CS330 Fall 2017
Assignment 2
Due on **January 27th, end of the day**. Please follow the submission instructions in the "notes for all labs" on Moodle. You are required to do all of this assignment, but the bolded parts are what you should submit.

- Read the syllabus, linked on Moodle. You are responsible for the contents of the syllabus.
- Read the "Notes for All Labs" document on Moodle. All assignments must be submitted as specified there.
- Read Chapters 2 and 3 of your text. This assignment follows along with the material covered in that chapter.
- If you haven't managed to get set up with a Haskell-aware editor by now, do it before you work on this assignment. It will make it much easier to read your code, and may include features that help you format your code in a readable and correct fashion.

Follow the instructions here:
http://www.haskellcraft.com/craft3e/Start.html
To get the code that will be used in the book examples. (You'll want to do those commands in the command line, not in GHCi.)
After you do all of that, you'll need to do the following:
- Navigate to the directory the code was installed in.
- Remove the "other-modules" line from the Craft3e.cabal file
- Navigate to the directory the code was installed in (again)
- `cabal install`

If you're having trouble, make sure you've followed the instructions here:
https://www.haskell.org/platform/

Written Assignment 2.1: (4 points)

In a few sentences each (in your own words), describe the following things and explain the differences:
GHC; **GHCi**; **Haskell Platform**

A copy of FirstScript.hs, as it appears in your text, should be available if you followed the instructions above. Note that it is its own file, separate from the Chapter 2 material. (It is also available on Moodle.) In GHCi or WinGHCi, load it, then experiment with the commands in Figure 2.4 of your text

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Written Assignment 2.2: (4 points)

Do something similar to Task 1 on page 32 of the text to test out FirstScript.hs. (Note that you may get some errors - that's expected for illegal lines.)

Write: Did any of the lines do something you didn't expect? (You can say "no" here.)
Write: What do you think that `it` means? What do you think that `let` means? Does anything surprise you about `let`?

Written Assignment 2.3: (2 points)

In a few sentences, describe what a **module** is. Have you seen similar things in other languages?

Coding Assignment 2.4: (6 points)

A. Define a module called `UsePictures` which imports `Pictures` and contains definitions of `whiteHorse` and `rotateHorse`. (These are described on page 10 of your text.) These can use the definitions imported from the `Pictures` module. You should name your file UsePictures.hs.
B. Use functions to produce values equal to the three images shown in Exercise 2.3 in your text. (They will be in ascii art, rather than SVG, as you are using `Pictures` instead of `PicturesSVG`). Don't worry that they don't display as a neat rectangle.

Coding Assignment 2.5: (8 points)

In `UsePictures`, write a function called `evilTwin` that takes one argument, a Picture. It should return a picture that is the same as the original picture, but flipped across the vertical axis and with its colors inverted.

Write tests and/or properties that use `evilTwin`. For a reminder of how to do this, see section 1.14 of your text. Use quickcheck to test the properties you wrote, if you wrote any. (It is fine to just write tests or just write properties; it may be difficult to write properties using just what we've seen so far, due to how Quickcheck generates test cases.)

Discussion Prep 2.6: (4 points)

Include in your write-up at least three thoughts or questions you had about the chapter 2 reading.

Extra Credit 2.Special

Do a bit of research into what the SVG image format used by PicturesSVG is and what makes it special. Describe it in about a paragraph, in your own words. Cite your sources.

Preparation for the Future

Moving forward, the expectation will be that you feel comfortable with the topics covered in this assignment. If you do not, you should ask questions on Piazza and/or continue to practice with GHC. You may want to try the other exercises in chapter 2.