NESTED LISTS
NESTED LOOPS
Nested lists

• Nested list is a list of lists:
  \[
  m = \begin{bmatrix}
  1, & 2, & 3 \\
  4, & 5, & 6 \\
  7, & 8, & 9
  \end{bmatrix}
  \]

• Getting the row:
  >>> m[2]
  [7, 8, 9]

• Getting the element:
  >>> m[2][1]
  8
for variable1 in list1:
    statements
    for variable2 in list2:
        statements
        statements

for i in [1, 2, 3]:
    for j in [4, 5, 6]:
        print(i*j)
    print()
Data structures

• Primitive types: values cannot be decomposed into smaller units. For example: int, float, bool.
• Non-primitive types (data structures): contain other values in a structured way. For example: list, str.
• Possibilities to construct new data structures are endless. For example: list of lists of lists etc.
Other common data structures

- **Tuple.** Like an array but nonmutable.
  \[ t = (6, -2, 3) \]

- **Set.** Collection of unique elements where order is unimportant.
  \[ s = \{2, 4, 6\} \]

- **Dictionary.** Set of key-value pairs.
  \[ d = \{ 'day': 9, 'month': 4, 'year': 2020 \} \]
Algorithms and data structures

• Data structures represent “passive part” of programming. They describe how data are organized.

• Algorithms represent “active part” of programming. They describe what needs to be done with the data.

• Good program has both parts implemented in an efficient way.
Questions
Review exercise

• Click on “Join room” on the new tab
• Open “Review exercise” in Moodle
• To discuss with others, use the chat or switch on your microphone.
• Pay attention to the time limit!
Solutions of the review exercise
Programming tasks