

Informatics 2, 1st midterm (2019-03-04)

1	2	3	4	5	6	Σ

The answers should fit next to the questions, if you used a separate paper let us know clearly!

1. What will be printed after these python commands? (4 points)

a) (1 points)

```
n = 5
i = 1
s = 0
while i <= n:
    s += i
    i += 1
print s
```

b) Give an example! (1 points)

```
s = raw_input()
print "Hello", s + "!"
```

c) (2 points)

```
n = 12
while n != 1:
    print n,
    if n % 2 == 0:
        n /= 2
    else:
        n = 3*n+1
print 1
```

2. Write a python program that reads a number from the user (suppose that you get a non-negative integer) then reads as much number as the first number and finally prints the biggest of those numbers. (4 points)

If you receive 0 numbers print "None". Example input:

```
5
-1
1
2
-3
0
```

Output:

```
2
```

3. Theoretical questions (2 points)

a) What are the similarities between string (str) and tuple?

b) What is the result of the command `type(3.14)` ?

c) How to write a quotation mark in a string?

d) What is the result of *adding* two lists, for example `[1,2] + [3,4]`?

4. Write a function that decides which word has the most vowels (aeiou) in it compared to their lengths. Calculate the ratio of vowels to letters in a word (this is a real number in the interval $[0, 1]$) then compare this number between two words. If the first is smaller or equal then return `True` otherwise `False`. *(4 points)*

```
def vowelratio(a):
```

```
def vowelsmaller(a, b):
```

Example:

```
>>> vowelratio("dog")
0.33333
>>> vowelsmaller("do", "dont")
False
```

5.

a) Write a function that has one argument: a positive integer and returns the numbers from that number down to 1 in a list. *(2 points)*

Example $4 \mapsto [4, 3, 2, 1]$

```
def countdown(n):
```

b) Write a function that has two arguments: a dictionary and a key. Return the corresponding value if the key is in the dictionary, otherwise put that key into the dictionary with the value 0 and return the updated dictionary. *(2 points)*

```
def value(d, k):
```

Example:

```
>>> value({1:2, 3:4}, 3)
4
>>> value({1:2, 3:4}, 4)
{1:2, 3:4, 4:0}
```

6. There are 4 mistakes in the following code, what are they? *(2 points)*

```
d = {12:1, [1,2]:2, (1,2):3, "12":4, }
if 1 in d
    d[1] += 1
else if "2" in d:
    d["2"] += 1
else:
    d.append((12, 1))
print(d)
```