CSCI 2300, Spring 2019

SOLID Design Principles Exercises

In this exercise, we will put theory into practice. In your git repositories, you will find a SOLID directory. Last time we worked with the ISP directory. Today, we will work with the code in the DIP directory.

Form groups with the people that are sitting in your row, and discuss your answers with your group. Review the code in the appropriate directory and answer the questions on this worksheet (one worksheet per student). Put your name at the top of the worksheet.

DIP – Dependency Inversion Principle

1. There are two classes defined here. What is the dependency between them (which class depends on the other)?

2. If we wanted to add a `Fan` class (that can be turned on and off) to this design and a `Fan` also needed a button? One way to handle this is to add a `FanButton` class that allows the `Fan` to be turned on and off. What would the class diagram look like in this case (including `Lamp`, `Button`, `Fan`, and `FanButton`)?

3. What is the common behavior between `Lamp` and `Fan`?

4. We can define an `Equipment` interface for the common behavior of `Lamp` and `Fan` classes and have `Lamp` and `Fan` classes implement that interface. What would the class diagram look like in this case?

5. We can now modify the `Button` class to have a reference to an instance of `Equipment` object. Draw the class diagram after this modification.

6. Make the necessary code changes in the DIP directory to implement the final re-design.