ASSIGNMENT #11 – Creating Arrays / Lists

(WORTH 15 POINTS)

PART 1: Creating Arrays / Lists

RESOURCES:

1. ☐ Videos located in the Content link under ARRAYS / LISTS TASKS
2. ☐ Lecture Handout concerning arrays / lists
3. ☐ Sample arrays, lists and built-in functions

FLOWGORITHM VERSION:

DESCRIPTION: (worth 3.5 points)

Write a program to create a list of outdoor Temperature data

1. ☐ Use a while loop or for loop to populate / enter outdoor weather temperature (in Florida) data inside a list called **wTemp** **(worth 2 points)**
2. ☐ Use a while loop or for loop to display the unsorted list **(worth 1 points)**
3. ☐ Add comments throughout the program **(worth 0.5 point)**
4. ☐ Save the program as:

SAVE FILE FLOWGORITHM FILE AS:

lastname_firstname__A11_wTemp_WHILE_LOOP.fprg

SAMPLE FLOWGORITHM INPUT

* Use actual meaningful data, not a list of duplicate values

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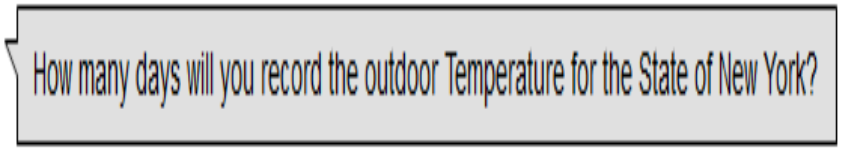

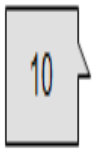

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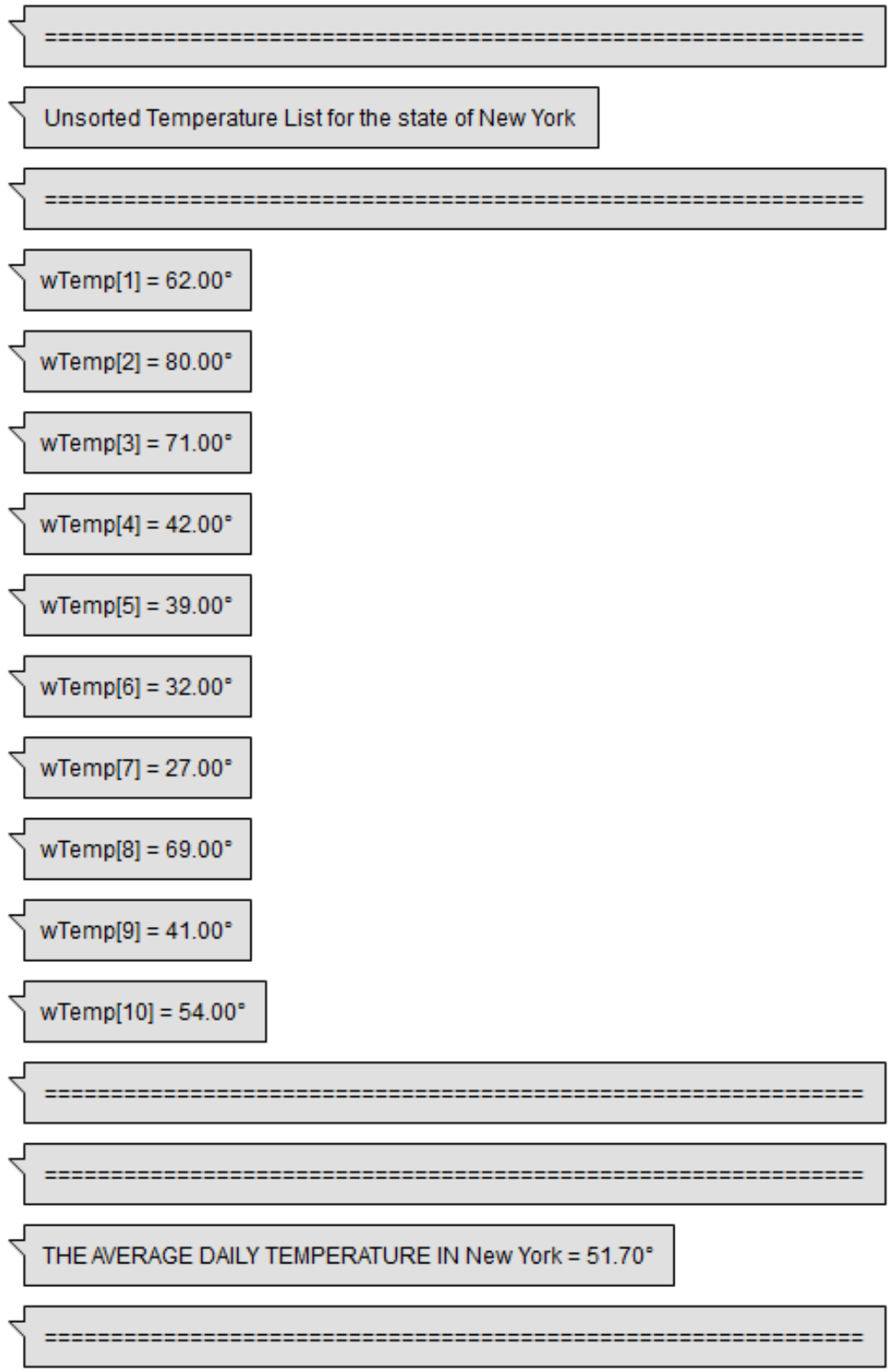
SAMPLE FLOWGORITHM OUTPUT



