

Exercise sheet 11*To be corrected in tutorials in the week from 20.01 to 24.01.2020***Exercise 1** [*Bug hunting*]

In the following you are provided with a not working code, which you have to correct. Try to do it without PC, since a similar assignment might be part of the final exam. Pay attention because you may encounter different types of errors:

- **Syntax errors** that you will be able to detect at compile-time;
- **Logic errors** that you *might* only be able to detected at run-time.

There are 9 bugs in the following code, which is supposed to evaluate the expressions tasks (i) and (ii) here below. Find and correct them all.

$$(i) \sum_{k=1}^N k^2 \quad (ii) N!! \equiv \prod_{k=0}^{\lceil \frac{N}{2} \rceil - 1} (N - 2k) = N(N-2)(N-4) \dots$$

```

1  int main(){
2
3      unsigned int number;
4      printf("\n Please, insert an integer positive number: ");
5      scanf("%u", &number);
6
7      unsigned int sum;
8      for(unsigned int k=1; k<=number; k++)
9          sum+=k*k
10
11     unsigned int product=(number=0 ? 1 : number);
12     unsigned int index=number-2;
13     while(index>1)
14         Product*=index;
15         index--=2;
16
17     printf("\nThe sum of the first N=%u squares is %u\n", number, sum);
18     printf("The double factorial of %u is: %u!! = %u\n", number, product);
19
20 }
```

Exercise 2 [*Very basic exam-like questions*]

- Which is the difference between an `int` variable and an `unsigned int` one?
- Which is the difference between a `float` variable and a `double` one?
- What is a *cast*? Give an example.
- Given the assignment `double x = 1/4;`, which value is stored into `x`? How would you modify the code in order to have 0.25 stored into `x`?