

Exercise Sheet No. 12 - Programming

Energy Informatics

Winter 2016

Submission deadline: 15.02.2016, at 09:15

Submission guidelines:

Submit your solution for exercise 1 **in addition to at least one** of the exercises: 2, 3. Submit your code in a python file named as *your_name.py*, Write your name in the first line inside the file as: *# your_name*.

Make sure your code is running, well formatted and commented properly, then submit it for correction per Email at: alzoghba@informatik.uni-freiburg.de

Exercise 1: (Practicing Loops, 4 pts)

For the following two functions, use loops in your solution, the usage of some python supported operations to reverse a string like `[::-1]` is not accepted.

- A palindrome is a sequence of characters which reads the same backward or forward, such as *madam* or *10101*. Write a function that recognizes a palindrome. The function should accept a single input parameter and returns True if the input parameter is a palindrome, and False otherwise.
- Write a function that reverses a string (or list). The function should accept a single input parameter (string or a list) and returns the reversed input as a list.

Exercise 2: (6pts)

You are given N numbers from the stdin. Store them in a list and find the second largest number.

Input Format: The first line contains N . The second line contains an array $A[]$ of N integers each separated by a space.

Constraints: $2 \leq N \leq 100$, $-100 \leq A[i] \leq 100$

Output Format: Output the value of the second largest number.

Sample Input:

```
5
2 3 6 6 5
```

Sample Output:

```
5
```

Exercise 3: (6pts)

Given the names and grades for each student in a Physics class of N students, store them in a nested list and print the name(s) of any student(s) having the second lowest grade. If there are multiple students with the same grade, order their names alphabetically and print each name on a new line

Input Format: The first line contains an integer, N , the number of students. The $2N$ subsequent lines describe each student over lines; the first line contains a student's name, and the second line contains their grade.

Constraints: $2 \leq N \leq 5$, be one or more students having the second lowest grade.

Output Format: Print the name(s) of any student(s) having the second lowest grade in Physics; if there are multiple students, order their names alphabetically and print each one on a new line.

Sample Input:

```
3
Harry
37.21
Berry
37.21
Tina
37.2
```

Sample Output:

```
Berry
Harry
```