

15-110 Recitation Week 11

Reminders

- Check 6-1 due Monday (11/20) at Noon!
 - Utilize OH if you need help!
- Exam 2 grades have been released
- [Recitation Feedback](#)

Overview

MVC Review
Simulations: Code Writing
Debugging
Working with Data

Problems

MVC Review + Simulation

Match the simulation part to its definition

Model	Repeatedly displays current state of the model
View	Tell the model when to run rules and update components
Controller	Stores the core components in a data structure and implements core rules in functions

Consider this setup:

```
def makeModel(data) :
    # Initialize the box dimensions and position
    data["bx"] = 150
    data["by"] = 150
    data["bwidth"] = 200
    data["bheight"] = 200

    # Initialize the circle
    data["cx"] = 250
    data["cy"] = 250
    data["radius"] = 30
    data["color"] = "purple"

def makeView(data, canvas) :
    # Draw the box
    canvas.create_rectangle(data["bx"], data["by"],
                           data["bx"] + data["bwidth"],
                           data["by"] + data["bheight"],
                           outline="black")

    # Draw the circle
    canvas.create_oval(data["cx"] - data["radius"],
                      data["cy"] - data["radius"],
                      data["cx"] + data["radius"],
                      data["cy"] + data["radius"],
                      fill=data["color"])
```

Write the runRules function such that a new random circle (random x and y) is drawn on the 500 x 500 canvas every 300 ms. If the circle's center is within the box, then its color should be purple. If it is not in the box then it should be blue. (don't worry about the timer, that is done for you).



Debugging Large Projects

Reference the starter code section for debugging. There are 2 errors spread out in the code. Work with your classmates to debug this code and get the code working again!

Note: Remember some of the strategies that we have practiced for debugging! You can try adding print statements, talking through the logic with a classmate, and testing a variety of different inputs.

Bug 1:

Bug 2:

Working with Data

Your Global Business professor gives you some sample corporate data to analyze more thoroughly for homework. Make sure to download the starter code and csv files from the 15110 website and store them in the same folder.

You will be implementing the following items:

- 1) First, we want to read in the corporate data from the csv file. Use the skills you learned in class to write the function **readCSVFile** that takes in a file path and saves the contents to a 2D list called data.
- 2) Write a function **departmentNameDict** that stores the information in an input list as a dictionary. The input list is a 2D list where each inner list contains 4 elements: department_id, department_name, location_id, and department_expenses. The output dictionary should be

created so that for each inner list, there is a key of that department_name and an associated value which is the 2 element list of the corresponding location_id and department_expenses.

- 3) Write a function **departmentInfo** that takes in a dictionary like the one outputted above and a list of departments, and finds the mean expenses across the given departments and the most common location among the departments and prints them to the user. You may want to import a package to help you with this function!