

### 3) Get Maximum in Generated Array Leetcode Solution

The problem Get Maximum in Generated Array Leetcode Solution provided us with a single integer. With the given single [integer](#), we need to find the maximum integer in the generated array. The array generation has some rules. Under the imposed constraints, we need to find the maximum integer that could have been generated. The rules are:

#### Rules for generation

1.  $\text{arr}[0] = 0, \text{arr}[1] = 1$
2.  $\text{arr}[2*i] = \text{arr}[i]$  where  $2 \leq 2*i \leq n$
3. and  $\text{arr}[2*i+1] = \text{arr}[i] + \text{arr}[i+1]$  where  $2 \leq 2*i+1 \leq n$

#### Example

for  $n = 7$   
 $\text{arr} = [0, 1, 1, 2, 1, 3, 2, 3]$   
Maximum among all the elements = 3  
Output = 3

input

$n = 7$

output

3

Explanation: According to the given rules:

$\text{nums}[0] = 0, \text{nums}[1] = 1$

$\text{nums}[(1 * 2) = 2] = \text{nums}[1] = 1$

$\text{nums}[(1 * 2) + 1 = 3] = \text{nums}[1] + \text{nums}[2] = 1 + 1 = 2$

$$\text{nums}[(2 * 2) = 4] = \text{nums}[2] = 1$$

$$\text{nums}[(2 * 2) + 1 = 5] = \text{nums}[2] + \text{nums}[3] = 1 + 2 = 3$$

$$\text{nums}[(3 * 2) = 6] = \text{nums}[3] = 2$$

$$\text{nums}[(3 * 2) + 1 = 7] = \text{nums}[3] + \text{nums}[4] = 2 + 1 = 3$$

So, we can see  $\text{nums} = [0, 1, 1, 2, 1, 3, 2, 3]$ , and the maximum is 3 among them. Thus the answer is 3.