Homework 2
How to College
Due September 24, 2021 at 5pm
5% bonus for submission before Sept. 23, 5pm

In this homework, you will be doing a series of exercises designed to make you practice using variables, expressions, and decision structures. Each one of these should be in a separate python file. For this assignment, you may assume that all the input you get will be of the correct type. There is also a not-so-subtle theme of developing good habits.

In this assignment, as in coming assignments, don't use approaches or language constructs that we haven't yet covered in class. You should be able to implement these solutions with the programming concepts and Python that we've covered in class.

To help you build good habits around starting early, we're offering a 5% grade bonus to anyone who turns this assignment in a day early – ie., by 5pm on Thursday September 23. As an added incentive, Zac has a bunch of mid-day office hours to get you over any final humps.

Learning Goals
1. Use variable and expressions.
2. Use decision structures to control program flow.
3. Identify and fix errors.

The Assignment

Write three small programs to do the following three tasks. For each program, you must prompt politely for input and print out the answer in an explanatory sentence.

1. **hw2a.py** Calculate the average attendance for your first four COS125 lab meetings. Prompt the user for the four attendance numbers, one at a time. Read in each float from the user (you may assume the user will actually enter numbers). Print out the average of these four numbers – round down to the nearest integer. If any lab has attendance greater than 24, print out a warning about exceeding room capacity.

   Sample output (user responses in bold):

   ```
   Hello, I will calculate the lab attendance average.
   What was the attendance at Lab 0? 22
   What was the attendance at Lab 1? 18
   What was the attendance at Lab 2? 21
   What was the attendance at Lab 3? 23
   The average attendance in the first four labs was 21.

   Hello, I will calculate the lab attendance average.
   ```

```
What was the attendance at Lab 0? 33
What was the attendance at Lab 1? 18
What was the attendance at Lab 2? 21
What was the attendance at Lab 3? 23
The average attendance in the first four labs was 24.
Warning! The first lab meeting looks like it exceeded the
room capacity!
```

2. **hw2b.py** For this part, you will calculate a class grade. Grades will be based on homework (30%), projects (20%), engagement activities (10%), labs (10%), two hourly exams (20%), and final exam (10%). Your program should prompt the user for the following inputs, **exactly in this order:**
    1. Homework weight
    2. Homework grade
    3. Project weight
    4. Project grade
    5. Engagement Activities Weight
    6. Engagement Activities Grade
    7. Lab Weight
    8. Lab Grade
    9. Hourly Exam Weight
    10. Hourly Exam Grade
    11. Final Exam Weight
    12. Final Exam Grade

    Your program should prompt for required values, calculate a grade with those numbers, and then print out the answer as an explanatory sentence. Weights will always be between 0 and 1 (you don't need to check if they sum to one), while the grade will be between 0 and 100. A weighted total is computed by multiplying each grade by the corresponding weight and summing them. To replicate the actual situation of this course, use the weights below.

    Sample output:

```
Hello, I will calculate your grade.
What is the homework weight? .3
What is your homework grade? 100
What is the project weight? .2
What is your project grade? 100
What is the engagement activities weight? .1
What is your engagement grade? 100
What is the lab weight? .1
What is your lab grade? 100
What is the hourly exam weight? .2
What is your hourly exam grade? 100
What is the final exam weight? .1
```

```
What is your final exam grade? 100
Your grade is 100.
```

3. **hw2c.py** Create a very simple recycling coach. Prompt the user for how many disposable bottles/cans they used today and how many they recycled. If they did not recycle all the bottles/cans used, encourage them to recycle them all. If they recycled all, give an encouraging message. If they recycled more than they use, ask how they did that and compliment them on their ingenuity. If they use no bottles, give an encouraging message. If they use more than three bottles (no matter whether they recycle them all), suggest they get a reusable bottle. End every exchange with a reminder to visit the SCIS Help Center in Boardman 138.

   Sample output (does not include all possible outcomes/actions):

```
Hello, I will give recycling advice.
How many bottles/cans did you use today? 3
How many did you recycle? 3
You used 0 more bottles than you recycled.
Good job recycling all your cans/bottles!
Remember to visit Boardman 138 for help or community.
```

How to turn in your homework
Turn in each program in its own file. Each file should have a collaboration statement at the top. When turning in your own assignment make sure to add your last name to the file name (for example: Rheingans_hw2a.py).