Literal :- an explicit value. understood by the Prog. Lang.

    Python Basic literals
      • numbers ⟵ integers
                 reals "float"
      • Strings   scientific numbers.   e

      • Real numbers are not stored
         completely accurately

      • strings. "apple"   "orange"

Operators :- basic operations,
         represented by special characters.
           +   -   * /   **
                         power.

   • on integer.   %   //
              modulus   integer
                    division.

    • order of operations:
       ‿   () goes first
       ⹀   **
       ⹀   * / %
       ‿   + -
       ‿ left-to-right.

    • On Strings.
       +   *   [i]
           multiply w/ number.   character at
                          position i

     note: "indexes" start at zero.
          position.

• Variables :-
     a named item that holds a value.

     a value is assigned to a variable   ["apple"]
     using the assignment operator =   Jeff

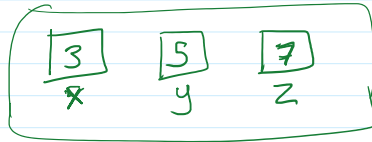   variable = expression.   [≈≈]
                                   bob
    • assignment is not equality.
         ⟵   =

* assignment is not equality.   bob

$\leftarrow$ =
=   ==

E.G,

X = 5 | 3 | | 5 | | 7 |
y = X   X   y   Z
Z = X+2
X = 3

- names are called "identifiers"
    - made of letters numbers or "_"
    - not begin with number.
    - cannot be the same as a "reserved" identifier.
          True   for   if   and   def
          False   else   is   or   in ....

• FILES and MODULES

Import <file>

• FUNCTIONS

sqrt() is a function.
. function - a named sequence of instructions.
    calling a function - use it.
functions can take values, arguments, you place
    those in parenthesis
functions return a value which is used to
    compute the expression the function appears in.

· Import math.
you get:
            tan().
            sin()   exp()
    sqrt() cos()
    pow()
            log()

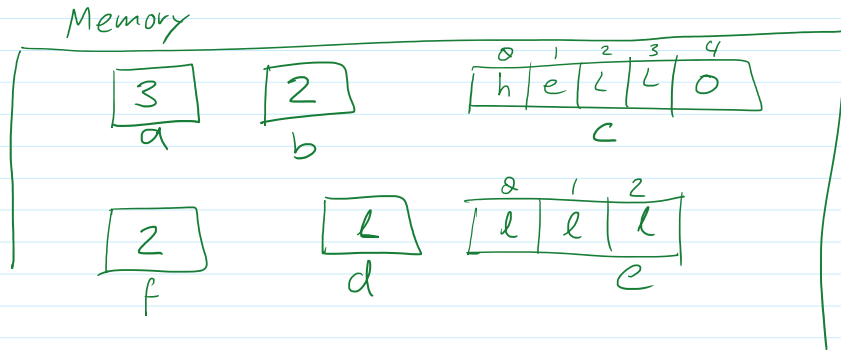· Import random
                    "pseudo-random" numbers.

    · random() - random number in [0..1]
                    integer
    · randrange() - random number between [l..u)
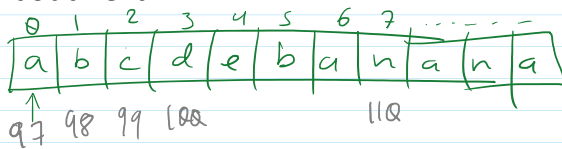   · randint() - random integer number between [l..u]

random number generation needs an initial value called a **seed**.
  The seed normally comes from the clock.

E.X #1

- a = 3
- b = 7 // a
- c = "hello"
- d = c[3]
- e = d * a
- f = random.randint(6)

Memory

3	2	0 1 2 3 4
a	b	h e l l o
		c

2	L	0 1 2
f	d	l l l
		e

• A Word About Text

0	1	2	3	4	5	6	7	.....
a	b	c	d	e	b	a	n	a	n	a

97 98 99 100   110

assignment   number ⟷ symbols
                ASCII
          0 - 128   7-bits
          0 - 256.   8-bits.

Unicode.
    0 ← 64K.   16 bits.

- ord (char)
- chr (number)

= "Escape Sequences"

\t   tab.   \' single quote

\n   newline   \" double quote

\\   backslash

• f strings:
    Special strings. to format the output of variables.

    f' text {var} text {var} .....'   expr.

    format options:
        =   after var (or expr) shows both expr
             and result.

        :s   string.
         d   decimal
         b   binary
         x   hexadecimal
         e   scientific
         f   fixed.   .2f   two decimal digits

$\bar{x}$ hexadecimal
e   scientific
f   fixed.   .2f   two decimal digits

——●— EoF