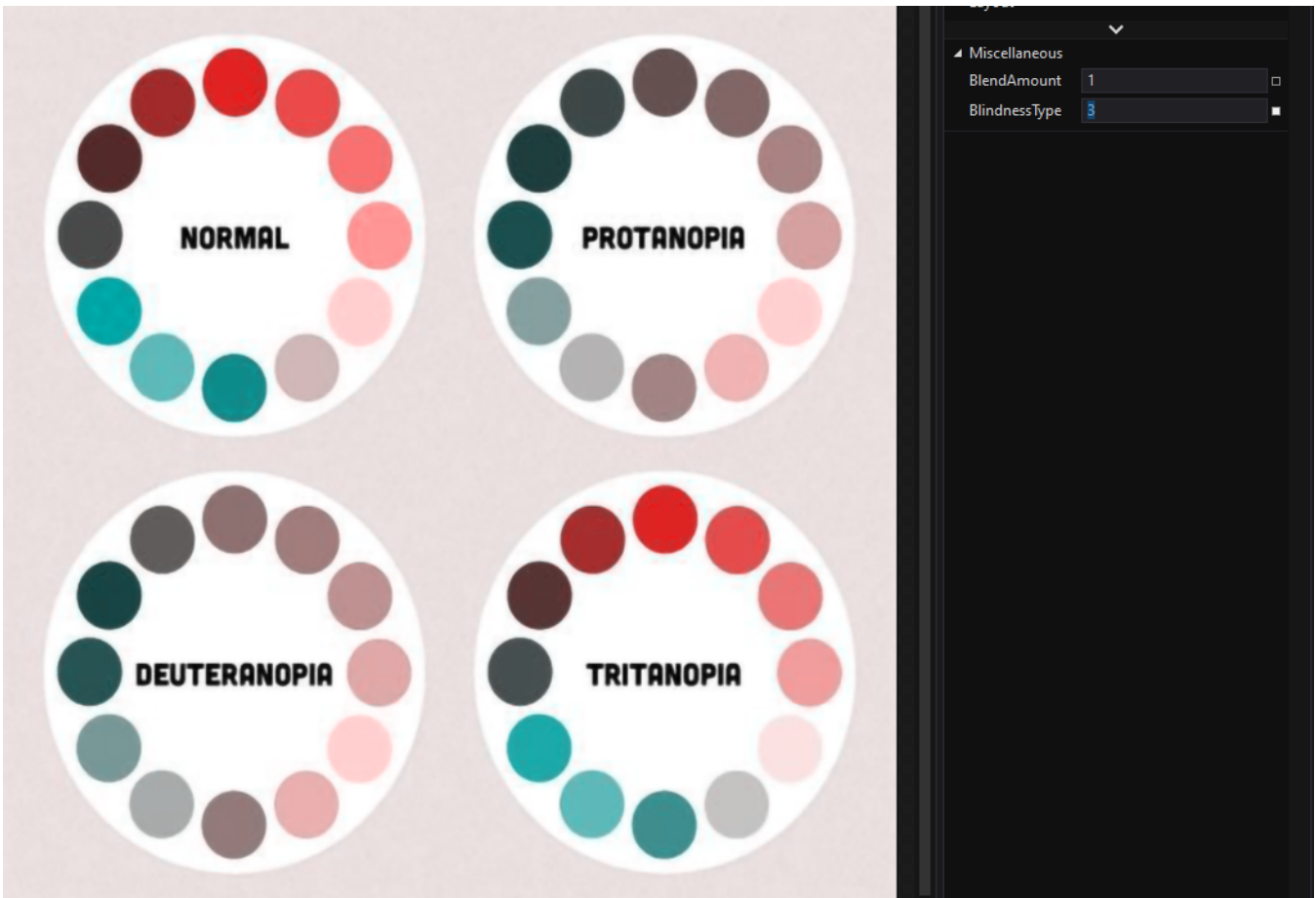
Deuteranopia:





Tritanopia:





Monochromacy:

