

Algobox	Season	01
	Episode	23
	Time frame	1 period

Objectives :

- Implement an algorithm with algobox.
- Use and understand the notion of repetitive loops in algorithm.
- Devise an algorithms with loops.

Materials :

- *ICT room.*
- *Slideshow.*

1 – Introduction

10 mns

Using a slideshow, the teachers introduces Algobox and the notion of **control flow statement**.

2 – First steps with Algobox

25 mns

Students have to implent some algorithms under Algobox.

3 – Concept of loops

25 mns

Using Algobox, the students implent a loop and then have to devise and implement some algorithms.

Input – Output – Assignment

```

Data :
A, number
Begin
  Input : A
   $A^2 \rightarrow A$  ;
  Output : "The square of the
           input is : "
  Output : A
end
    
```

1. Use AlgoBox to implement the algorithm.
2. Run the algorithm and fill the table out.

Input	3	-3	$\frac{1}{2}$	$-\frac{1}{2}$
Output				

If-then-else Statement

```

Data :
x, number
Begin
  Input : x;
  If  $x > 0$  then
    | Output : x
  else
    | Output : -x
  end_if
end
    
```

1. Use AlgoBox to implement the algorithm.
2. Run the algorithm and fill the table out.

Input	3	-3	$\frac{1}{2}$	$-\frac{1}{2}$
Output				

Loops

```

Data :
counter, number;
Begin
  For counter from 1 to 10 do
    | Output : counter;
  end_for
end
    
```

1. Implement and run the algorithm.
2. Amend this algorithm such that it displays the multiples of 7 from 0 to 70.

Challenges

1. Use algoBox to compute the table of values of $f(x) = (x + 1)^2$ from 1 to 10 with a step of 1.
2. An initial amount of 1000 euros is put on a bank account, with an compound interest rate of 5% (meaning each year, you add 5% of the previous year amount to your savings). Write an algorithm to compute the savings after 15 years, then amend it so that it gives the savings after n years, where the value of n is chosen by the user.

to amend according to the new instructions

Sum of numbers

```
1  VARIABLES
2  depart EST_DU_TYPE NOMBRE
3  final EST_DU_TYPE NOMBRE
4  somme EST_DU_TYPE NOMBRE
5  compteur EST_DU_TYPE NOMBRE
6  DEBUT_ALGORITHME
7  AFFICHER "Valeur de départ ? "
8  LIRE depart
9  AFFICHER "Valeur de fin ?"
10 LIRE final
11 depart PREND_LA_VALEUR 0
12 POUR compteur ALLANT_DE depart A final
13   DEBUT_POUR
14   somme PREND_LA_VALEUR somme+compteur
15   FIN_POUR
16 AFFICHER "La somme vaut : "
17 AFFICHER somme
18 FIN_ALGORITHME
```

Saving money

```
1  VARIABLES
2  versement EST_DU_TYPE NOMBRE
3  epargne EST_DU_TYPE NOMBRE
4  DEBUT_ALGORITHME
5  versement PREND_LA_VALEUR 0
6  epargne PREND_LA_VALEUR 0
7  TANT_QUE (epargne <220) FAIRE
8   DEBUT_TANT_QUE
9   versement PREND_LA_VALEUR versement+1
10  epargne PREND_LA_VALEUR epargne+versement
11  FIN_TANT_QUE
12 AFFICHER "Nombre de semaine : "
13 AFFICHER versement
14 AFFICHER "Montant de l'épargne : "
15 AFFICHER epargne
16 FIN_ALGORITHME
```