Oefenopgaves tentamen Python for Economists

Assignment 01

```
def f1(a_list1, a_list2):
    """The parameters a_list1 and a_list2 are both a list of int's.
    The function f1() should return a new list that contains all the
    elements of a_list1 followed by all the elements of a_list2.
    Example:
       f1([1, 2], [3, 4]) should return [1,2,3,4]
    """
print f1([1, 2], [3, 4])
```

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Assignment 02

```
def f2(an_int, a_bool2, a_bool3):
    """The parameter an_int is an int. The parameters a_bool2 and
    a_bool3 both is a boolean.
    The function f2() should return True if
     - an_int is even and a_bool3 is true
    or if
     - a_bool2 and a_bool3 are both not true
    If the function f2() cannot return True, it should return False
    Example:
       f2(5, True, False) should return False """
print f2(5, True, False)
```

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Assignment 03

```
def f3():
    """The function f3() should return a list with all the numbers from
    17000 upto and including 34000 that are divisible by 17.
    """
print f3()
```

Assignment 04

```
def f4(a_list):
    """The parameter a_list is a list of int's. The number of elements
    in a_list is 100.
    The function f4() should return a new list that contains the 31st
    element from a_list upto and including the 88th element of a_list.
    """
print f4(range(100))
```

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Assignment 05

```
def f5(a_list):
    """The parameter a_list is a list of int's.
    The function f5() should return the sum of the squares
    of the elements of a_list
    Example:
       f5([1, 2, 3, 4, 5]) should return 55
       (as 1 + 4 + 9 + 16 + 25 = 55)
    """
print f5([1, 2, 3, 4, 5])
```

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Assignment 06

```
def f6(a_str, n):
    """The parameter a_str is a string. The parameter n is an int
    The function f6() should return the first n characters of a_str if
    a_str has a length >= n, or the empty string if a_str has a length < n
    Example:
       f6('abcdef', 3)  == 'abc'
       f6('abcdef', 30) == '' """
print f6('abcdef', 3)
print f6('abcdef', 30)
```

Assignment 07

```
def f7(a_list, n):
    """The parameter a_list is a list of int's. The parameter n is an int.
    The function f7() should return a new list that contains all the
    values from a_list that are not equal to n.
    Examples:
      f7([1, 2, 3, 1, 2, 1, 2], 2) should return [1, 3, 1, 1]
      f7([4, 5, 6, 7, 8], 2) should return [4, 5, 6, 7, 8]
    """
    print f7([1, 2, 3, 1, 2, 1, 2], 2)
print f7([4, 5, 6, 7, 8], 2)
```

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Assignment 08

```
def f8(n):
    """The parameter n is an int and n > 0.
    The function f8() should return the smallest fifth power that is
    bigger than n.
    Example:
    f8(10000) should return 16807 as 6 ** 5 == 7776 (and is not bigger
    than n) and the next 5th power, 7 ** 5 == 16807, is bigger than n.
    """
print f8(10000)
```

Assignment 09

```
def f9(a_list, n):
    """The parameter a_list is a list of int's. The parameter n is an int.
    The function f9() should return a list that contains exactly one of
    each of the numbers in a_list that occurs exactly n times in a_list.
    Example:
        f9([1, 7, 7, 3, 3, 3, 4, 4, 5], 2) should return [7, 4] (as 7
        and 4 are the only numbers that occur exactly 2 times in a_list)
    """
print f9([1, 7, 7, 3, 3, 3, 4, 4, 5], 2)
```

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Assignment 10

```
def palindrome(a_str):
    """The parameter a_str is a string.
    The function palindrome() should return True if a_str is a
    palindrome. A string is a palindrome when you see the same characters,
    in the same order, when you walk through the characters from left
    to right as when you walk through them from right to left.
    Example:
        palindrome('parterretrap') should return True
        palindrome('abcda') should return False
        palindrome('aabaa') should return True
    """
print palindrome('parterretrap')
```

Assignment 11

```
def f11():
    """Add parameters to the function f11() in such a way that this function
    can be called with two int arguments, for instance f11(8, 34).
    You can assume that when the function f11() is called, the first
    argument is always smaller than the second argument.
    The function f11() should return the product of
    all the numbers x, with the first argument <= x and x <= second argument.
    Example:
        f11(3, 6) should return 360 (3 * 4 * 5 * 6)
        f11(8, 24) should return 12310484161373798400 (8 * 9 * ... * 24)
    """
print f11(3, 6)
print f11(8, 24)
```

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Assignment 12

```
def f12(start, n):
    """The parameters start and n are both int's. Furthermore n > 0.
    The function f12() should return a list of int's that contains n
    elements.
    The first element (e) in the resulting list has to be start.
    The successor of an element e is calculated as follows:
    - if e is a threefold (e.g. n is divisible by 3),
      then the next e is e / 3
    - if e is not a threefold, then the next e is e + 7
    Example:
        f12(1, 5) should return [1, 8, 15, 5, 12]
        f12(7, 11) should return [7, 14, 21, 7, 14, 21, 7, 14, 21, 7, 14]"""
print f12(1, 5)
print f12(7, 11)
```

Assignment 13

```
def fibonacci(n):
    """The parameter n is an int with value > 0.
    The row of Fibonacci numbers is defined as
    1  1  2  3  5  8  13  21  34  55  89 ........
    The first two number are defined to be 1, all the next numbers are calculated
    by adding the two previous numbers (1+1==2, 1+2==3, 2+3==5, .....).
    The function fibonacci() should return a list with the first n numbers of the
    row of Fibonacci.
    Examples:
       fibonacci(1) should return [1]
       fibonacci(8) should return [1, 1, 2, 3, 5, 6, 13, 21]"""
print fibonacci(1)
print fibonacci(8)
```

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Assignment 14

```
def f14(text, n):
    """The parameter text is a string containing words separated by
    spaces. Every word only contains letters in lower case. The parameter
    n is an int with a minimum value of 1.
    The function f14() should return True if the number of words with a
    length > n is smaller than the number of words that don't have a
    length > n.
    Examples:
f14('de het even groot geweldig ongelooflijk', 5) should return True
    (as the number of words with length > n is 2, and the number of words
    which don't have a length > n is 4)
    f14('de het even groot geweldig ongelooflijk', 2) should return False
    (as the number of words with length > n is 5, and the number of words
    which don't have a length > n is 1)  """
print f14('de het even groot geweldig ongelooflijk', 5)
print f14('de het even groot geweldig ongelooflijk', 2)
```