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CMSC 143: Object-Oriented Programming with Robots

Lab 9: Programming with Class
Due April 23, 2015

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In this lab, we will improve upon the small *Frogger* game we started 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 improve the game by designing a new class for a new object(s) in the game. For example, you could create a timer for the game, a treasure object that rewards the player when collected, a speed booster, or create a new type of enemy. Feel free to change the current Player and Car class.

First write the class diagram for the new class before writing any python code.

Learning Objectives

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

Deliverables

Submit an electronic copy of your lab using moodle. Your program should have your name, email, assignment description, the date, and collaboration statement at the top of the file as a comment. Your submission should be a zip file that expands to a folder with a single file.

```
cmsc143-lab9-LASTNAME-FIRSTNAME/
   lab9.pdf-- Your class diagrams
   lab9.py -- Your program
```