ESR 20 10-5-21

- quiz 1 today

Ex. TurtleLoop4.py

Chap 3: Functions

A function is a named set of instructions, packaged for re-use.

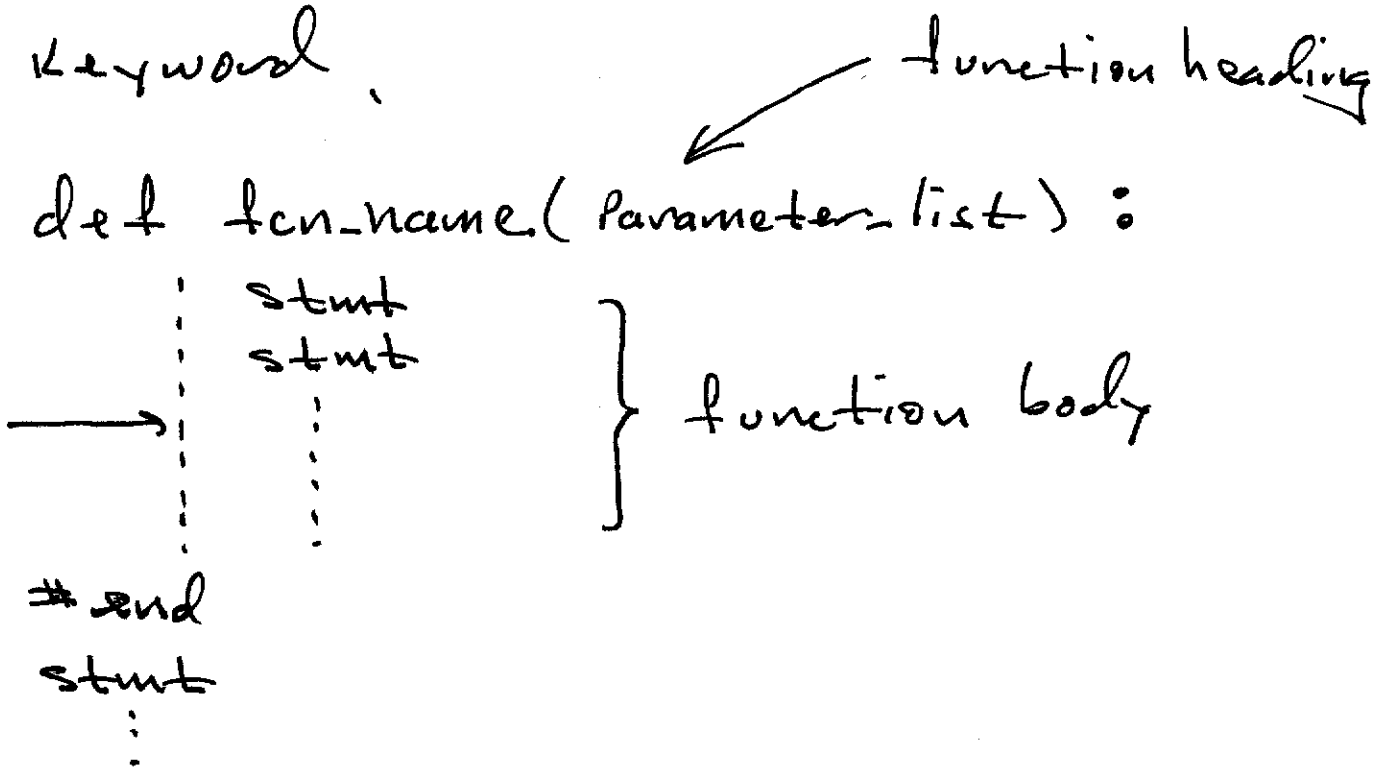
Two contexts:

- function definitions
- function calls

Ex functions we've called

- Print( )
- input( )
- math.factorial( )
- turtle.Turtle( )
- alex.forward( )
- ⋮

To define a fcn., use the def keyword.



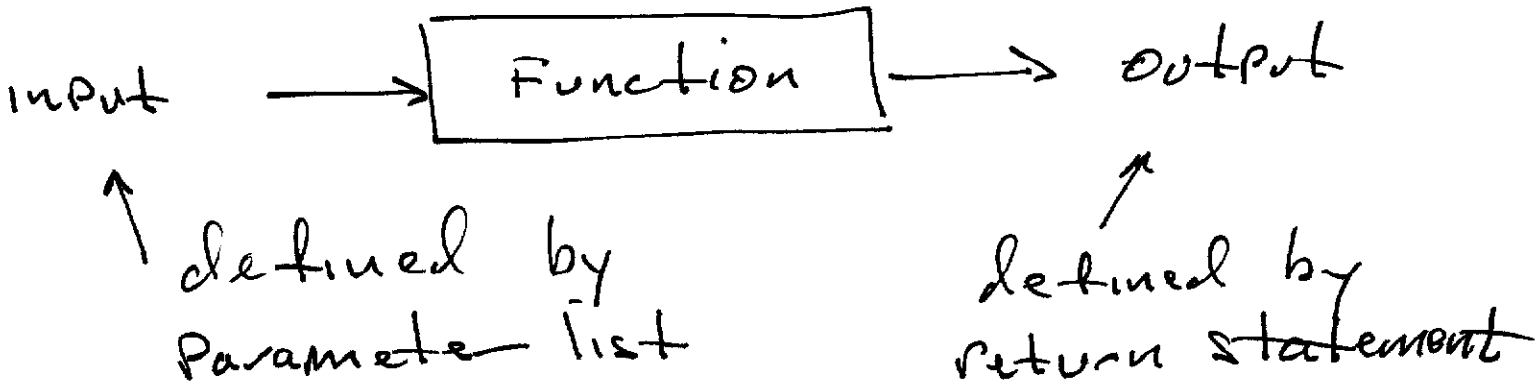
- fcn_name follows same rules as for variables.
- Parameter_list is a comma separated list of variables:

{ Variable: x = 6
  Literal: 6

x
[6]

- function body is the set of instructions to be executed.

