SCSJ1023 Programming Technique II
Semester 1, 2019/2020

Assignment 1

Overview

This is an **individual** assignment. In this assignment, you will be implementing the concept of classes and objects of Object-Oriented Programming (OOP), and performing some manipulations on the objects.

Requirements

1. Find any case or topic that is suitable to be implemented with graphics. The followings are some example cases:
    - Traffic lights
    - Moving cars
    - Bouncing balls
    - Fireworks
    - Scrolling screen
    - Digital signage
    - User Interface elements such as buttons, edit text, menu, etc.
    - Game characters such as flappy bird, running dinasour, pac man, etc.
    - Any element, component, character or object from your group project.

    Notes: Your topic should be different from others. That means, if someone has already picked "Flappy bird", you need to find another topic.

2. Write a C++ program for the topic you choose using OOP approach. It is fairly enough to implement only a class. However, you have the freedom should you want to extend more than a class.

3. Separate the declaration and definition of the class. Put them in the same file. That means, you only need to use a single CPP file for writing your program.

4. Use the WinBGI library for drawing graphical output. Note that, the library also supports for handling mouse input.

Assessemement

This assignment carries 5% for the final grade of this course. The breakdown scores are as follows (out of 100 marks):

Assessment Item	Marks
A. Declaring and defining the class: *The class must consist of the following members:* • Attributes • Constructors (at least two) and destructor • Accessors and mutators (for all the attributes, and you may add more) • **Display-related methods.** Methods regarding showing or displaying the objects. *(for example, the mehods* `draw(), undraw(),` *etc)* • **Action-related methods**. Methods that perform the key actions of the objects *(for example the case of Bouncing balls, the mehod could be* `bounce(), move(), hitBoundary(),` *etc).*	40
B. Creating and manipulating objects. *for example, … some examples scenario for the "bouncing balls"* • *Balls drop down.* • *Balls hit the boundary or the edge of the screen and when this happens, they bounce.* • *Balls might be colliding to each other and when this happens, they dissappear or break.* Notes: you only need to implement one action for this item.	30
C. Implementing **either one** of the followings: • Pointers to objects, • Arrays of objects, • Passing objects as parameters to functions, or • Operator overloading.	10
D. Overall including effort and creativity	20
Total	**100**

Duration

- You have TWO (2) weeks to complete this assignment.
- The deadline is on **Saturday, 16 November 2019, 11:59 PM**

Deliverable Items

- Submit only the source code file.
- Besides, you need to accompany your submission with a check-list showing the items you have done in this assignment (use the template doc file provided, see the attached file). Note that, it is necessary to submit this document. Otherwise, you will lose some portion of the scores.
- The submission must be done on elearning.

Late Submission Policy

- **10% deduction for every 1 day (or 24 hours) late**.
- For example: if the deadline is on 27 Oct. 12:00 AM, and your submission is received on 28 Oct 1:00 AM, then you are only eligible to earn 90% at maximum of the total marks. In this case, your submission will be graded as a normal submission, but the final grade will be weighted by the factor of 0.9.

Plagiarism Warning

- Any kind of plagiarism (e.g., copying and pasting code by any mean) would lead to disqualification of submissions for both parties (i.e., students that copy others' code and students that give their code to others).
- Here is one common example (out of many types of plagiarisms): students who get copies of program code from other students, and make changes to the output of the program,e.g. changing colors, changing texts, or even put sounds (to make it different from the original version), or simply changing variable names. All of these are still considered as plagiarisms although the outputs of the programs are different.

FAQ

1. **Do I need to choose a topic from the list you have given above?**
   Ans: No. You have the freedom to choose any topic or case. The list I provide is just examples.

2. **How do I know whether the topic I choose is not similar to others?**
   Ans: Everyone needs to register the topic so that others can see which topics have been taken.

3. **What if there two or more students register the same topic?**
   Ans: First come first serve. The topic will be automatically given to whom register it first.

4. **Can I use the samples you provided on elearning?**
   Ans: As for the source code, you only want to refer to them. You are not allowed to re-use my source code for your submission.

5. **Do I need to implement any concept regarding relationship between objects?**
   Ans: In this assignment, you are not expected to implement any relationship such as association, inheritance, etc.

6. **Can I use other graphic libraries instead of WinBGI?**
   Ans: No. You must use WinBGI.

7. **How do I use WinBGI on my Apple Macintosh laptop?**
   Ans: WinBGI can only be used on Windows. Therefore, if you are using Apple Mac, I suggest you run Windows on Virtual Machine, or use dual-boot system.

8. **Is there any example program output?**
   Ans: See the attached file.