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Computing Fundamentals using Python

SUBJECT CODE : UQ25CA151A

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Computer Applications

Recursive Functions in Python

- Recursion is the process in which a function calls itself.
- Must include a base condition to avoid infinite recursion.
- Recursion uses the call stack to keep track of function calls.
- Too many recursive calls may cause **RecursionError** in Python.
- Recursion is useful for problems that can be divided into smaller subproblems.

Working of Recursive Functions in Python

- Each time the function calls itself, a new copy is created in memory.
- The recursion continues until the base case is reached.
- After the base case, all calls return one by one (stack unwinding).

Syntax: Recursive function

```
def function_name(parameters):
    if base_condition:
        return result       # stops recursion
    else:
        return function_name(smaller_problem)
```

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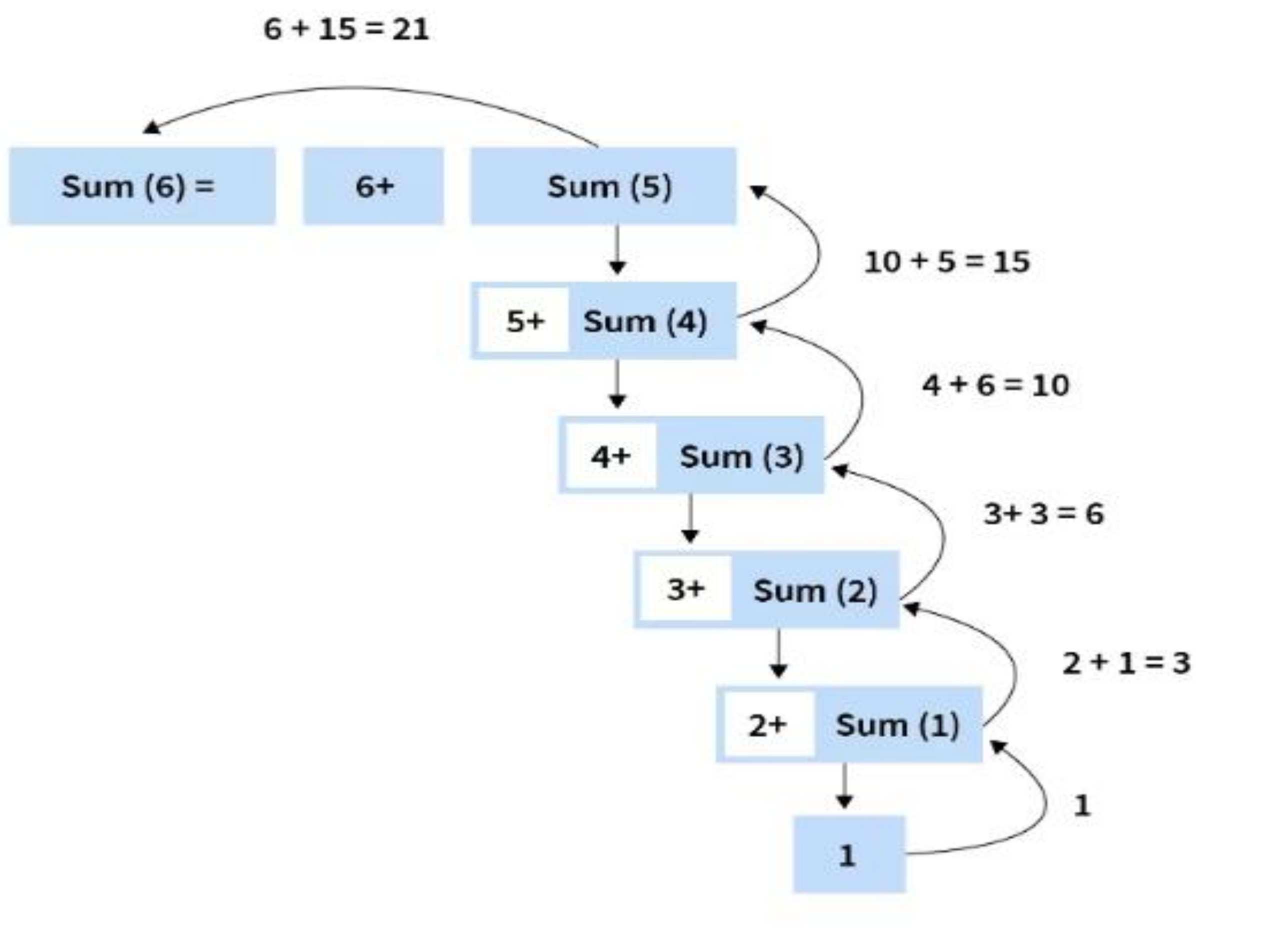
Example on recursion to find the sum of given “n” elements

```
def rec_sum(n):
    if n<=1:
        return n
    else:
        return n + rec_sum(n-1) #recursion call
y = rec_sum(6)   # function call
print(y)
```

