


Write a C++ program that does the following:
Provided a palette of colors, evaluate to what degree its color combinations are problematic for people with a particular form of color blindness



Certainly! To achieve this, you can use a color blindness simulation algorithm to assess the visibility of color combinations for people with color blindness. Below is a simple C++ program that does this using a simulation algorithm for red-green color blindness (protanopia).

cpp

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#include <iostream> #include <cmath> struct Color { int red, green, blue;
Color(int r, int g, int b) : red(r), green(g), blue(b) {} }; double
simulateProtanopia(Color color) { // Simulation algorithm for red-green color
blindness (protanopia) double luminance = 0.299 * color.red + 0.587 *
color.green + 0.114 * color.blue; double newRed = 0.0, newGreen = 0.0, newBlue =
0.0; newRed = luminance; newGreen = luminance; newBlue = luminance; return
sqrt(pow(color.red - newRed, 2) + pow(color.green - newGreen, 2) +
pow(color.blue - newBlue, 2)); } bool isProblematic(Color color1, Color color2)
{ // Check if the color combination is problematic double contrast1 =
simulateProtanopia(color1); double contrast2 = simulateProtanopia(color2); //
You can set a threshold value to determine if the contrast is problematic double
threshold = 50.0; return (contrast1 + contrast2) > threshold; } int main() { //
Example palette colors Color color1(255, 0, 0); // Red Color color2(0, 255, 0);
// Green Color color3(0, 0, 255); // Blue // Check color combinations if
(isProblematic(color1, color2)) { std::cout << "Color combination (color1 and
color2) is problematic for people with color blindness.\n"; } else { std::cout
<< "Color combination (color1 and color2) is not problematic for people with
color blindness.\n"; } if (isProblematic(color1, color3)) { std::cout << "Color
combination (color1 and color3) is problematic for people with color
blindness.\n"; } else { std::cout << "Color combination (color1 and color3) is
not problematic for people with color blindness.\n"; } return 0; }
```

This is a basic example, and you may need to refine the algorithm based on specific requirements and types of color blindness you want to consider. The program currently uses a simulation algorithm for protanopia, but you can adapt it for other types of color blindness as needed.