

Assignment 1

Start on 13 January, complete by 24 January end of day Montreal time zone. Covers Chapter 1 and 2 of the book.

Problem Statement

Following the principles seen in Chapter 2 of the book, design and write the code necessary to support a camera drone.

1. Create a class to represent the moves of the drone. It can take-off, land, move forward some distance, move backwards some distance, move up some distance, and move down some distance. In addition, the drone can also focus on an object, and capture a picture if an object is in focus. This picture can be saved as only one of JPG, PNG, RAW, or PDF, and the filename and format is provided by the client. You may choose how to simulate picture capture and saving behavior. Ensure the drone is in focus when it is about to capture a photo. [8]

NOTES:

- To simulate the move being executed, you can print statements to the console. For e.g., `System.out.println("Taking Off")`.
 - Using the console is only to simulate actual behavior of the application that is out of scope of this assignment (such as some functionality or for obtaining input that would normally require a GUI). In general, printing to the console is not a means to interact with the client and should be used internally for development only.
2. Create a remote control that allows someone to pre-program the sequence of moves the drone should make. It should be possible for the client to edit the sequence of moves and then execute the program. The sequence must begin with taking off, and end with landing. It should also be possible for a client to access all the moves in the pre-programmed sequence. [8]
 3. Create a separate RunDrone file to test the working of your pre-programmed drone. Configure the moves using the remote control, and then execute it on the drone. Demonstrate that the requirements in 1 and 2 are fulfilled. [4]

Deliverables

1. The submission include a zip file of your source code folder and a pdf file of a short description (max. 200 words) of the design of your solution. For example, include the major design decisions, what design techniques you used, and some of the trade-offs. The description should also include at least one UML object diagram created with JetUML.
2. Submit your work on MyCourses -> Assignments -> Assignment1

Rules of Carrying Out Assignment

- The focus of the assignment is to evaluate your application of design techniques while respecting all the requirements in the problem statement. To this end, you are expected to come up with an original design when the requirements don't specify a particular design.
- The goal of this assignment is to arrive at a solution having explored the design space and to understand the trade-offs.
- Remember that there's no single optimal solution. However, you should be able to justify the design choices you made during the assignment both by your code and your description file.
- Try to think of different use cases for your code, and how your solution could accommodate them. Writing your own client code can help identify design issues. For example, you can use real world scenarios to approach the problem statements. However, you don't need to implement features other than those in the problem statement, and you are not expected to implement a perfect solution for all real world scenarios.

Assessment

The evaluation of your solution will focus on three aspects:

1. How well does the delivered code satisfy the requirements in the problem statement?
2. How well are the design concepts, principles, and techniques applied and explained in the description file (including the trade-offs of different options)?
3. How readable is the source code (through its style and documentation)?

Policy on Code Reuse

1. All design activities are prepared so as to be completed without any need to reuse external code; "External code" means any code not part of the course samples or Java/JavaFX class libraries; If you are pining for the a perfect score, please note that using external code will not give you any kind of competitive advantage to help you reach this level.
2. You can reuse external code only for implementation of functionalities that clearly go beyond the requirements; All major design decisions required to fulfill the requirements should be yours and yours only. In case of doubt either refrain from using external code or clarify the situation with your teaching assistant (TA). If you reuse external code it is your responsibility to ensure it does not take away from your required contributions.
3. If you reuse external code it is your responsibility to understand how it works; External code included with a solution is considered part and parcel of the solution: any bug or design flaw caused by external code will be considered a problem with the solution.
4. If you reuse external code you must clearly identify it and locate it in a separate package named `external`, and code files must clearly bear the origin of the external code.
5. If you reuse external code you are responsible for looking up its license and respecting it (in particular any attribution clause).
6. If you reuse external code you are responsible for documenting how it works to the extent where it integrates with your solution. The TAs can be assumed to have knowledge of the Java class

libraries, but not external code.

7. Use of external code must be credited anywhere it appears. For example, if you paste a code fragment from Stack Overflow into a comment, this needs to be credited even if it might not appear in the final solution.
8. Any unaccredited contribution of external code will be considered a breach of [academic integrity](#). In brief, reusing code is a big responsibility, not to be taken lightly. Please read the article [Surviving Software Dependencies](#) for more insights.