Working of recursive functions example of sum of given “n” numbers



Example on recursion to find factorial of number

```
def factorial(n):
    if n == 0 or n == 1:     # base condition
        return 1
    else:
        return n * factorial(n - 1)  # recursive call

print(factorial(5))
```

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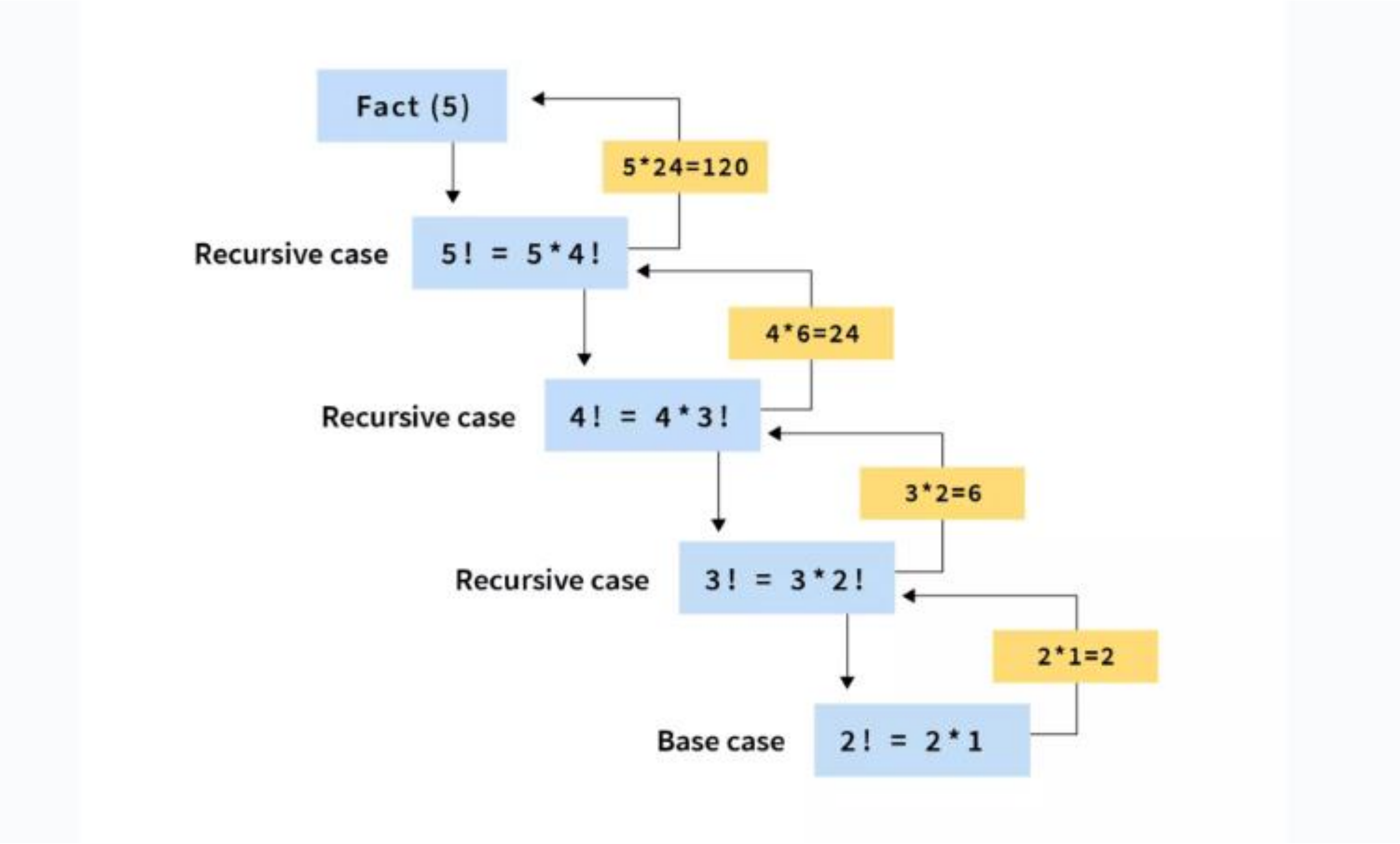
Working of recursive functions example of factorial of given “n” numbers



THANK YOU

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