In general, a fcn is like a machine



Ex. Function2.py

Function Call:

fcn_name (argument_list)

comma separated list of objects
(variables or literals)

variable: x = 6

literal: 6

Ex. circle2.py
circle3.py

what happens when a function is called?

- memory is allocated for fcn. Parameters.
- fcn arguments are copied to the fcn. Parameters.
- execution transfers to the fcn. body
- if there is a return stmt., the value of its expression:

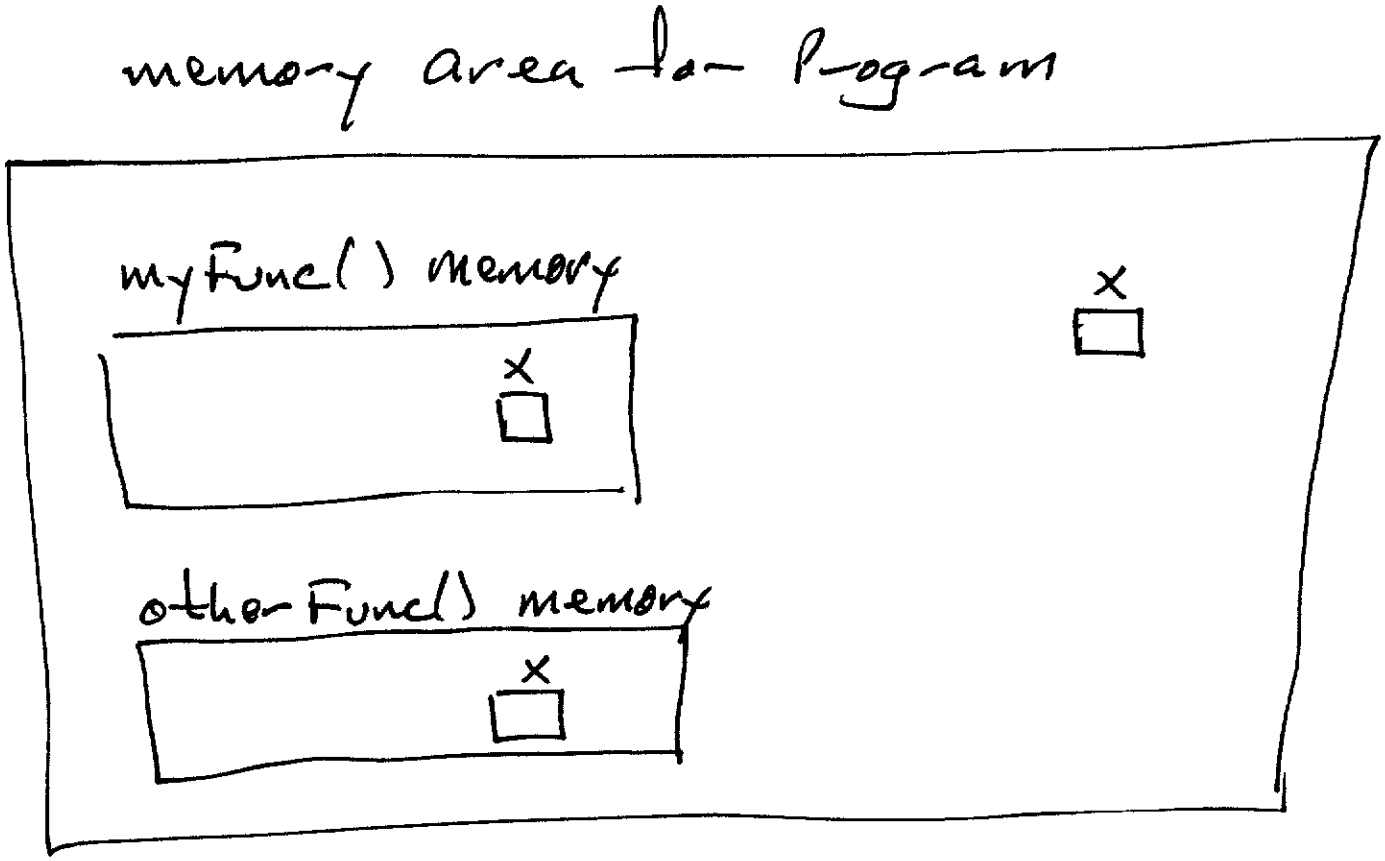
  return expression

  becomes the value of the fcn. call.

  if no return stmt. is encountered, the value of the fcn. call is the special value None

- execution transfers back to where the fcn. was called. memory for fcn. is de-allocated.

local vs. global variables



Ex. Function3.py

sum_to(n) → 1+2+3+ ... +n

fact(n) → 1·2·3 ..... n

Read: chap 5 Conditionals