Assignment 1 – A Collection Class

Objectives: *This assignment gives you some experience with designing and writing C++ classes using "big five" (see the textbook), operator overloading, and templates. Also you will learn how to use the command line interface (CLI) and makefiles.*

- (5 points) Create a text file, called README (Template provided as LyX file. You are free to use any software but stick to the format given in the templated file):
  - Submit to Canvas an electronic version of the file README by January 26th.
  - Test the C++ programs on your Computer Science Linux machine.
  - The assignment will be graded focusing on: program design, correctness.
  - When your program works correctly, upload the code to Mimir Classroom by January 26th where your program will be tested against TA's test cases. The instructions for using Mimir Classroom will be shared in a separate file.

Problem Description – Part 1 (25 pts)

1. Write a C++ program to implement a collection for organizing data and for performing operations on this data. A collection contains items in no particular order and it might have duplicate items. It is probably the simplest way of organizing data. In our particular case you have a collection of stress balls of different colors and sizes and there is no specific arrangement or organization of these items.
2. (25 points) Write a class `Stress_ball` which represents a stress ball.
   (a) The class default constructor creates a stress ball with a randomly selected color and size, every time the constructor is called. Use only the following colors: `red`, `blue`, `yellow`, and `green`, and sizes: `small`, `medium`, and `large`. Apply `enum class Stress_ball_colors` to define colors and `Stress_ball_sizes` for sizes.
   (b) The class parameterized constructor creates a stress ball with a given color and size: `Stress_ball(Stress_ball_colors c, Stress_ball_sizes s)`
   (c) The function `get_color()` returns the color of a stress ball using the enum class `Stress_ball_colors`
   (d) The function `get_size()` returns the size of a stress ball using the enum class `Stress_ball_sizes`
   (e) The operator `==(const Stress_ball& sb)` returns `true` if `sb`'s color and size are the same as color and size of the stress ball `this` (object calling the operator).
   (f) Outside of this class: overload `operator<<(std::ostream& o, const Stress_ball& sb);` to print a stress ball as a pair of color and size in this form: (color, size). Example: `(red, small)`

The C++ program must be submitted to Mimir Classroom and the README file must be submitted to Canvas by January 26th. You should test all the implemented functions/operators of this class.