

CMSC 143: Introduction to Object-Oriented Programming with Robots

Lab 10: Programming with Class

Due November 15, 2010

In this lab, we will improve upon the small *Frogger* game we created in lecture. In the first part of the lab, you are asked to create class diagrams of the existing classes in the game. A class diagram describes the attributes and methods of the class as well as type information. For example, below is a Duck class along with its class diagram.

```
class Duck:

    DUCKS = 0

    def __init__(self, name):
        self.name = name
        self.wings = 2
        self.body = Scribbler()
        Duck.DUCKS = Duck.DUCKS + 1

    def quack(self, voice):
        setVoice(voice)
        speak(self.name + " says quack")

    def waddle(self, times):
        for i in range(times):
            self.body.move(1, -0.5)
            self.body.move(1, 0.5)
            self.body.stop()
```

Name	Duck
Class Attributes	DUCKS: int
Object Attributes	name: string wings: int body: Scribbler
Methods	quack(voice: string) waddle(times: int)

In the second part you should design a new class that will be part of the game. For example, you could create a treasure object that rewards the player when collected, or create a new type of enemy.

You **should first** come up with a class diagram for your new class before starting to write any python code.

Learning Objectives

- Create Class Diagrams
- Design Classes
- Implement Classes
- Create a Game

Deliverables

1. cmsc143_lab10_LASTNAME_FIRSTNAME.pdf – Your class diagrams.
2. cmsc143_lab10_LASTNAME_FIRSTNAME.py – Your program.