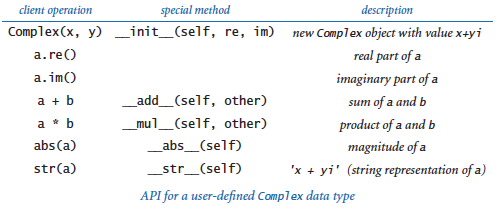
For this final project, you must complete one of the following 5 tasks. You may work with a classmate, or as an individual. If you work in a pair, please note that the end result needs to reflect the work of two people (meaning your work should be taken further than a single person could have gone, and the work submitted should reflect contributions from both partners that each individual is pleased with.) As always, you will be graded on the following:

* **Clarity:** is your code readable and concise? Does your code sacrifice readability for concision (this would be bad)? Can someone not familiar with the code easily follow what is happening in the code? Have you used comments to adequately explain your work? Did you include the date, a description, sources and the honor code at the top?
* **Organization:** Have you used methods/classes/loops to make your code more concise? Are your methods at the top, and classes in another file? Do your methods break your code down into manageable tasks? Do your classes hold appropriate information pertaining to your object, and do they not print information or ask for user input from within the class?
* **User experience/Creativity:** Is your project unique and engaging? (This might not make sense for some of the specific tasks listed below.) Is it clear to the user what they need to enter to make your program work, and is it easy and efficient for them to enter this data? Have you done sufficient error checking to ensure your program won't crash in inconvenient places? Is your program flexible in the input it accepts (accepting "Yes" and "yes" and "y" and "Y", for example, as all valid responses)? Did you have a variety of people play-test your program? What feedback did they give you, and how did you adjust as a result? Did you include this work (that is invisible to me) in your comments?
* **Time Management:** Did you use your time in class effectively? Did you advance your project between classes? Did you regularly log your progress with commits on Github? If you finished early, did you think creatively about how you could use the extra time to enhance the offerings in your program?

Your options for projects are as follows:

1. Complete a text-based card game of your choosing. You have a card and deck class from our in-class practice; now you just need to write the logic for the game of your choosing. Please run your card game by me so I can help you plan and avoid any pitfalls you may face.
2. Following Prim's Algorithm, write a program that will generate a maze. When you run your program, you should be able to specify the width and height for your maze, and a maze should be printed to the screen accordingly. (*Be careful not to look at working solutions in Python too closely. Read about how the algorithm works, and try to implement it on your own. Good and thorough comments will be key to demonstrating your understanding of your code.*)
3. Figure out a way to include code in your programs that will tell you how long it takes to execute your code. Then, rework your Mandelbrot code so that instead of using the built-in Complex() class, it uses the custom complex class you created that works in the same way. The complex class should be able to do the following at a minimum:   
     
   *Complex classes can be found online, so it is important to try and avoid solutions for this problem. Heavily commented code explaining a thorough understanding of how this works will be necessary.*Once you have implemented your own version of Complex, use it to run the Mandelbrot program. Time your original program and compare it to the time for the new one. How do the codes compare? Which is faster? Include an analysis of your findings in your comments. From: <https://introcs.cs.princeton.edu/python/32class/>
4. Compose a data type Element for entries in the periodic table of elements. Include data type values for element, atomic number, symbol, and atomic weight and accessor methods for each of these values. Then, create a data type PeriodicTable that reads values from a file to create a list of Element objects and responds to queries on input so that a user can type a molecular equation like H2O and the program responds by printing the molecular weight. What other kinds of interactions can you create within this class?  
   The file here: <https://introcs.cs.princeton.edu/python/32class/elements.csv> contains the data that the program should read. Include fields for element, atomic number, symbol, and atomic weight. (Ignore fields for boiling point, melting point, density (kg/m3), heat vapour (kJ/mol), heat fusion (kJ/mol), thermal conductivity (W/m/K), and specific heat capacity (J/kg/K) since it's not known for all elements). The file is in CSV format (fields separated by commas). From: <https://introcs.cs.princeton.edu/python/32class/>
5. In lieu of one of the above assignments, complete some project of your choosing that demonstrates a thorough understanding of the key concepts we have covered this term (loops, lists, logic, classes and functions for organization, etc.). It would be in your best interest to review your idea thoroughly with me before getting started on your project to ensure your project is appropriate in scope and skills.