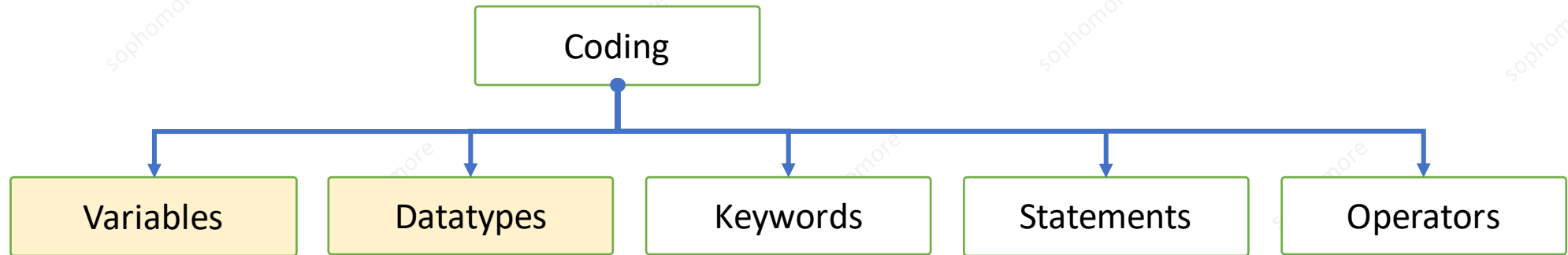


Python

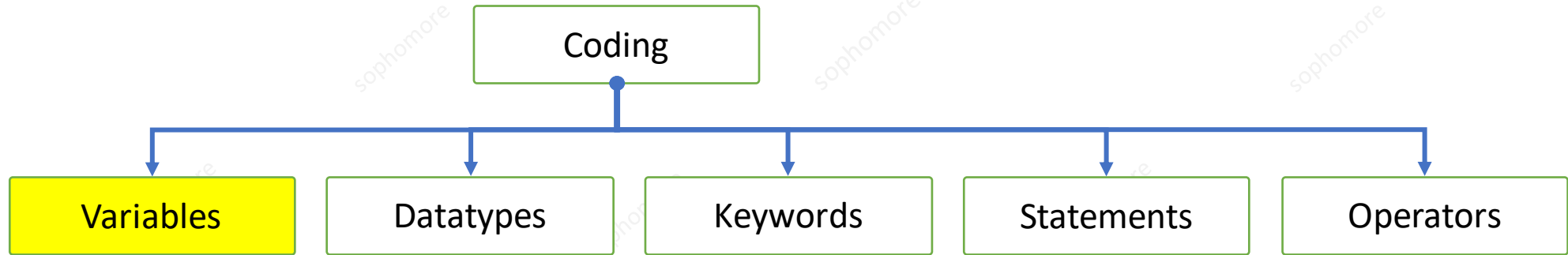
Datatypes and Variables

in programming

The basics blocks of coding



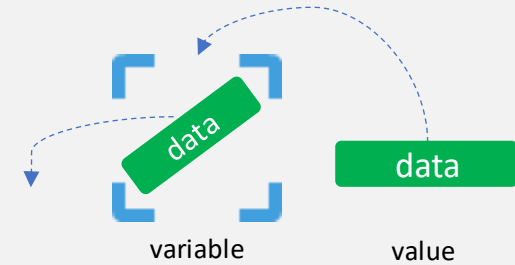
Variables in python



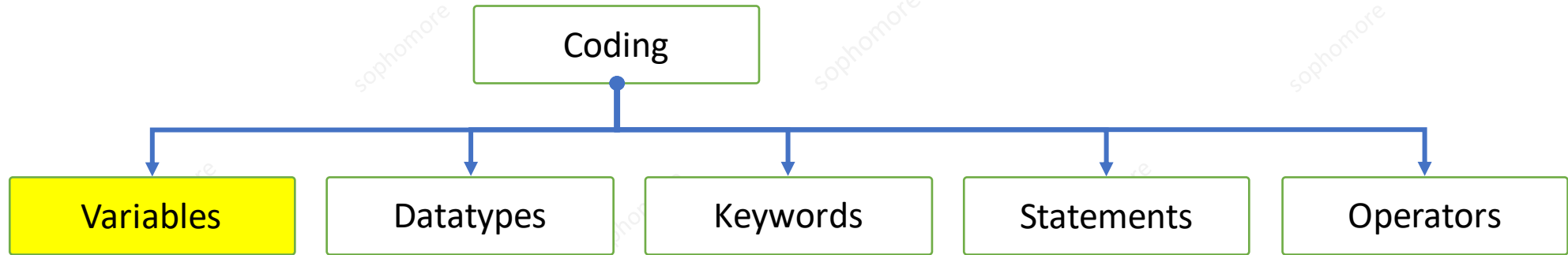
What is a variable ?

