Learning the VBA language by practicing

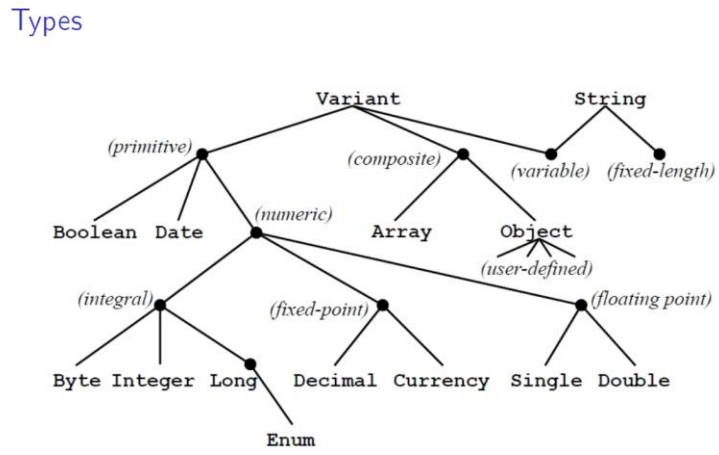
Part A: Variables, functions and instructions

1. Declaration of variables

To declare a variable, you use:

```
Dim nomVariable As type
```

The following tree summarizes the types supported by the vba language:



Examples:

a. Dim v As double

b.
```
Dim x As Integer
x = 5.5
MsgBox "value is " & x
```

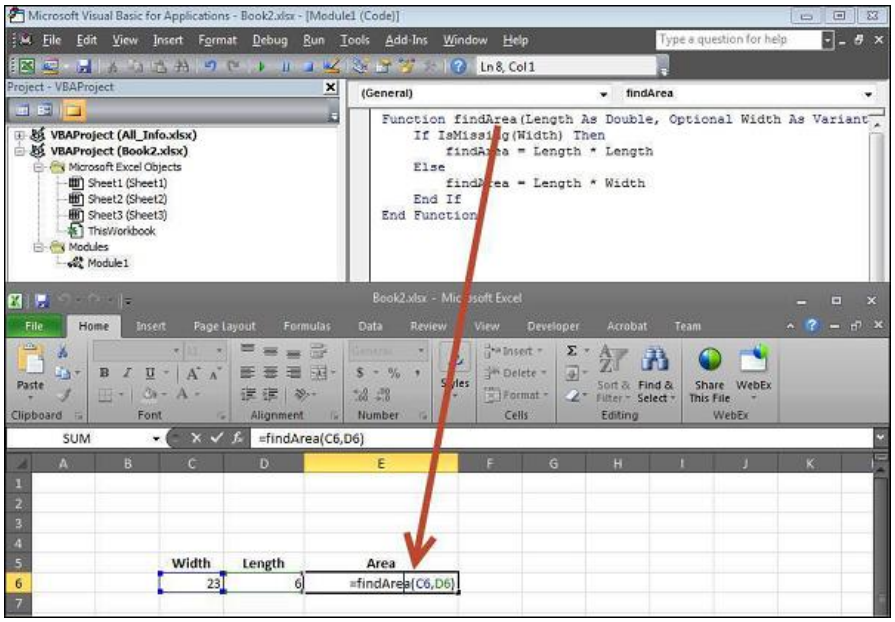
c.
```
Dim x As Double
x = 5.5
MsgBox "value is " & x
```

d.
```
Dim continue As Boolean
continue = True

If continue = True Then MsgBox "Boolean variables are cool"
```

2. Functions

The below figure shows how to define a VBA function. Observe that a VBA function can have an optional return statement. This is required if you want to return a value from a function.



Exercise:

Write a VBA function priceTot which computes the total price by considering the price and tax. Consider a tax rate equals to 1.22.

