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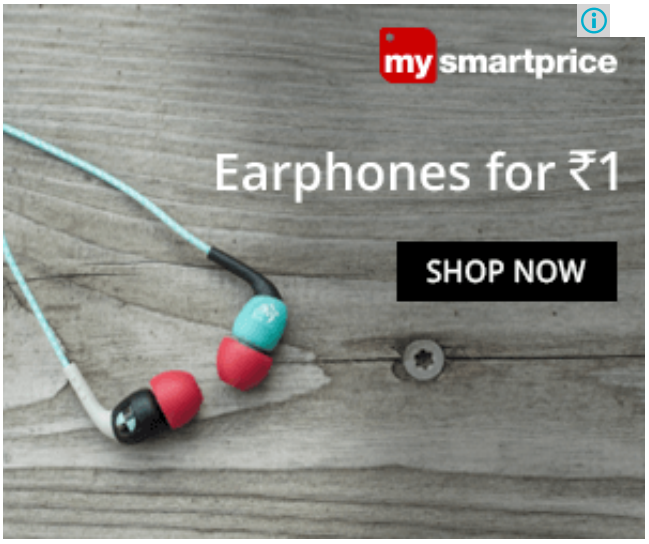

Generate All Strings of n bits.

BY SJ · FEBRUARY 1, 2015

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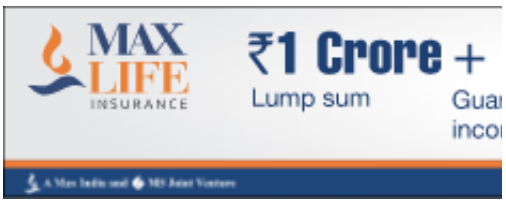

Objective: - Generate All Strings of n bits, consider A[0..n-1] is an array of size n.

Example :

```
n = 3

Output:

[0, 0, 0]    [1, 0, 0]    [0, 1, 0]    [1, 1, 0]

[0, 0, 1]    [1, 0, 1]    [0, 1, 1]    [1, 1, 1]
```

Approach:

- Recursion is key here.
- create a integer array of size n.
- Now if we think of every bit, it can take 2 values, 0 and 1.
- starting from the end of the string, set the bit 0 and 1 and make recur-sive calls

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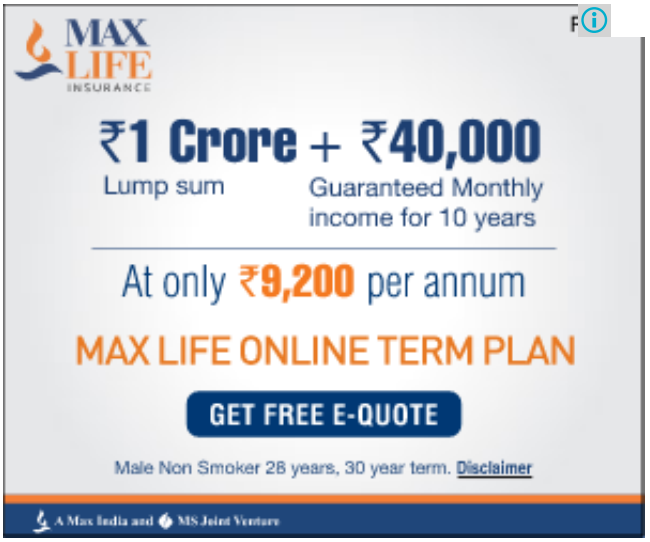

Time Complexity — O(2^n)

Code:

```
public class
NbitsStrings {
        int[]
arrA;

        public
NbitsStrings(int
n) {

arrA = new
int[n];
        }

        public
void nBits(int n)
{

if (n <= 0) {

System.out.printl
n(Arrays.toString
(arrA));
                }
else {

arrA[n - 1] = 0;

nBits(n - 1);

arrA[n - 1] = 1;
```

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```
nBits(n - 1);
                }
        }

        public
static void
main(String[]
args) throws
java.lang.Excepti
on {

int n = 3;

NbitsStrings i =
new
NbitsStrings(n);

i.nBits(n);
        }
}
```

```
Output:
[0, 0, 0]
[1, 0, 0]
[0, 1, 0]
[1, 1, 0]
[0, 0, 1]
[1, 0, 1]
[0, 1, 1]
[1, 1, 1]
```

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