## CSF202 – Lab Class 5 – Wednesday 21/10/2020

This lab is about applying the Facade Pattern to the DuckUSim system as we discussed in the lecture.

## □ Task 5.1

For this task a working program is provided. Download the zip file from Github:
https://github.com/tomblanch118/CSF202/blob/master/Code/Labs/Lab%205/Lab5.zip

You should compile and run the code provided to make sure it works and check the output.

Now you should work towards the solution we discussed in the lecture today. Use the lecture notes to guide you.

1. Remove the fly and quack methods from Duck, MallardDuck, RedheadDuck, DecoyDuck and RubberDuck.
2. Create QuackBehaviour and FlyBehaviour interfaces.
3. The QuackBehaviour interface needs a public void quack method.
4. The FlyBehaviour interface needs a public void fly method.
5. Create the following implementations of the QuackBehaviour interface:
   - Quack.
   - Squeak.
   - MuteQuack.
6. Create the following implementations of the FlyBehaviour interface:
   - FlyWithWings.
   - FlyNoWay
7. Add protected FlyBehaviour and QuackBehaviour attributes in your Duck class.
8. Add the following methods to the Duck class:
   - public void performFly()
   - public void performQuack
9. Add constructors to MallardDuck, RedheadDuck, DecoyDuck and RubberDuck that create appropriate instances of the FlyBehaviour and QuackBehaviour implementations.
10. Test your code. Create some different types of duck and call performFly and performQuack on them.

## □ Challenge Task 5.2

Add the ability to change a behaviour at runtime. You will need to add some setBehaviour methods to your duck class. Create a new type of duck that starts with certain behaviours and then has it's behaviours changed at runtime. Test your code.