1. Write a python program that generates the fibonacci series in a list. You will take 2 number inputs from the user, the first input N indicates the Nth element until which you need to generate the sequence and print it, and the second input M indicates the single Mth element you need to print. If the Mth  element does not exist, print “The element has not been generated”.

**The fibonacci sequence is a sequence where each element is a summation of its two preceding elements. The first 2 elements of the sequence are 0 and 1. [Hint: you can initialize the list with first 2 elements]** [CO3, CO4, CO6]

[6 marks]

**Sample Input 1:**

N: 6

M: 3

**Sample Output 1:**

[0, 1, 1, 2, 3, 5, 8]

2

**Explanation:** As N = 6, we need to generate upto 6th element. So, 2nd element = 1st element + 0th element = 1+ 0 = 1, 3rd element = 2nd element+ 1st element = 1 + 1 = 2, 4th element = 3rd element + 2nd element = 2 + 1 = 3 etc and then print the completed list. As M = 3, we have to print the 3rd element, which is 2.

**Sample Input 2:**

N: 4

M: 5

**Sample Output 2:**

[0, 1, 1, 2, 3]

The element has not been generated

**Explanation:** As N = 4, we need to generate up to 4th element and print the completed list. As M = 5 which is greater than 4 (therefore not generated), we have to print “The element has not been generated”.

**Sample Input 3:**

N: 1

M: 0

**Sample Output 3:**

[0, 1]

0

**Explanation:** As N = 1, we need to generate upto 1st element and print the completed list. As M = 0, we have to print the 0th element, which is 0.

1. Write a python program that finds the largest tuple in a given nested tuple by summing all of its elements together. **E.g: in the nested tuple ((10,2), (1,2,3,4)) the tuple (10,2) is bigger than the tuple (1,2,3,4) as (10+2) = 12 is greater than (1+2+3+4) = 10**. You have to print the whole largest tuple as the output, and your solution must work for any given tuple. **You can assume that there will be at least one tuple inside the outer tuple, and you are not allowed to use the sum() or max() functions. You do not need to take user input.**

[CO3, CO4, CO6]

[10 marks]

**Given tuple 1:**

example\_tuple1 = ((1,2,3), (6,10), (89,))

**Sample Output 1:**

(89,)

**Given tuple 2:**

example\_tuple2 = ((1,2,3),)

**Sample Output 2:**

(1,2,3)

**Given tuple 3:**

example\_tuple3 = ((567, 1), (3,), (1,4,6))

**Sample Output 3:**

(567, 1)

1. Trace the output of the following code:

| **1** | **myList = [0, 1, 3, 5, 7]** |
| --- | --- |
| **2** | **index1 = 0** |
| **3** | **index2 = 0** |
| **4** | **b = myList** |
| **5** | **while (index1 < 4):** |
| **6** | **myList[index1] = index1 + index2** |
| **7** | **index2 = 1** |
| **8** | **while (index2 < index1):** |
| **9** | **myList[index1] = b[index2-1] + myList[index2] - index1** |
| **10** | **index2 = index2 + 1** |
| **11** | **print(myList[index1])** |
| **12** | **index1 = index1 + 1** |

[CO3, CO4]

[4 marks]

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