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 is 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 the due date, see the Canvas calendar.
  - Test the C++ programs on your machine.
  - The assignment will be graded focusing on: program design, correctness.
  - When your program works correctly, upload the code to Canvas where your program will be tested on a Linux machine against TA's test cases.

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 along with the README file must be submitted to Canvas by the due date, see the Canvas calendar. You should test all the implemented functions/operators of this class.