

### Exercise I (14 points)

1. Define a structure type Date containing three fields: day, month and year.
2. Define a structure type Person containing four fields: name, height (double), weight (double) and birthday (Date).
3. Write the function "bmi" that takes a person as parameter, calculates and returns its body mass index (bmi). We give the bmi formula:  $bmi = \frac{\text{weight in kilograms}}{(\text{height in meters})^2}$ .
4. Write a function "stats" that, given an array of persons, returns the percentage of obese teenagers. A person with a bmi higher than 30 is considered obese, according to the WHO (World Health Organization). A teenager is a young person whose age falls within the range from 13 to 19. Note that the age must be calculated relatively to 31/12/2016.

### Exercise II (8 points)

Draw the memory state of the following program, and deduce what does the function word do.

```
#include <stdio.h>
void word(int n, char* w){
    *w='0'+n-n/10*10;
    if (n/10==0)
        *++w='\0';
    else
        word(n/10, w+1);
}
void wordTest(){
    char s[20];
    int n=123;
    word(n,s);
    printf("the number is %d, the word is %s",n,s);
    getchar();
}
void main(){
    wordTest();
}
```

### Exercise III (8 points)

Write a function "copy2list" that, given an array of integers, allocates and fills a linked list, in the heap, with the array elements and returns it. The order of the copied elements must be maintained in the list.