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CLICK CHAT BUBBLE ON CONSOLE WINDOW TO DISPLAY AS TEXT DATA

CLICK CHAT BUBBLE – TEXT VIEW OF FLOWGORITHM INPUT

Enter the name of the state you are recording the daily temperature for: [i.e. Florida, Georgia, New York]
New York
How many days will you record the outdoor Temperature for the State of New York?
10
What is the outdoor temperature in New York on day # 1
62
What is the outdoor temperature in New York on day # 2
80
What is the outdoor temperature in New York on day # 3
71
What is the outdoor temperature in New York on day # 4
42
What is the outdoor temperature in New York on day # 5
39
What is the outdoor temperature in New York on day # 6
32
What is the outdoor temperature in New York on day # 7
27
What is the outdoor temperature in New York on day # 8
69
What is the outdoor temperature in New York on day # 9
41
What is the outdoor temperature in New York on day # 10
54

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CLICK CHAT BUBBLE – TEXT VIEW OF FLOWGORITHM OUTPUT

```
============================================================
Unsorted Temperature List for the state of New York
============================================================
wTemp[1] = 62.00°
wTemp[2] = 80.00°
wTemp[3] = 71.00°
wTemp[4] = 42.00°
wTemp[5] = 39.00°
wTemp[6] = 32.00°
wTemp[7] = 27.00°
wTemp[8] = 69.00°
wTemp[9] = 41.00°
wTemp[10] = 54.00°
============================================================
============================================================
THE AVERAGE DAILY TEMPERATURE IN New York = 51.70°
============================================================
```

PART 2: PYTHON VERSION: (Worth 11.5 points)

Convert the flowgorithm to python

1. ☐ Convert from flowgorithm to python. This conversion will display the heading of the unsorted list and the actual unsorted list. You will need to add the following functions to your program:
2. Add the open, write and close files to write the results to an external file. See **assignments #08, #09** as examples on how to write the results to an output file. **(1 point)**
3. ☐ Add the function to Check the integer data type for the "size" variable to make sure it is numerical and that it is a positive whole value (using the **try/except statement**) as was done in assignments #08 and #09; Place this function inside the myCustomFunctions **(worth 1 point)**
4. ☐ Add the function to Check the float data type of the **weather Temperature (wTemp)** using the try except statement. This was done in assignment #09 and should have been saved inside the myCustomFunctions program. Import the myCustomFunctions to apply this function. **(worth 0.5 point)**

