**Patterns:**

**// If k or kth smallest or largest elements needed, not in order**

    Randomized QuickSelect / std::nthelement C++

**// To serialize a tree such that we can uniquely identify it**

    We need a char for null values eg. ‘!’

After each value add a char eg. ‘#’

Only preorder and postorder will work

**Bit Manipulation:**

**// XORing removes duplicate pairs**

**//n&(n-1) flips n’s least significant 1 bit. Can be used to find no. of 1 bits in a number.**

**General:**

**// For a N-ary tree having height h**

    Number of nodes = Nh+1