CS 3753 & 5163 Data Science
Homework 1 (100 points)

Submission:
1. Submit a single python script (abc123_hw1.ipynb) through Blackboard learn. All the results are outputted from your Python code
2. You should have the instruction of running your code at the beginning of your code (e.g. Download the file abc123_hw#.py; Open the file via Jupyter Notebook; Run the code by clicking the "Run" button, …). It should run successfully.
3. If your code cannot run, we assume your code can run, then we will check whether your code is correct logically. If so, half points will be deducted. Otherwise, more points will be deducted if your code is wrong or there is no code.
4. Do not compress your source code and data files. The compressed files will receive a warning at the first time and will lose 10% points in future assignments. Make sure all your files are in the same folder when you run the code. So, after the grader downloads your homework, he/she does not need to set the path for the data file. They can run your code successfully.
5. If there is any plagiarism, you will lose all points on the questions at first time. In next, you will lose all points in the whole homework.
6. You can submit your homework 3 times before the deadline. The late submission will lose 15% of the total points in the assignment. The late submission is acceptable in 48 hours.

Watch the videos of lecture 3 & 4 to complete the following questions.
Questions
You can either use some existing functions or implement your own code to finish the questions. Questions in a section do not have the connection with questions in previous sections.

String (20 points)
1. Create the string *str* with "Welcome to Python Programming"
2. Output the string using the function Print
3. Output the substring from indexes 11 to 16 (including both indexes 11 and 16).
4. Output the substring of the last 5 characters (please use negative index)
5. Concatenate the string '!!!' to the end of the string *str*
6. Output the string *str*

List (32 points)
1. Create an empty list
2. Add the elements 1, 2, 3, 4 into the list one by one and output the list after all additions
3. Add the tuple (5, 6) as an element to the end of the list and output the list
4. Add the list ['perfect', 'wonderful'] as an element to the end of the list and output the list

5. Concatenate the list [[7, 8], [9, 10]] to the end of the above list and output the new list
6. Add the multiple elements 8.5, 7, 'code', 'software' to the end of the list at once and output the list
7. Output the last 5 elements in the list
8. Remove the elements from indexes 3 to 6 and output the list

Tuple (16 points)
1. Create a tuple Tuple1 using the list with elements 1, 2, 3, 4 and output the tuple. (Note: there are many ways to create a tuple. You use the list to create the tuple here.)
2. Create another tuple Tuple2 with elements 'Python', 'for', and 'kids' directly, and then output the tuple.
3. Concatenate the tuple Tuple2 to the end of Tuple1 and assign the resulted tuple to Tuple1. Then output the tuple Tuple1.
4. Output elements from index 3 to the end

Dictionary (32 points)
1. Create an empty dictionary Dict
2. Adding elements 0: 'Python', 1: 'Programming', 2: 'Funny' one by one and then output the dictionary.
3. Update the key 1's value to 'is very' and output the dictionary.
4. Output all the keys
5. Output all the values
6. Delete the element with the key *2* and output the dictionary. (Note: you should delete the entire element with the key and value).
7. Check for existence of key *2*
8. Convert the dictionary Dict to a list. Only the values of the dictionary are in the list. Then, output the list.