A storage location for data in a computer programs

The storage location can be used to store a value and retrieve the value



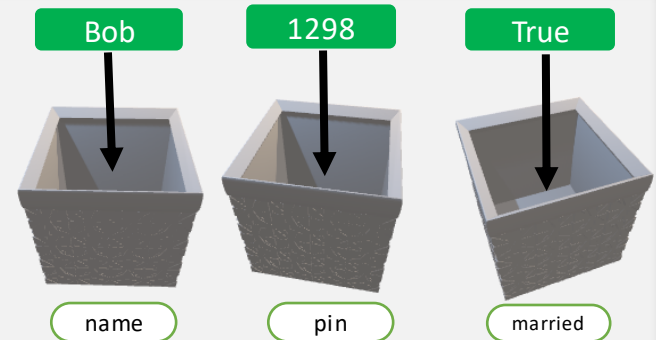
Variables in python



What is a variable ?

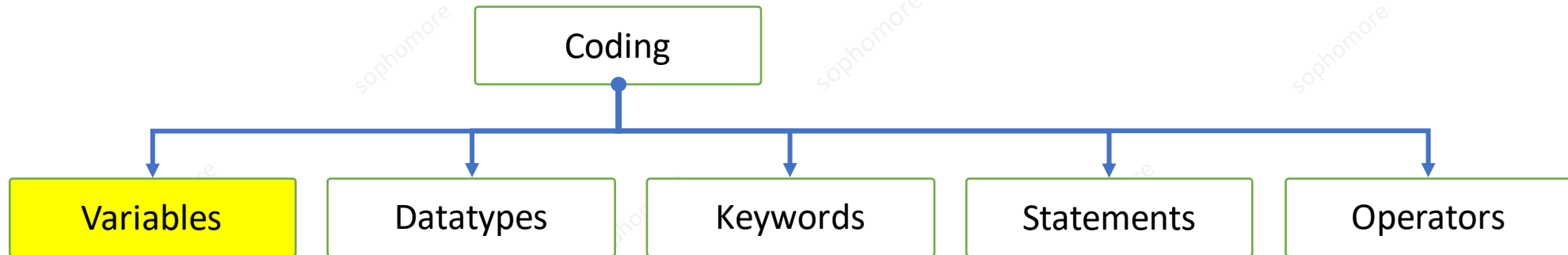
Value in a variable can be changed anytime by coder or during execution of program

The value of variable will determine the datatypes of the variable



variables are written in small letters in python

Variables in python



Creating a variable in python is super easy

age = 18

name = 'bob'

color2 = 'red'

is_sleeping = False

Variable names start with alphabet but can have numbers and underscore (_). No other special characters can be used in variables