5. ☐ Calculate the average of the outdoor Temperature data in the list **(1 point)**
6. ☐ Use the min function to determine and write the minimum outdoor Temperature value in the list **(1 point)**
7. ☐ Use the max function to determine and write the maximum outdoor Temperature value in the list **(1 point)**
8. ☐ Write the heading of the unsorted list and display the unsorted list. (**0.5 point**)
9. Write the lowest temperature using the **min** function **(worth 0.5 point)**
10. ☐ Write the highest temperature using the **max** function **(worth 0.5 point)**
11. ☐ Write the average of the temperature list **(worth 0.5 point)**
12. ☐ Use the sort function to sort the list **(worth 0.5 point)**
13. ☐ Write a heading "Sorted List" and the sorted temperature list **(worth 0.5 point)**
14. ☐ Write the lowest temperature using the **min** function **(worth 0.5 point)**
15. ☐ Write the highest temperature using the **max** function **(worth 0.5 point)**
16. ☐ Write the average of the temperature list **(worth 0.5 point)**
17. ☐ Add comments throughout the entire program **(worth 1.5 points)**
18. ☐ **Store your customized functions such as:**
    a. ☐ **checkIntDataType and move to the myCustomFunctions if it is not already there.**
19. ☐ **Save the python program as:**

    lastname_firstname__A11_wTemp_WHILE_LOOP.py

    OR as a for loop version

    lastname_firstname_A11_wTemp_FOR_LOOP.py

Save the python program as:

20. ☐ Make sure all output is formatted using either the format function or f'-string
21. ☐ Your results must display centered as in the following example:

EXECUTE OR RUN THE PYTHON VERSION

Enter a file name where the output will be written

lastname_firstname_A11_wTemp_While_Loop_Output

Enter the name of the state you are recording the daily temperature for:
[i.e. Florida, Georgia, New York]
New York
How many days will you record the outdoor Temperature for the State of New York?
10a
You entered the wrong data type
Re-enter a positive numerical value
-10
You entered a negative value
Re-enter a positive numerical value
10
What is the outdoor temperature in New York on day # 1
62z
You entered the wrong data type
Re-enter a positive numerical value
-62
You entered a negative value
Re-enter a positive numerical value
62
What is the outdoor temperature in New York on day # 2
80
What is the outdoor temperature in New York on day # 3
71
What is the outdoor temperature in New York on day # 4
42
What is the outdoor temperature in New York on day # 5
39
What is the outdoor temperature in New York on day # 6
32
What is the outdoor temperature in New York on day # 7
27
What is the outdoor temperature in New York on day # 8
69u
You entered the wrong data type
Re-enter a positive numerical value
69
What is the outdoor temperature in New York on day # 9
41
What is the outdoor temperature in New York on day # 10
54

OUTPUT FILE - lastname_firstname_A11_wTemp_While_Loop_Output

```
================================================================================
            Unsorted Temperature List for the state of New York
================================================================================
                            wTemp[  1] =  62.00°
                            wTemp[  2] =  80.00°
                            wTemp[  3] =  71.00°
                            wTemp[  4] =  42.00°
                            wTemp[  5] =  39.00°
                            wTemp[  6] =  32.00°
                            wTemp[  7] =  27.00°
                            wTemp[  8] =  69.00°
                            wTemp[  9] =  41.00°
                            wTemp[ 10] =  54.00°
================================================================================
                     The minimum Temperature  =  27.00°
                     The maximum Temperature  =  80.00°
                   The average Temperature     =  51.70°
================================================================================
================================================================================
             Sorted Temperature List for the state of New York
================================================================================
                            wTemp[  1] =  27.00°
                            wTemp[  2] =  32.00°
                            wTemp[  3] =  39.00°
                            wTemp[  4] =  41.00°
                            wTemp[  5] =  42.00°
                            wTemp[  6] =  54.00°
                            wTemp[  7] =  62.00°
                            wTemp[  8] =  69.00°
                            wTemp[  9] =  71.00°
                            wTemp[ 10] =  80.00°
================================================================================
                     The minimum Temperature  =  27.00°
                     The maximum Temperature  =  80.00°
                   The average Temperature     =  51.70°
================================================================================
```

SUBMISSION: - SUBMIT THE FOLLOWING FILES INSIDE THE DESIGNATED DROP BOX FOR ASSIGNMENT #11

lastname_firstname__A11_wTemp_WHILE_LOOP.fprg
lastname_firstname__A11_wTemp_WHILE_LOOP.py

lastname_firstname_A11_wTemp_While_Loop_Output

myCustomFunctions

*** OR submit the FOR-LOOP versions along with the myCustomFunctions**