Computational Thinking and Programming – A.Y. 2017/2018

First partial written examination – 27/11/2017

Given name: _____

Family name: _____

Matriculation number: _____

University e-mail: _____

Please answer to the following 5 questions [40 minutes max, 1 point each, max score: 5 points]

1. Explain what is the main difference between lists and tuples.

2. Say if the following sentence is true – if it is not, provide a justification: “Babbage's Difference Engine was a programmable machine since it could be instructed to address any solvable computational problem”.

3. Write down all the passages and the final result of the following boolean expression:

```
True and (False or not True or not (True and False)) or (False or not True)
```

4. Consider the last digit (i.e. the right most) of your matriculation number as stored in the variable `my_digit`. Write down the result of the execution of the following algorithm passing `my_digit` as input (i.e. `algorithm(my_digit)`).

```
def algorithm(cur_digit)
      result = None
      for digit in reversed(range(cur_digit)):
            if digit == cur_digit - 1:
                  result = digit
            else:
                  result = None
      return result
```

5. Write the algorithm `def algorithm(dictionary, key_list)` that takes a dictionary and a list of strings as input and checks if each string in the list is a key of a pair in the dictionary. All the values of the pairs in the dictionary that have been matched by any key contained in the input list are added to a set, that is returned at the end of the algorithm. Example of execution:
`my_dict = dict({"a": 1, "b": 2, "c": 3})`
`my_list = ["a", "c"]`
`algorithm(my_dict, my_list)` returns `set({1, 3})`