

ME1 Computing- Session 5: 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 63 53 57

Before you start

In your H drive create a folder `H:\ME1MCP\Session5` 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 row in a table with three columns: 'Mark', 'Occ', and 'List'. The 'Mark' column contains integers (72, 70, 65, 55). The 'Occ' column contains integers (1, 2, 1, 1). The 'List' column contains strings ('Carmen', 'Cezary, Shidao', 'Calum', 'Gaurav'). Annotations include: a black arrow pointing to the list index [0]; 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