Internal Algorithm of Assignment Stmt.

General Format:

LHS = RHS.

Variable.name = expression.

① In Python, data is created as well as manipulated on RHS.

$$n = 10$$

$$c = a + b$$
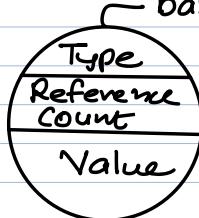
② Golden Statement? When Python Interpreter executes ANY RHS EXPRESSION, it MUST PRODUCE object of some class a result of execution.

③ Python variables do not have notion of type. Therefore, there is no notion of declarative statement in Python.

Python asks programmer to define a new variable by directly using it for the first time in LHS sense and access the associated object by using variable in RHS sense.

④ Format of Python object   — base-address

Type

Reference Count

Value

Case-I : Definition of new variable.
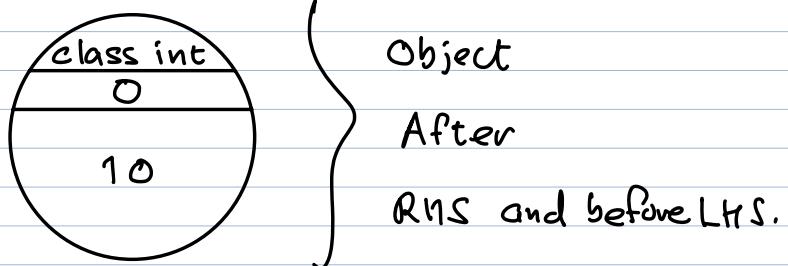
n = 10

Python processes RHS.
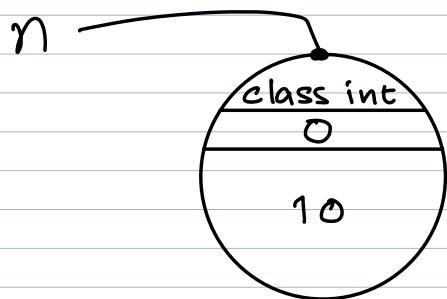
Evaluation : 10

Type Inference: type (10) == class int.

Memory Allocation
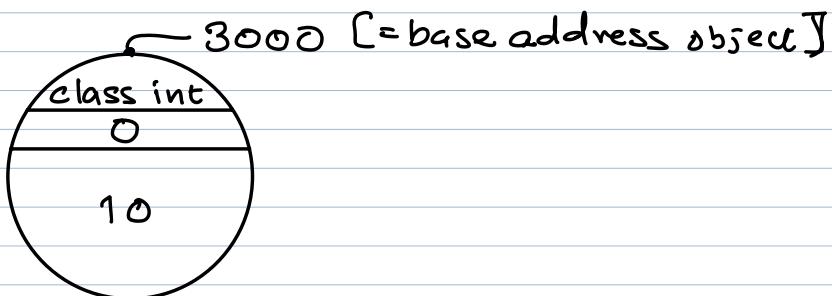
Object
After
RHS and before LHS.

Assign object to variable named n.

[Diagramatic Representation].

3000 [= base address object]
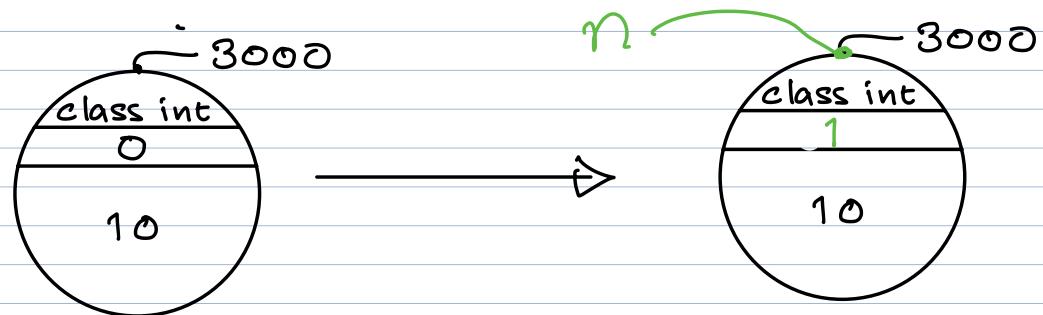
Python must store the name(s) given to each object.
Towards that end, Python maintains a table.

Name	Addr.
n	3000

← when this entry is created.

the assignment stml is complete.

~ 3000

class int
0
10

→
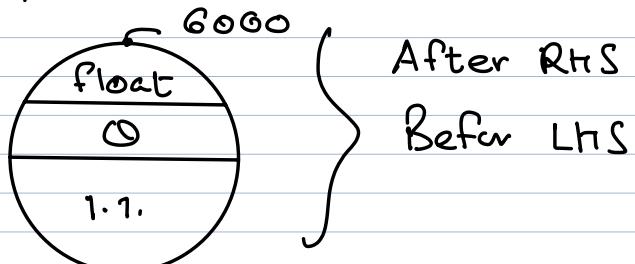
n ⟶ ~ 3000

class int
1
10

f_num = 1.1.

