Week 5 Practise Exercise

Dear students,

In this exercise, you will be tasked with implementing an entire class hierarchy yourself. You are provided with a set of files: some are empty and awaiting you to fill them, while others contain some pseudo code to help you.

The **instruction file** has all the details necessary for your implementation, including a **UML Class Diagram** that outlines the class structure. Your task will involve creating and working with classes, inheritance, memory management, file I/O and many more.

This exercise will help you build a solid foundation in OOP and dynamic memory management in C++. Be sure to test your codes thoroughly before submission to ensure they meet all the requirements. Good luck!

Objective

In computer graphics and digital imaging, colors are represented and manipulated using models known as color spaces. Color spaces (or models) are mathematical representations of how colors can be represented as tuples of values. Some common color spaces are RGB, CMYK, and HSV. In this exercise you will be implementing a system that represents different color spaces (RGB, CMYK, HSV) using a base class called Color. Each derived class should implement specific functionalities related to its color space.

This assignment aims to help you understand and practice the following C++ concepts:

- Classes and Inheritance
- Overloading and Overriding
- Virtual Functions and Pure Virtual Functions
- Dynamic Memory Management
- File I/O Operations
- Static functions
- Forward Declarations

Given

- **Starter code**: `Starter Codes zip`

- **Note:** use **./bin/color_spaces** to run

Requirements

- Code should run without any errors.
- Code should not have any memory leaks.

Instructions

For detailed instructions please see:

BBM203_Fall_2024_Classes_Exercise.pdf

Submission format:

- b<studentID>.zip
  - Color.h
  - RGBColor.h
  - HSVColor.h
  - CMYKColor.h
  - Color.cpp
  - RGBColor.cpp
  - HSVColor.cpp
  - CMYKColor.cpp
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