

# Exercise paper#7

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## 1 Exercise 1

Write a recursive function *exercise1* such that it takes an integer argument  $n$  as input.

- the function returns the sum  $S$  of the single digits of the number  $n$  if this sum  $S$  is less than or equal to 10
- otherwise we recursively apply the function *exercise1* on the sum  $S$  of the digits

**Example:**

- $\text{exercise1}(15) = 1+5 = 6$
- $\text{exercise1}(392) = \text{exercise1}(14) = 5$  because  $3+9+2=14$  and  $1+4=5$

## 2 Exercise 2

Write a recursive function *int f(int n, int m)* defined as follows:

- if the function is called with input parameter  $m$  greater than zero ( $m > 0$ ), then  $f(n,m)=1+f(n,m-1)$
- if the function is called with input parameter  $m$  equal to zero ( $m = 0$ ), then  $f(n,m)=n$

Once you have implemented these specifications try to understand what is the purpose of this function.

## 3 Exercise 3

Write a recursive function *int f(int n)* such that:

- if  $n$  is a negative integer the result of the output of the function is 0
- otherwise the function counts how many couples of adjacent equal values are there in the number  $n$

**Example:**

- $f(551122)$  returns 3
- $f(5122)$  returns 1
- $f(9)$  returns 0