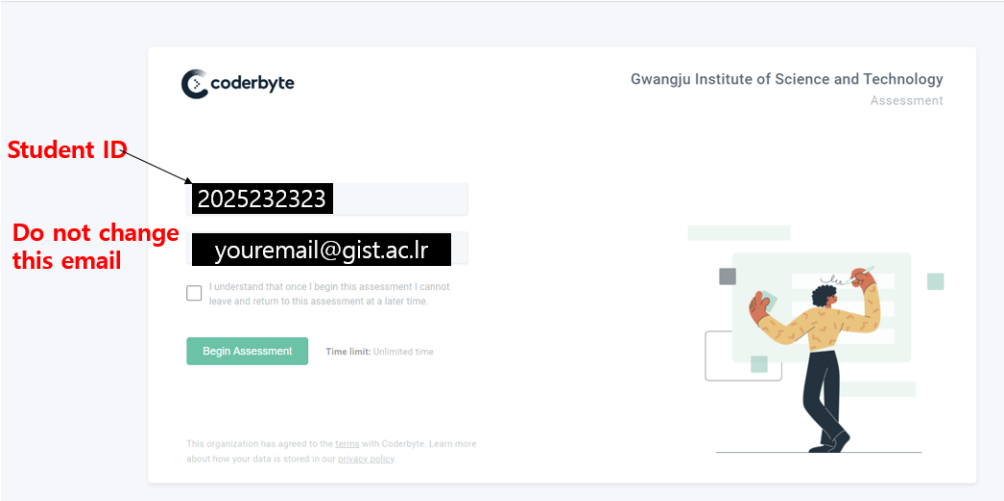
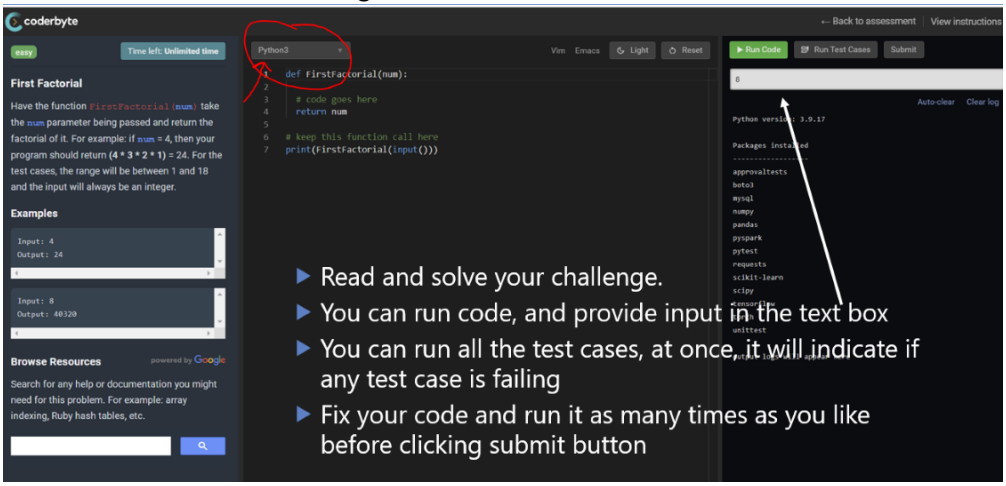
Algo Assignment 3: SORTING

General Instruction to submit the assignment

1. Open the link sent in email and enter your Student ID and ZEUS email address



2. You must change the programming language to Python3 before starting to code. There is a drop down button above the coding window.



3. If you submit and try to resubmit etc., the system will not let you do that. (once submitted you can not update your code)
4. Hence solve this question before hand and then enter your code in Coderbyte system. This way you will save a lot of hassle. The questions will also be released in the pdf format. Make sure your code is giving right results for all the given test cases before you submit your code.
5. You should not use **system libraries** while solving questions for at least first 3 assignments. Starting from DP assignments you can use **min max** and **sort** functions of python3.
6. Remember total points from the assignments are only **10%** of your grades. Hence these are mainly for practicing for mid-term and final-term coding test.
7. The time complexity of your submissions will be tested only after 4th Assignment.

1) Second GreatLow

Have the function `SecondGreatLow(arr)` take the array of numbers stored in **`arr`** and return the second lowest and second greatest numbers, respectively, separated by a space. For example: if **`arr`** contains `[7, 7, 12, 98, 106]` the output should be `12 98`. The array will not be empty and will contain at least 2 numbers. It can get tricky if there's just two numbers!

Examples

Input: [1, 42, 42, 180]

Output: 42 42

Input: [4, 90]

Output: 90 4

Code frame

```
def SecondGreatLow(arr):

  # code goes here
  return arr

# keep this function call here
print(SecondGreatLow(input()))
```

Test Cases

1. For input `[1,2,2,3]`, the correct output is `2 2`
2. For input `[2,2,2,5,5,5,6]`, the correct ouput is `5 5`
3. For input `[100, 30, 6]`, the correct ouput is `30 30`
4. For input `[78, 90, 100, 1, 2]`, the correct ouput is `2 90`
5. For input `[-4, -5, 10, 2]`, the correct ouput is `-4 2`
6. For input `[100, 200, 3, 400, 5, 1]`, the correct ouput is `3 200`
7. For input `[4, 60, 7, 188]`, the correct ouput is `7 60`
8. For input `[80, 80]`, the correct ouput is`80 80`
9. For input `[90, 23]`, the correct ouput is `90 23`
10. For input `[7, 7, 90, 1000003]`, the correct ouput is `90 90`

2) Wave Sorting

Have the function `WaveSorting(arr)` take the array of positive integers stored in **`arr`** and return the string **`true`** if the numbers can be arranged in a wave pattern: **a1 > a2 < a3 > a4 < a5 > ...**, otherwise return the string **`false`**. For example, if **`arr`** is: [0, 1, 2, 4, 1, 4], then a possible wave ordering of the numbers is: **`[2, 0, 4, 1, 4, 1]`**. So for this input your program should return the string **`true`**. The input array will always contain at least 2 elements. More examples are given below as sample test cases.

Examples

Input: [0, 1, 2, 4, 1, 1, 1]

Output: false

Input: [0, 4, 22, 4, 14, 4, 2]

Output: true

Code Frame

```
def WaveSorting(arr):

  # code goes here
  return arr

# keep this function call here
print(WaveSorting(input()))
```

1. For input [0, 1, 2, 4, 1, 4], the correct output is true
2. For input [0, 1, 2, 4, 1, 1, 1], the correct output is false
3. For input [0, 4, 22, 4, 14, 4, 2], the correct output is true
4. For input [1, 1, 1], the correct output is false
5. For input [0, 67], the correct output is true
6. For input [0, 1, 2, 3, 3, 3, 3, 3, 8, 9], the correct output is true
7. For input [10, 90, 49, 2, 1, 5, 23], the correct output is true
8. For input [10, 90, 49, 2, 1, 5, 23, 45, 21, 22], the correct output is true
9. For input [1, 1, 1, 1, 5, 2, 5, 1, 1, 3, 5, 6, 8, 3], the correct output is true
10. For input [10, 100, 20, 300], the correct output is true