

ITSE 1302 – Assignment 06

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 **BOTH** the .ipynb and .html files to the appropriate link in Blackboard | Assignments. Submit the .html file as a .zip file to pass security settings. Submit other files individually.
- 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:

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- 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

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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 a `while` loop with:
 - `i = 0 to 7`
 - `i = 1 to 7`
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 $5 \times 4 \times 3 \times 2 \times 1 = 120$
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).

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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.