

Full stack web development using python

Variables and types



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Agenda

- ① Comments
- ② Data
- ③ Variables
- ④ Dynamic Type
- ⑤ type()
- ⑥ Data Types
- ⑦ Memory Management
- ⑧ print()
- ⑨ Special characters.

Comments

- Single line comment ... # Text
- Multiline comment " " "

====

'''

Data

Data is any piece of information which is used by the program to accomplish a task.

Examples of tasks

- Find sum of two numbers
- check whether a given number is even or odd
- Find LCM of two numbers.

All the above tasks can be done only by using some data

Variety of Data

age of a person	25	}	Integers
ATM PIN	0007		
Number of Students	250		

price of a book	450.80	}	Real
body weight	68.5		

city name	"BHOPAL"	}	Strings
person name	"Saurabh"		
book title	"Python bible"		

Variables

- Variables are used to hold data during execution of the program.
- In C, C++, You need to declare variables. Only after declaration you can use them.

```
int a;  
float b;
```

- In Python you don't declare variables. If there is a need of a variable you think of a name and start using it as a variable

C/C++

int a; ← declaration

a = 5;

a++;

printf(" %d", a);

a = 7;



Python

a = 5 ← declaration

a = 5

a = a + 5

Automatic declaration

Variable name

- variable name is any combination of alphabet, digit and underscore.
- variable name cannot start with digit.
- variable names are case sensitive.
- Keywords cannot be used as variable names.

$x = 10$

def x

C/C++/Java

Statement ; ← semicolon

Dynamic Type

- Not only the value of a variable may change during program execution but the type as well.

$x = 5$ # type of x is int

$x = 5.7$ # type of x is float

$x = \text{True}$ # type of x is bool

$x = \text{"MyString"}$ # type of x is str

$a = 5$

$a = 6$

$a = 3.4$

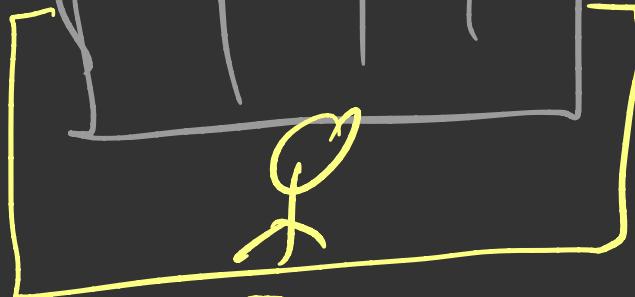
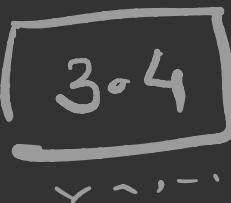
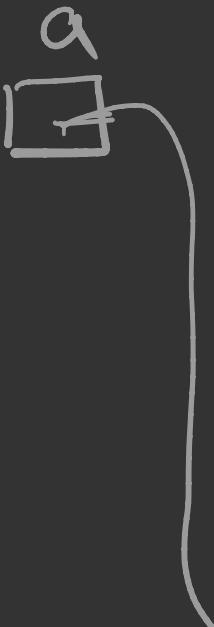
int

float

bool

str

data types
classes



type()

- type() is a predefined function which returns the data type of a specified variable

x = 5

type(x)

x = 5.7

type(x)

data type is always a class in Python

Data Types

- Numbers

int

5

float

3.7

complex

3+4j

• Boolean

bool

True
False

. String

str

"MySirG" | """MySirG"""
'MySirG' | '''MySirG'''

