ECS 102 Baruch

Spring 2019

HW 6

Due: Thursday, March 7, 11:59 pm

For this assignment you will be writing 3 programs in files, **each with a main**.

1. Start each program with a comment like this:

# Official Name: *Amanda Kitredge*

# Nickname: *Mandy*

# email: *ajkitred@syr.edu*

# Assignment: *Assignment 3, problem 1.*

# Date: *September 13, 2018*

# *a brief description of the problem.*

Replace the *italicised fields* with appropriate information for you and for this assignment.

* In the "Official Name" field write your name as it appears on University documents.
* "Nickname" is the name you would like to be called by the course staff. If you don't use a nickname you can leave this line out.

2. In addition, each program should have comments describing the main sections of the program. They should be specific to the problem you are solving. Under each of these comments should be a chunk of code implementing the comment.

3. Good readability:

* Use meaningful names for all variables.
* Use blank lines to delineate small portions of code that work together to accomplish a task.

4. Test you programs. Run each program with data as specified with that program. For **B** and **C** you will copy your graphics screen to a file **hw6Output.docx (**or **pdf).**

**A. ParkingCharges.py**

I have written a main for **ParkingCharges.py** and some function headers. Your job is to write **only the functions**, to accomplish the required task. **Do not change main.**

A parking garage charges $3.50 an hour, $.10 for each extra minute, and an initial $2.00 for each car. The function computeCharge(mins) computes the charge for one car.

The file named garageData.txt contains the data for one day at the garage. The first line consists of some words describing what follows. Each successive line contains the ID number and the number of minutes for a car. The number of lines depends on the number of cars that day.

The program should read the input file, compute the charge for each car, and print to both the monitor and the output file the id number, the number of minutes, and the charge for each car. There is a header line with column titles. At the end the program prints the total income for the day, labeled.

From links on the assignment page you can see a sample input file, a sample output file, and the program. Your job is to supply the bodies of each function. You should also provide an additional input file (created by you) and the corresponding output file. Do NOT change main.

**B. TheWorld.py**

For this program you will write a program to draw a (simplified) map of the world.

First, write a function

**setUpWindow():**

It should create a WinGraph 800x600, and set the coordinate system to go from 0 to 8 in the x direction and 0 to 6 in the y direction. It should return the GraphWin.

The input file, **Continents.txt**, consists of 7 lines, one for each continent.

The first item in the line is the name of the continent.

The next two items are numbers, the coordinates where the upper left corner should be when drawing the continent. The fourth item in the line is the color for that continent.

On each line items are separated by a comma.

Each continent will be drawn as a square, 1 on each side, in the given color.

Write a function

**def readCont(infile):**

It should process one line from the already open file **infile**.

It returns a list with 3 items.

* The first is the name of the continent, a string, with no extra white space before or after.
* The next item is a Point, representing the upper left corner of the continent.
* The last item is a string, with no extra white space, representing the color.

Write a function

**def makeRect(p):**

It receives a Point p, and returns a 1 by 1 Rectangle with upper left corner p.

Main should call these 3 functions to accomplish the following. Main opens the input file, creates a window, colored light blue. It then processes the input file, for each line, creating the list of items on that line, creating a rectangle, coloring the rectangle, and drawing the rectangle to the window. Finally it closes the window.

Run the program. Paste the screenshot of the graphics window in hw6Output.docx (or .pdf).

Your program should be well documented. Each function should be preceeded by a comment describing the parameters, the return value, and what it does. (See my comments in the program for part A as examples.)

Your main should also be well commented.

**C. Cars.py**

For this program you will design a simple car. (Maybe a rectangle and a couple of circles. You decide.)

Write a function

**drawCar(p, win)**

p is a Point, some anchor point for your car.

win is the window where the car will be drawn.

drawCar draws a car in the window, with its location determined by the point p.

Main should first call **setUpWindow**() (the same function as the previous program. Make a copy and paste it in this file.)

Then it will draw 5 cars, using drawCar, based on 5 mouse clicks, using the locations of the mouse clicks as the anchor points of the cars.

Take a screenshot of the graphics window and paste it in hw6Output.docx (or .pdf)

Functions should be well commented as above. Main should be well commented.

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**Upload:**

ParkingCharges.py

your garageData.txt

your ParkingCharges.txt

TheWorld.py

Cars.py

hw6Output.docx (or pdf)

Make and save a receipt each time you upload a file.