Introduction to Programming:

a) Types of Languages
b) Memory Management

a) Types of Languages:

- 1) procedural
- 2) functional
- 3) object Oriented

1> Procedural:

1) specifies a series of well-structured steps and procedures to compare a program.

2) Contains a systematic order of statements, Functions and procedures to compose a program.

ex: phython, C, C++, java, python

2> Functional: (For reuse)

1) Writing a program only in pure functions i.e never modify variables, but only creates new ones as an output.

2) Used in situations where we have to perform lots of different operations on the same set of data, like ML.

3) First class functions?

ex: python.

3> object Oriented:

1> Revolves around objects.

2> code + Data = object

3> Developed to make it easier to develop, debug, reuse and maintain software.

ex: python, C++, java

class: Named group of properties and functions.

Static vs Dynamic Lang

1) Static:

- perform type checking at compile time
- Errors will show at compile time.
- Declare datatype before you use it.
- More control

Ex: C, C++, Java

string name = "sachin";

2) Dynamic:

- perform type checking at runtime → when machine code is running
- Error might not show till program is run.
- No need to declare datatype of variables.
- Saves time in writing code but might give error at run-time.

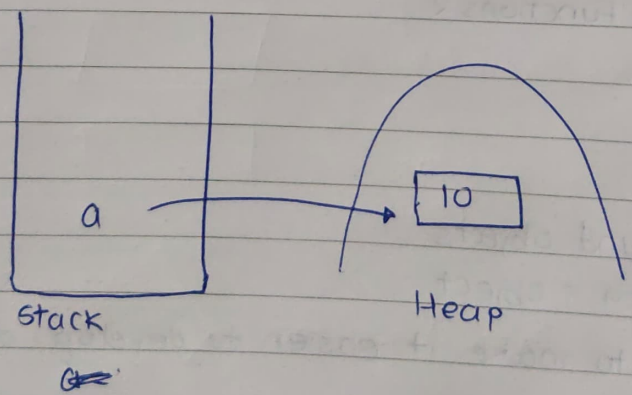
a = 10; ✓
a = "sachin" ✓ }

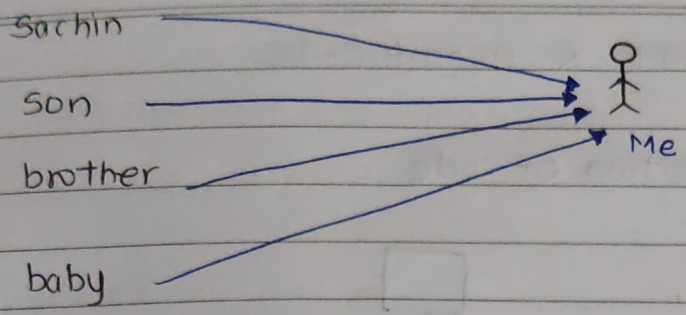
Memory Management:

ex: python.

a = 10

↓ ref variable → object





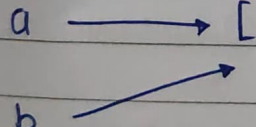
Note: 1) ~~One~~ More than one reference variables can point to same obj.

2) If one of the reference variables try to change object original obj will change for all.

ex:- If my haircut will change. change will be visible to everyone.

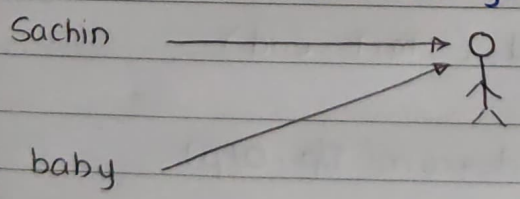
ex: a = [1, 3, 5, 9]

b = a



a[0] = 99

It will change for b also.



(This is obj there is no reference variable looking at it)

It will hits garbage collection & will remove it.