double is not
char is not

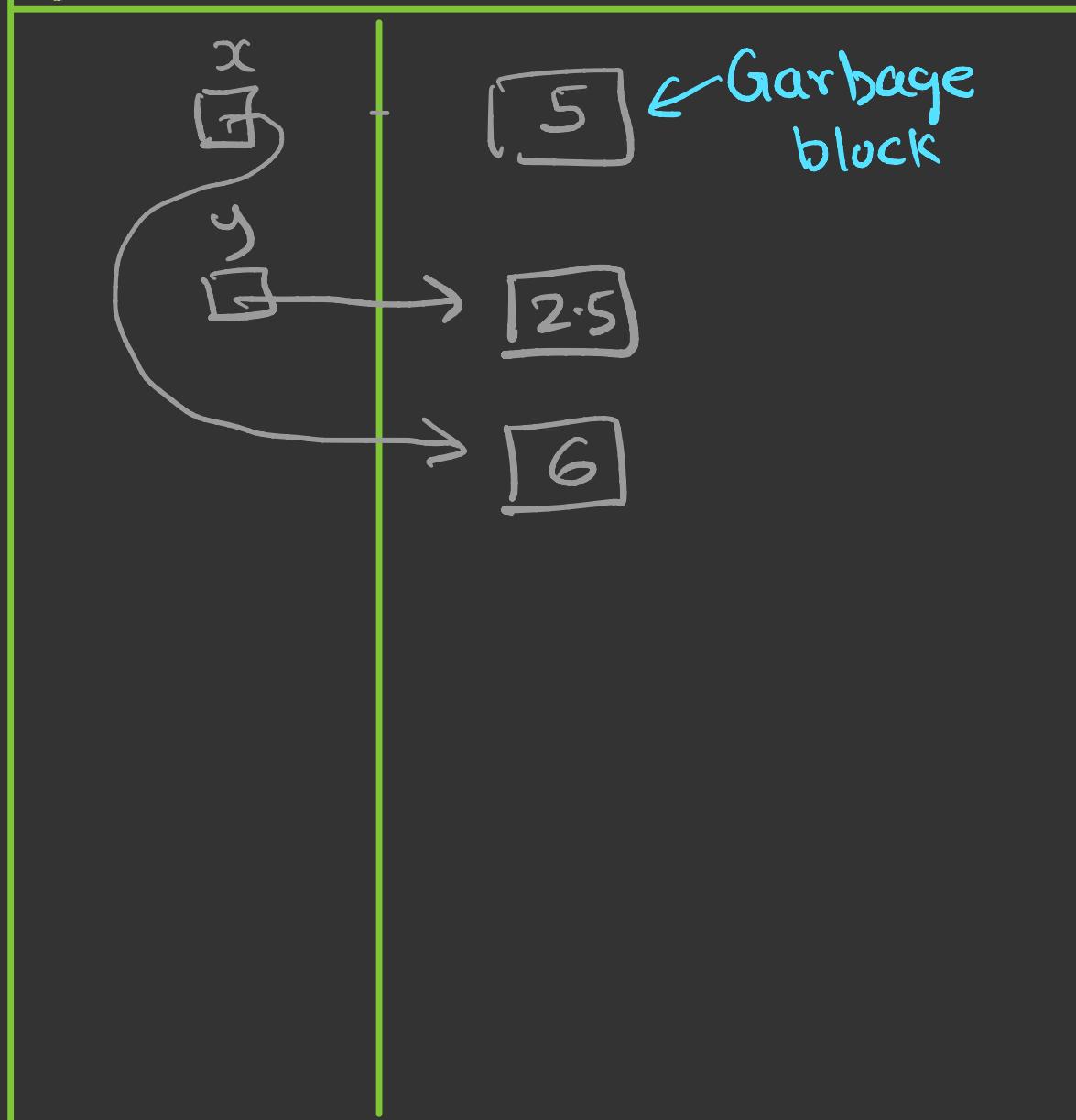
there in Python
there in Python

Memory Management

Name space

Stack

Private Heap Space



$x = 5$
 $y = 2.5$

$z = 6$

$\text{del } x;$

Garbage Collection

It is a program, invoked by python itself, whenever required, whose job is to release memory of Garbage blocks (object which is not referenced by any name)

What is an Object?

- Object is real world entity
- Object is an instance of a class
- Object is a proper noun
- class is a common noun

Doctor → common noun class

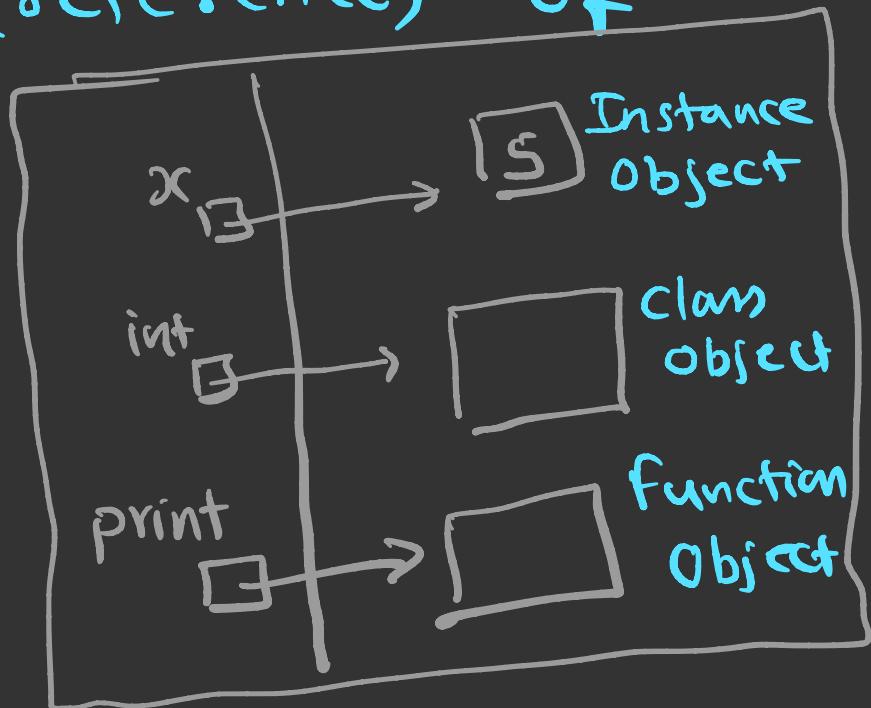
Dr. dixit → Proper noun object

Dr. Sharma → Proper noun object

Name किसका होता है ?

Name in namespace is a variable which is used to contain id(reference) of

- ① Instance object
- ② Function object
- ③ Class object



In python everything is an object.

Print()

- print simple text `print("welcome")`
- print variable value `print(x)`
- print expression `print(x+5*3)`
- print multiple value `print(x,y)`
- sep
- end