General Points

- Use the course material located at:
  - [Whirlwind Tour of Python](#)
- Assignment 06 can be completed using previously covered material and content from the following chapters:
  - 00-Introduction *through* 10-Iterators
- After completing the requirements, test to ensure all cells run correctly in the .ipynb file.
- Include appropriate markdown cells to identify the requirements below by number. See this [example](#).
- *Output (print) the results of all operations*
- Produce an .html file that shows the .ipynb after a *successful test run*.
  - by File | Download as | HTML (.html) .
- Test the .html file by opening it in a browser and ensure the content is produced correctly from the run in Jupyter Notebook.
- Submit <mark>BOTH</mark> the .ipynb and .html files to the appropriate link in Blackboard | Assignments. Submit the files individually (via a multi-select). However, if your browser posts an error for the .html file, submit it as a .zip.
- Submit any additional files required to complete the assignment.

Requirements

(*Ensure that all Requirements are complete*)

1. Using Jupyter Notebook (or similar tool), create a file named:
   - assignment-06.ipynb
2. Add an H1 markdown cell: "This is Assignment 06 - <yournamehere>"
3. Include appropriate markdown cells to identify the requirements below by number.
4. In a cell, use Python to:

- Include appropriate comments in your code.
- Create a list named list_1
- Populate list_1 list with 20 arbitrary numbers between 0 and 99
- Use built-in list methods to:
  i. output the length of the list
  ii. append 3 numbers to the list between 0 and 99
  iii. use the addition operator (+ sign) to append a literal list of 7 numbers between 0 and 99 to list_1. A literal list consists of objects in []; like [1, 2, 3], without assignment to a variable.
  iv. sort list_1

5. Show the following values from list_1:
- the 4th element
- the 15th element
- the 3rd element from the end
- the 7th element from the end
- the first 4 elements
- the last 5 elements
- the elements in reverse order
- set the 14th element = -99
- every other element in the list
- set elements 9th through 15th to -77

6. Create a tuple named tuple_1 containing 7 arbitrary numbers
- attempt to set the 3rd value to -33
- attempt to append the value -22 to the tuple

7. Create a dictionary named players_<sportofchoice> (e.g. players_baseball)
- populate the dictionary with player positions as keys (e.g. shortstop) and player names as values (e.g. Brennen)
- include at least 9 key::value pairs in the dictionary
- change a key::value pair
- add a new key::value pair

8. Create two sets named hatfields and mccoys. Each set should contain 10 first names with a few in common. Demonstrate the following set operations:
   - union
   - intersection
   - difference
   - symmetric difference

9. Demonstrate the use of if, elif, and else statements based on weather conditions

10. Demonstrate the use of a for loop using:
    - a range
    - list contents

11. Demonstrate the use of the below in two while loops:
    - i = 0 to 7 (where 7 is the number of times the loop executes)
    - i = 1 to 7 (where 7 is the number of times the loop executes)

12. Define and use a function named factorial() that returns the factorial of a number that is passed to it as an argument when called. For example, factorial(5) should return the result of 5x4x3x2x1 = 120

13. Define and use a function named vegetables() that takes numbers of vegetables as *args and names of vegetables as **kwargs.

14. Create a list named cars that contains three dictionaries each with three key::value pairs.
    - The key::value pairs should represent three common attributes::values of automobiles
    - pass the cars list to the sorted built-in function and use a lambda to sort the cars list
    - perform another sort on the cars list using a lambda and a different key

15. Demonstrate the use of a try and except statement (must be different from online textbook versions).

16. Demonstrate the use of try, except, else, and finally statements (must be different from online textbook versions).

17. Use markdown to briefly explain the *iterator indirection* concept in your own words.

18. Create a list of 10 animal species named animals_list and demonstrate the use of len() and iteration to print the index and values of the animals in the list.

19. Use the *enumerate* iterator to perform the same actions as the previous requirement.

20. Create a list of 10 colors named colors_list. Use the zip iterator print the values of the animals_list and colors_list within the same for loop.

21. Create a lambda named times_ten that multiplies the variable x by 10. Use the map iterator and range(10) to evaluate the lambda in a for loop.

22. Create a lambda named by_three that returns true if the variable x is evenly divisible by 3. Use the filter iterator and range(30) to evaluate the lambda in a for loop.

Be sure you have output (printed) the results of all operations

23. Use markdown to include a statement at the end of assignment-06.ipynb explaining your experiences with Assignment 06. Make this authentic (minimum of 2-3 sentences).

TEST – TEST – TEST your .ipynb file to ensure all requirements are met. Produce an .html file from a *successful test run* of the .ipynb file. Ensure that the .html is produced correctly by opening it in a browser.

- Use the list above as a confirmation checklist.
- Not meeting all requirements = 0 points for the assignment.