1. Comparing programming languages

Dynamically typed: Types are determined at runtime

Statically typed: Types are determined when compile

Weak typing: Types can be implicitly changed (For example: In js, “1125” + 5 = “11255”, “1150” – 10 = 1140

Strong typing: Types can not be implicitly changed (For example, in Python: “1125” + 5 => exception)

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| --- | --- | --- | --- |
|  | Node.js / Javascript | Python | Scala |
| Typing System | + Dynamically typed  + Weak typing | + Dynamically typed  + Strong typing | + Statically typed  + Strong typing |
| Memory management | + Automatically reorganize memory  + Use mark-and-sweep algorithm and generational algorithm  + Will pause program to perform garbage collection | + Does not automatically reorganize memory  + Use reference counting with cycle detection  + Will pause program to perform garbage collection | + Automatically reorganize memory  + Use mark-and-sweep algorithm and generational algorithm  + Support concurrent garbage collection. |
| Concurrency support |  |  |  |
| Performance |  |  |  |
| Portability |  |  |  |