Programming Assignment 3:
Dichotomous Key: Tree Identification
Due Saturday, September 23rd at 11:59 pm

1. Overview

The purpose of this assignment is to give you experience using the conditional construct: if, if-else, etc.

See the document titled "At-Home-Science-In''Tree''guing-Plant-Identification.pdf" that is posted on the "About project 3: more work with conditionals" page.

The first part of your assignment is to create a diagrammatic representation of the full dichotomous key as outlined in the video (you can skip node #19). You should save your representation in a pdf file titled **TreeKey.pdf** and submit it to Gradescope along with your code (**p3.c**) and a **Makefile** (use uppercase as seen here).

No skeleton code is provided for this assignment. Your program should be interactive, displaying informational text about tree identification, asking the user questions and soliciting responses. You should implement code for only a subset the dichotomous key starting at **broadleaf, alternate** and using the format seen in the sample program outputs found in p3_dist.zip.

Be sure to:

- Include a block comment header as seen in project 2.
- Use meaningful variable names.
- Use appropriate formatting, as described in the "Style Guidelines for CPSC 1010" linked in on the "Week 4 Asynch: style guidelines" page.
- Create your own Makefile and use the compile command with warnings turned on:

```
gcc -Wall -o p3 p3.c
```

As in project 2, we know that this implementation will be imperfect: e.g., we don't check for valid input. The control flow may be complex. However, as we move along through the semester, we'll use the imperfections we identify as motivation to incorporate additional features of C, apply our accumulating knowledge of best practices, and refine our implementation.

2. Sample Output

See the files with 6 example runs of the program, each corresponding to a type of tree (beech, holly, magnolia, etc.). These were generated by running p3, as seen here:

./p3 < tree_name.in > tree_name.out

You can generate your own output files, like this:

./p3 < tree_name.in > Student_tree_name.out

And then diff the two output files.

Submission

1. Create a Proj3 sub-directory in your Mod1/Projects directory
2. Create the Makefile and p3.c
3. Once you have it all compiling, be sure to test with a variety of inputs to be sure that the full tree is correctly implemented.
4. Submit via the Gradescope link:
    - TreeKey.pdf
    - p3.c
    - Makefile

3. Grading rubric:

___ / 05 p3.c, Makefile, and TreeKey.pdf are submitted and are the only file submitted

___ / 05 p3.c compiles cleanly using Makefile (with -Wall in compile command)

___ / 10 Diagram in TreeKey.pdf is correct

___ / 05 Header material complete

___ / 05 meaningful variable names

___ / 60 Gradescope test cases

___ / 10 p3.c is formatted according to style guidelines

___ / 100

4. Notes on Collaboration

You are required to work individually on this assignment. You can ask questions and get help in piazza, in office hours (make appointment by email) and in class.