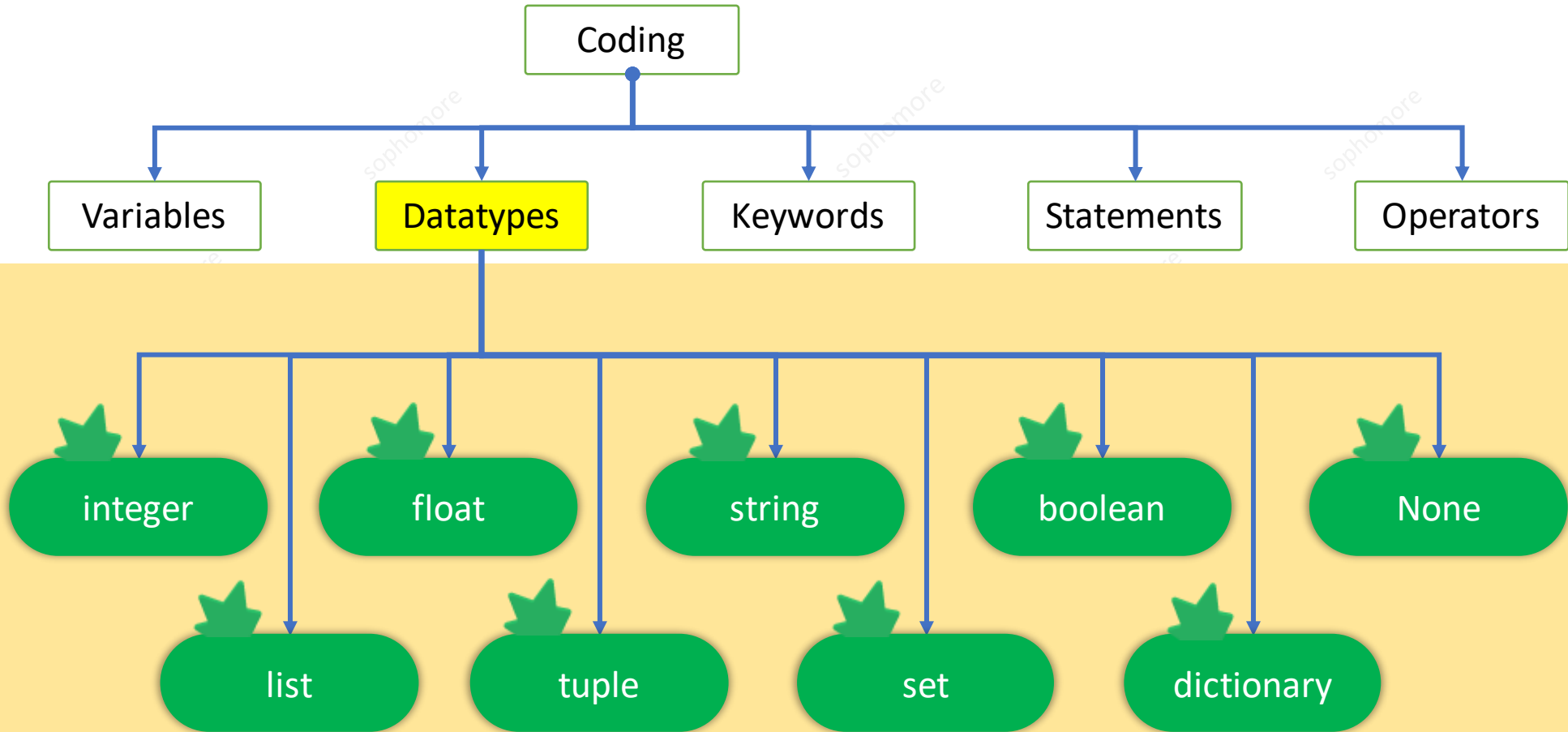


Activity

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Datatypes

Datatypes in Python



Integer

integer

Integer in python, means any numerical values (positive or negative)

Integers can be of any length, it is only limited by the memory available

We can use the `type()` function to know which class a variable or a value belongs to.



1

+2

-50

319

Examples

```
x = 1
```

```
y = 35656222554887711
```

```
z = -3255522
```

Float

float

Float, or "floating point number" is a number, positive or negative, containing one or more decimals.

Float can also be scientific numbers with an "e" to indicate the power of 10.

We can use the `type()` function to know which class a variable or a value belongs to.



1.1

2.0

-3.14

0.1111

Examples

```
x = 1.10
```

```
y = 1.0
```

```
z = -35.59
```

```
z = 87.7e100
```

Strings

String

String literals in python are surrounded by either single quotation marks, or double quotation marks.

'hello' is the same as "hello".

'Sam'

"Samuel"

'a'

"apple"

Multiline Strings :

You can assign a multiline string to a variable by using three quotes `""" Hey yo """`



Examples

```
name = "bruce wayne 01"
```

```
color = 'yellow'
```

```
Institute = 'digipodium'
```

Boolean

boolean

Booleans represent one of two values: **True** or **False**.

'hello' is the same as "hello".

True

False

In programming you often need to know if an expression is **True** or **False**



Examples

```
is_coding = True
```

```
is_fun = True
```

```
are_u_bored = False
```

None

Nonetype

when you don't want to store something but want to create an empty variable

The None keyword is used to define a null value, or no value at all

None

None is not the same as 0, False, or an empty string. None is a datatype of its own (NoneType) and only None can be None



Examples

```
x = None
```

The special datatypes

list

List

- ◆ List is an ordered sequence of items.
- ◆ It is one of the most used datatype in Python and is very useful
- ◆ Items in a list do not need to be of the same type
- ◆ Declaring a list is pretty straight forward.
- ◆ Items separated by commas are enclosed within brackets []

List are part of python collections or data structures and thus are very important to understand.

Examples

```
a = [5,10,15,20,25,30,35,40]
```

```
vals = [1, 2.2, 'python']
```

```
colors = ['red', 'green', 'yellow']
```

Tuples

Tuples

- ◆ Tuple is an ordered sequence of items.
- ◆ A tuple is a collection which is unchangeable
- ◆ usually faster than lists as they cannot change dynamically
- ◆ Declaring a tuple is also pretty straight forward.
- ◆ In python tuples are written with round brackets ()

Tuples are immutable (unchangeable) and are used internally by python mostly

Examples

```
a = (5,10,15,20,25,30,35,40)
```

```
vals = (1, 2.2, 'python')
```

```
colors = ('red', 'green', 'yellow')
```


Sets

- Set is an unordered collection of **unique** items
- items in a set are not ordered
- Sets have unique values. They eliminate duplicates.
- Declaring a set is also pretty straight forward.
- Set is defined by values separated by comma inside braces { }

We can perform set operations like union, intersection on two sets.

Examples

```
a = {5, 10, 15, 20, 25, 30, 35, 40}
```

```
vals = {1, 2.2, 'python'}
```

```
colors = {'red', 'green', 'yellow'}
```

Dictionaries

Dictionaries

- Dictionary is an ordered collection of key-value pairs (3.7)
- Generally used when we have a huge amount of data
- Items in a dictionary do not need to be of the same type
- Key and value can be of any type.
- Dictionaries are defined within braces { } with each item being a pair in the form **key : value**.

Dictionaries are optimized for retrieving data. We must know the key to retrieve the value.

Examples

```
car_info = {  
    "brand": "Ford",  
    "model": "Mustang",  
    "year": 1964  
}
```

Activity

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Assignment for

level 1

[click here](#)

THE END