WIA1002 Data Structure
Tutorial 3: Recursion and Exception Handling

1. Write statements for each of the following
    a. Write a recursive method to find the smallest element in an array.
    b. Write a recursive method to compute the sum of the elements in an array.
    c. Write a recursive method that find the greatest common divisor of two given integers. The GCD of x and y is defined recursively as follows. If y is equal to 0, then gcd(x, y) is x. Otherwise, gcd(x, y) is gcd(y, x%y).
    d. Write a recursive method that convert decimal to binary.
    e. Write a recursive method that computes the sum of the first n cubes.

2. Define a recursive method Acker(m,n) that return the value as follow:
    - If m=0, Acker(m,n) = n + 1
    - If n=0 , Acker(m,n) = Acker(m-1,1)
    - Otherwise, Acker(m,n) = Acker(m-1, Acker(m, n-1))

    Find the value of Acker(3, 4) and Acker(2,5)

3. Write a recursive method writeLine that prints a character repeatedly to form a line of characters. Example, writeLine('$', 3) produce $$$. Then, Write a recursive method writeBlock that prints m lines of n characters each. Example, writeBlock('$', 3, 2) produce:

    $$$
    $$$

4. Create an exception class. The exception class will throw an exception when the length of a String is greater than 12. Create a try-catch clause to test the exception.