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Variables

A variable is a symbolic name that is a reference or pointer to an object

variables are containers for storing data values

These are the reserved memory locations for storing values.

Global variable	Local variable
A global variables is a variable that is accessible throughout the program i.e. globally	A local variable is accessible to the current scope only i.e. locally
That means, any function or method in a program can use it	That means, a tempory variable used in a single function defination
It is declared outside of all functions	It is declared within a function or code block.
stored in fixed memory location	stored in stack which is dynamic in nature.

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Creating variables :-

- Python has no command for declaring variables.
- A variable is created and memory is allocated to it when you first assign a value to it.

Syntax :

Variable_name = value

Example :

Num_1 = 10

Naming Conventions :-

- A Variable name must start with a letter or the underscore (_)
- A Variable name cannot start with a number
- A Variable name can contain only alphanumeric characters and underscore and not any special - symbol [A to z and 0 to 9 * and -]
  Variable names are case - sentitive

Valid variable names	Invalid variable names
number_1	1number
_number	num@
Number1	num 1

- In python, variables do not need to be declared with any particular type.
- It's data type get changed according to the value assigned to it.

For example :-

```
x = 10      ''' variable 'x' is created with
                'int' type. '''

x = "ABC"   ''' now 'x' will be over written
                and now contains data of
                type 'str'. '''
```

Type casting :-

- To specify the data types of variable, type casting is used.

Syntax :-

```
var = datatype (val)
```

Example :-

x = str (ABC123) ... x : "ABC123"

y = int (123) ... y = 123

- Checking data type of variable :-

To get the datatype of variable type() function is used

Syntax :

type (variable_name)

Example :

x = 100

type (x)

- Case sensitive :-

Variable names are case sensitive

for example :

```
a = "ABC"      # .. lowercase a
A = 123        # ... lowercase A
```

'a' will be different from 'A'

- Assigning values to variables :-

  - The '=' operator is used to assgin values to variables, it is known as assignment operator.
  - The operand at left side of '=' operator is the name of variable
  - The operand at right side of '=' operator is the value assigned to the variable.

for example :-

```
number = 12345
```

number → variable

12345 → value

= → assignment operator

- Python allows to assign a single value to multiple variables simultaneously.

for example :-

```
x = y = z = 10
```

- It allows to assign values to multiple variables simultaneously, it can take different forms,

for example :-

```
x, y, z = 10, 20, 30          #1

x = 10 ; y = 20 ; z = 30      #2

a = [10, 20, 30]

x, y, z = 0                   #3
```

The third form is also known as unpacking.

- Python allows to print multiple variables in one line, it takes following form.

for example :-

```
print (a+b+c )          #1
print (a,b,c)           # 2 for integers
```

- This method1 works properly with string
- In case of integers, it will perform addition
- If datatypes of variable are different, error is shown.