3. Decision

3.1. Statement IF

```
If condition Then
  bloc d'instructions
  si la condition est vraie
Else
  bloc d'instructions
  si la condition est fausse
End If
```

Exercise:

Consider again the priceTot function and suppose that it accepts two parameters: price and category. The category may be either "ordinary" or "luxury". For the former, the tax rate is 1.22 and for the latter is 1.60.

3.2. Statement Select

b.1.

```
Select Case variable
       Case valeur 1
              bloc d'instructions
       Case valeur 2
              bloc d'instructions
       ...
       Case Else
              bloc d'instructions
End Select
```

Exercise:

Consider again the priceTot function and use the *select statement* instead of *if statement*.

3.3. Statement Select with ranges of values

It is possible to introduce ranges of values in the box section of the Select Case structure. The comparison becomes more sophisticated. Variable is a numerical in this case, integer or even real.

```
Select Case variable
      Case Is op.de.comparaison valeur
             bloc d'instructions

      Case valeur de départ To valeur de fin
             bloc d'instructions

      Case Else
             bloc d'instructions
End Select
```

Example:

```
'calcul du prix unitaire en fonction de la quantité
Public Function MonPU(quantite As Long) As Double
'variable intermédiaire
Dim pu As Double
'selon les valeurs de quantité
Select Case quantite
    Case Is < 100
        pu = 0.5
    Case 100 To 200
        pu = 0.3
    Case Is > 200 'Case Else aurait fait l'affaire aussi
        pu = 0.2
End Select
MonPU = pu
End Function
```

4. For statement

```
For indice = val.départ to val.fin step pas
      bloc d'instructions
      ...
Next indice
```

Exercise:

Write a function which computes:

$$s = \sum_{i=1}^{n} i * i$$

5. While statement

```
Do While condition
      Bloc d'instructions...
      ...
Loop
```

Exercise:

Consider again the previous function, replace for statement by while statement.

6. Do statement

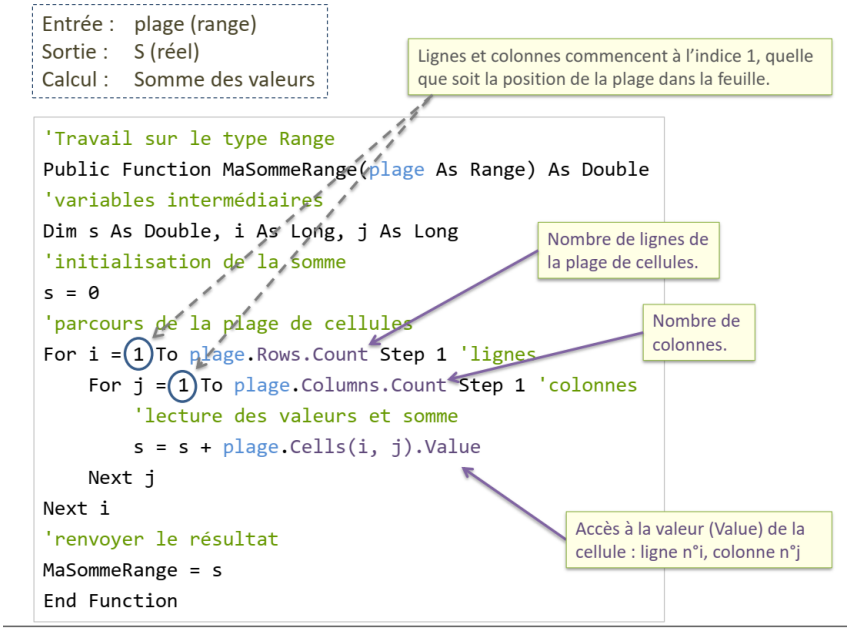
```
Do
      Bloc d'instructions
      ...
      ...
Loop While condition
```

Exercise:

Consider again the previous function, replace for statement by do statement.

Exercise:

Write a text corresponding to the code given below.



Exercise:

Write a text corresponding to the code given below.