Execute RHS

Result of evaluation: 1.1

Type Inference: class float.

Memory Allocation:

~ 6000

float
0
1.1.

After RHS
Befor LHS
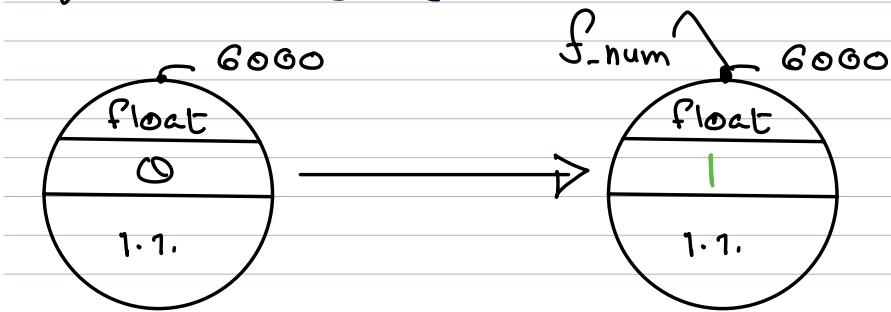
Assign object to LHS?

Name	Addr.
n	3000
f_num	6000

Increment Ref. count.

6000

float

0

1.7.

→

f_num

6000

float

|

1.7.
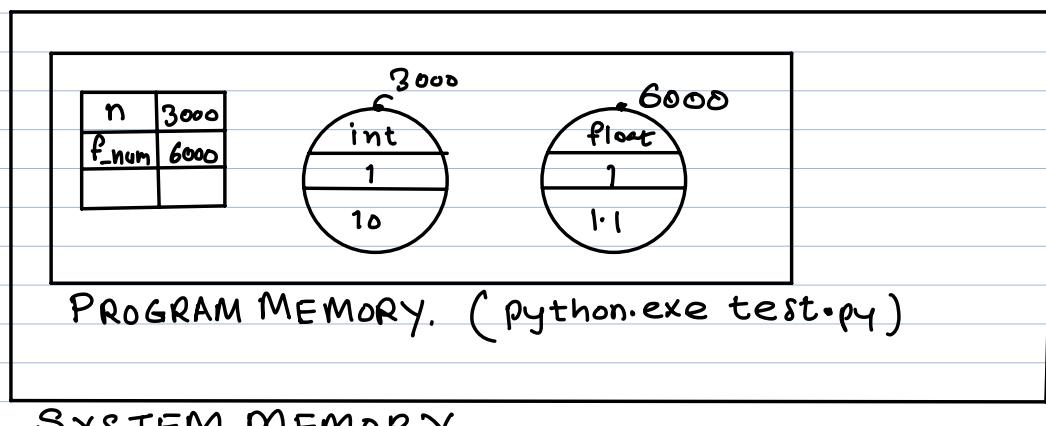
```
n = 10
f_num = 1.1
```

test.py

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python test.py


| n | 3000 |
| f_num | 6000 |

3000

int

1

10

6000

float

7

1.1

PROGRAM MEMORY. (python.exe test.py)
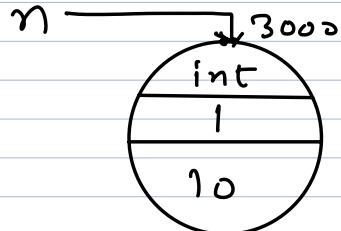
SYSTEM MEMORY

CASE-II: SHALLOW COPYING:

$n = 10$ —— Stmt - 1

$m = n$ —— Stmt - 2.

n ——→ 3000

int
1
10
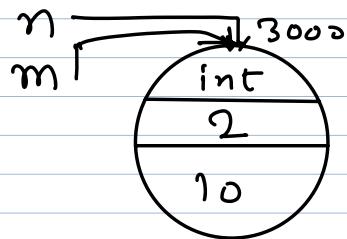
Name	Address
n	3000

After Statement - 1.

m = n

n ——→ 3000
m ——→

int
2
10

Name	Address
n	3000
m	3000

After Statement - 2.
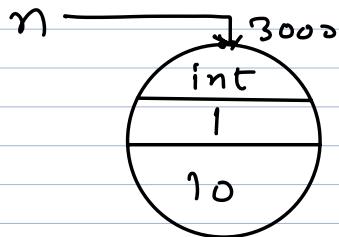
What happens when a variable is used in RHS sense?

$n = 10$ —— Stmt-1

print (n) —— Stmt 2.

print (y) —— Stmt 3.

[Plese go to the next page]

Name	Address
n	3000

After statement — 1.

print (n)

- n is used in RHS sense.
- Variable is SEARCHED IN THE SYMBOL TABLE.
- If found then address of object associated with variable name is used to reach to the object and value of object is fetched.
- If SEARCH IN Symbol table fails,