# **M1HW1 Array Creation and Manipulation (Assignment Details)**

**Introduction**:

In this assignment students will demonstrate their understanding of how to create and manipulate NumPy Arrays.

**Instructions**:

For this assignment, you will do the following

1.Create a Python code file named M1HW1\_ArrayManipulation\_FirstLast.py   
(replace "FirstLast" with your own name)  
2. Add a title comment block to the top of the new Python file using the following form

# A brief description of the project  
# Date  
# CSC221 M1HW1 – Array Manipulations  
# Your Name

**Part 1 = 70 points**  
3. The program should be menu driven, the menu to be displayed is shown below (20 points, loop must be functional)

MENU  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Create a 3-by-3 Array
2. Display cube Values for elements in array
3. Add 7 to every element and display result
4. Multiply elements by 6 and display result
5. Exit

4. The program is to do the following

Ask user to enter a number for one of the choices displayed in menu

**If 1 is entered(Create Array ): 20 points**

* Create a 3-by-3 Numpy array containing **Even** Integers from 2 through 18.
* Once array is created (array is to be displayed in three rows but without the square brackets []. *Hint , use function or loop to display array content*)

**If 2 is entered (Cube Values): 15 points**

* Verify that an array has been created, else notify user that the array is empty and redisplay menu
* If array has been created, calculate the cube value (\*\*3) for each element . *Hint* ***broadcasting***.
* Display result of operation. Remember to display array in 3 rows without the brackets.

Note: For the operations below, **DO NOT** alter the array created. *Hint, lookup shallow and deep copy*

**If 3 is entered (Adding 7): 15 points**

* Verify that an array has been created, else notify user that the array is empty and redisplay menu
* If array has been created, Add 7 to every element . *Hint* ***broadcasting***.
* Display result of operation. Remember to display array in 3 rows without the brackets.

**If 4 is entered (Multiply): 15 points**

* Verify that an array has been created, else notify user that the array is empty and redisplay menu
* If array has been created, multiply every element by 6. *Hint* ***broadcasting***.
* Display result of operation. Remember to display array in 3 rows without the brackets.

**If 5 is entered (Exit): 5 points**

* Terminate program

**Submit** your finished code solution file(s) through the assignment link below

**Note**: Write program Pseudocode (detail algorithm) and add it as a comment block to the submitted program. (10 points)

**Grading criteria**:

Shown above