**RECURSION**

An object is said to be recursive if it partially consists of (or is defined in terms) of itself. Recursion is encountered not only in mathematics, but also in daily life. Who hasn’t seen an advertising picture which contains itself?

Recursion is a particularly powerful means in mathematical definitions. A few familiar examples are those of natural numbers, tree structures and of certain functions.

1. Natural numbers
2. 1 is a natural number.
3. The successor of a natural number is a natural number.
4. Tree structures, e.g., O is a tree (called the empty tree).
5. The factorial function n! (For non-negative integers).
6. 0! =1.
7. If n > 0, then n! = n.(n - 1)!.

The power of recursion evidently lies in the possibility of defining an infinite set of objects by a finite statement. In the same manner, an infinite number of computations can be described by a finite recursive program, even if this program contains no explicit repetitions. Recursive algorithms however are primarily appropriate when the problem to be solved or the function to be computed or the data structure to be processed is already defined in recursive terms.

**STRUCTURE DIAGRAM**

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| --- | --- | --- |
| Software | System software | Translators |
| Utility programs |
| Operating systems |
| Application software | User developed |
| Standard packages |