Tutorial 3 : Loops

Exercise 1:
Write an algorithm that displays the first n terms of Fibonacci series.
Exercise 2:
1- What does the algorithm below do?
2- Using the loop execution table, what are the final values of the variables z and p, given that x=3 and y=5?

```
algorithm exo2;
var x,y,z,p,i : integer ;
begin
        read(x,y);
        i ← 0;
        z ← 0;
        p ← 0;
        while (i<y) do
                begin
                z← z+i;
                p← p+x;
                i← i+1;
                end;
        endWhile
        write(x,p);
end.
```

Exercise 3: Write an Algorithm to check whether a given number is a perfect number or not, given that a perfect number is equal to the sum of its divisors except itself.
Example : 6 = 1+2+3 ; 28= 1+2+4+7+14
Exercise 4: Write an Algorithm to find the perfect numbers of an interval given by its limits N and M.
Exercise 5: Write an Algorithm that finds the sum of the series below having input x and n.
$$1 + \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \cdots \frac{x^n}{n!}$$
Exercise 6: Write an algorithm that print the Floyd triangle, defined as:
1
01
101
0101
10101
Exercise 7: Write an algorithm that displays a pattern having n rows of numbers, each number in a row starts and ends with the number 1. The following pattern is an illustration:
```
    1
  121
12321
```