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Data Science (CDA)

Practical 8:

Introduction to python

SOLUTIONS:

Adapted from https://raw.githubusercontent.com/zhiwehu/Python-programming-exercises/master/100+%20Python%20challenging%20programming%20exercises.txt

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Question 1
Write a python function to compute the factorial of a number.

Solution:
```
def fact(x):
    if x == 0:
        return 1
    return x * fact(x - 1)

x=int(raw_input())
print fact(x)
```

Question 2
Write a python program that takes a comma-separated string composed of several words as input and sorts the words and put them in a new string separating them by commas.

For instance, for the following input:

```
without,hurra,bag,world
```

The program should output:

```
bag,hurra,without,world
```

Solution:
```
items=[x for x in raw_input().split(',')]
items.sort()
print ','.join(items)
```

Question 3
Write a python program that takes a string of words separated by spaces and writes the words after removing duplicate words and sorting them alphabetically.

For instance, for the following input:

```
eggs spam bacon spam spam bacon spam spam bacon
```

Then, the output should be:

```
bacon eggs spam
```

Solution:
```
s = raw_input()
words = [word for word in s.split(" ")]
print " ".join(sorted(list(set(words))))
```

Question 4
Write a python program that computes the word frequency of a string (the words are also separated by spaces). The output should show the words and their frequencies and the words should also be sorted alphabetically:

For instance, for the following input:

```
eggs spam bacon spam spam bacon spam spam bacon
```

Then, the output should be:

```
bacon:3
eggs:1
spam:5
```

Solution:

```
freq = {}   # frequency of words in text
line = raw_input()
for word in line.split():
    freq[word] = freq.get(word,0)+1

words = freq.keys()
words.sort()

for w in words:
    print "%s:%d" % (w,freq[w])
```

Question 5
Write a python program that takes an email address, such as `jorallo@dsic.upv.es`, and prints the affiliation (in this case, it should print `dsic`).

Hints: Use regular expressions and \w to match letters.

Solution:

```
import re
emailAddress = raw_input()
pat2 = "(\w+)@(\w+)"
r2 = re.match(pat2,emailAddress)
print r2.group(2)
```