DIFFERENCE B/W RECURSION AND ITERATION

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| **PROPERTY** | **RECURSION** | **ITERATION** |
| Definition | Function calls itself. | A set of instructions repeating again and again till termination is satisfied. |
| Termination | Terminates when base condition is satisfied and there is no call there. (if by chance condition is not satisfied recursion continues can even lead to system CPU crash) | Terminates when the iterator reaches the end condition. (it continues iteration upto some condition error than iteration stops when memory is exhausted. |
| Application | For functions | For loop |
| Usage | Used when time complexity is not an issue and we need code size to be smaller | Used when time complexity is an issue and for statements being more is not an issue |
| Code Size | Smaller | Bigger |
| Time Complexity | Very high (generally exponential) | Relatively low (in logarithmic) |

PROS AND CONS OF RECURSION:

PROS: CONS:

> Code size is small > Time complexity is high

> Adds clarity can reduced time > Slow

for debugging > Uses a lot of memory

>By memoization, time

complexity can be reduced.