COMP 3004 – *SCAPES* Assignment #3

Due: Thursday, October 17, 2019 at 4:00 PM (afternoon)

Collaboration: This assignment must be completed **individually**

System Design Document (partial)

Table of content:

1. Subsystem decomposition
2. Design patterns

Document content:

Subsystem decomposition:

- You will provide **one** UML class diagram that shows the subsystem decomposition for a subset of the *SCAPES* system; you will choose four (4) Programmer features, based on four (4) of the detailed use cases included in the Assignment #1 solution use case diagram
  - Your diagram must show **all entity, control, and boundary classes**
    - you must show only class names; do not show attributes or operations
    - the entity objects must be the ones provided as solution for Assignment #2
    - the control and boundary objects must be the ones associated with the four (4) detailed use cases of your choice
    - please refer to the in-class subsystem decomposition of the *cuLearn* assignment use cases as an example
  - Your diagram must show **all associations between classes**
    - it is insufficient to show the associations between subsystems; you must show the associations between the individual classes
  - Classes must be grouped into subsystems, where subsystems are shown as UML packages of classes; each subsystem must be labelled with its name
  - Class groupings into subsystems must minimize coupling and maximize cohesion
- Your document must explain, in your own words, how your design minimizes coupling and maximizes cohesion
- **NOTE**: Figure 6-29 in the textbook shows the correct format, although it only includes entity objects; your diagram must follow this format, but it must show all entity, control, and boundary objects

Design patterns:

- You will document two separate design patterns that are appropriate for the *SCAPES* system
  - One of the patterns **must** be Façade
  - You will select one (1) other design pattern from the Gang of Four textbook (Gamma et al.), *other than Façade*, that is appropriate for the *SCAPES* system

NOTE: Both design patterns must be ones for which **you** will write the code. Do **not** use patterns that are already implemented as part of the libraries (Qt or otherwise) that you will use.

- For each of the two design patterns:
  - Your document will describe, in your own words, what the design pattern does and what problems it is meant to solve; this **must** be based on the Gang of Four authors' description of the pattern
  - Your document will also describe, in your own words, how your system uses the design pattern, why the pattern is necessary to your design, and how it is used by your design
  - You will provide a UML class diagram, with class names and all associations, that shows how your system uses the design pattern

Grading

Grading breakdown:

- *System Design Document:*

Subsystem decomposition	60%
Design patterns	40%

Grading criteria:

- *Document completeness*: All the material must be present; completeness covers both breadth and depth.
- *Document correctness*: All the material must be presented accurately, with appropriate diagrams and in the correct format; superfluous, unnecessary material is considered incorrect.
- *Document presentation*: Professional-level documentation is expected, subject to a 10 mark deduction as penalty.

Format

Documentation deliverables must be submitted as a **PDF document**. They must be typed and legible, and they must be **professional**, including a cover page, page numbers, as well as section numbers and names. All UML diagrams must be produced using a drawing tool, and not hand-drawn. Documents that do not conform to these specifications will not be graded.