

ME1 Computing- Session 4: Tuples and Sorting Algorithm

Learning outcomes:

- Being able to define tuples
- Being able to manage list of tuples
- Being able to sort a sequence of data

Please provide feedback at: www.menti.com with code 7394 6262

Before you start

In your H drive create a folder `H:\ME1MCP\Session4` and work within it.

Task 1: List of tuples

1. Download the files *Names.txt*, *Groups.txt* and *Marks.txt* from Blackboard. Write a script to form a list of tuples, associating every line content of the three files into a tuple.

List

	Name	Group	Mark
[0]	Cezary	2a	70
[1]	Calum	4c	65
[2]	Gaurav	2a	55
[3]	Carmen	3b	72
[4]	Shidao	3b	70

← Tuple

[0] [1] [2]

Answer Question 1

Task B: Sorting algorithm

1. Sort, in descending order by marks, the list of tuples formed in Task A.

	Name	Group	Mark
[0]	Carmen	3b	72
[1]	Cezary	2a	70
[2]	Shidao	3b	70
[3]	Calum	4c	65
[4]	Gaurav	2a	55

[0] [1] [2]

Answer Question 2

Task C: Count occurrences

1. Count the occurrences of every mark and form a list of tuples with (see figure below):
 - a) the numerical mark,
 - b) the number of occurrences of that mark,
 - c) the list of students who achieved that mark.

Plot graphically Occurrences vs Marks.

The diagram shows a list of four tuples. The list is indexed from [0] to [3] on the left. Each tuple is a list of three elements: a mark, an occurrence count, and a list of student names. Annotations include: a black arrow pointing to the list index [0] labeled 'List'; blue arrows pointing to the 'Mark' and 'Occ' columns labeled 'Integers'; a blue arrow pointing to the 'List' column labeled 'List of strings'; and a black arrow pointing to the entire row [1] labeled 'Tuple'.

	Mark	Occ	List
[0]	72	1	Carmen
[1]	70	2	Cezary, Shidao
[2]	65	1	Calum
[3]	55	1	Gaurav
	[0]	[1]	[2]

Answer Question 3

Answer Question 4