

1. How recursion different from iteration

Criteria	Iteration	Recursion
Mode of implementation	Implemented using loops	Function calls itself
State	Defined by the control variable's value	Defined by the parameter values stored in stack
Progression	The value of control variable moves towards the value in condition	The function state converges towards the base case
Termination	Loop ends when control variable's value satisfies the condition	Recursion ends when base case becomes true
Code Size	Iterative code tends to be bigger in size	Recursion decrease the size of code
No Termination State	Infinite Loops uses CPU Cycles	Infinite Recursion may cause Stack Overflow error or it might crash the system
Execution	Execution is faster	Execution is slower

2. Various pros and cons of Recursion:

Recursion has the following advantages:

- For a recursive function, you only need to define the base case and recursive case, so the code is simpler and shorter than an iterative code.
- Some problems are inherently recursive, such as Graph and Tree Traversal

Recursion, broadly speaking, has the following disadvantages:

- A recursive program has **greater space requirements** than an iterative program as each function call will remain in the stack until the base case is reached.
- It also has **greater time requirements** because each time the function is called, the stack grows and the final answer is returned when the stack is popped completely.