TD3 Loop Statements

Ex 3.1 Input Control

Write a program that asks for an even number between 50 and 100, until the answer is correct. If the number is greater than 100, a message will appear: "Smaller!", and conversely, "Larger!" if the number is less than 50, if the number is not even, "the number is odd!".

Ex 3.2 Power

Write a program that asks the user to enter a number x and an integer power n. The program must calculate and display the nth power of the number x. Make sure you handle the case where the power is negative or equal to zero.

Ex 3.3 Divisor

Write a program that asks the user to enter a natural number, the program will have to determine and display the list of all divisors of this natural number.

Ex 3.4 GCD

Write a program that requests the user to enter two integers, then calculates and displays the Greatest Common Divisor **GCD.**

Ex 3.5 Sum

Write a program that determines the current term n such that:
$$1 + \frac{1}{2} + \frac{1}{3} + \cdots + \frac{1}{n} \geq limit \quad \text{where } limit \text{ is a given value.}$$

Ex 3.6 Numerical sequence

Given the following numerical sequence:
$$U_n = \frac{1}{1!} + \frac{1}{2!} + \cdots + \frac{1}{n!} = \sum_{i=1}^{n} \frac{1}{i!}$$

1. Write a program that calculates the limit of (U_n) with a given precision, knowing that this sequence is convergent and therefore has a single finite limit.
2. How many terms of the sequence (U_n) are needed to arrive at the result?

Ex 3.7 Display

Write a program that requests an integer N from the user and then displays the following numerical patterns: (Exp. *N=4)*

(A)	(B)	(C)	(D)
*	1	*	1
**	21	***	123
***	321	*****	12345
****	4321	*******	1234567