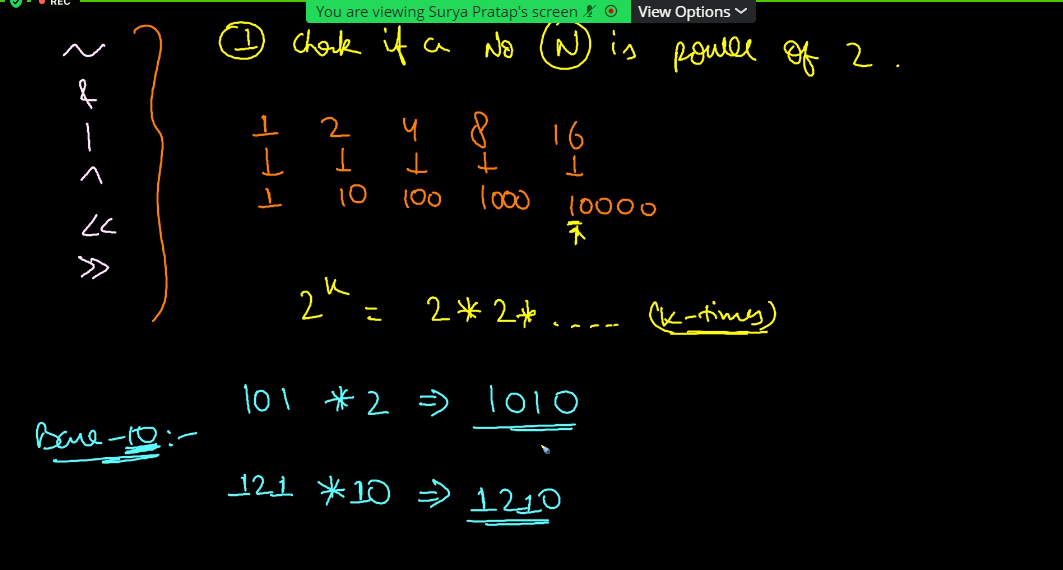
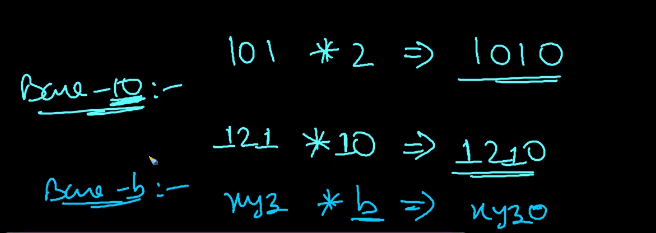
Day 4 Notes:

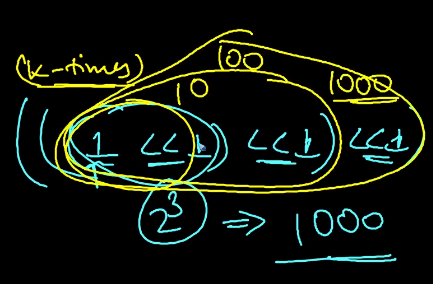
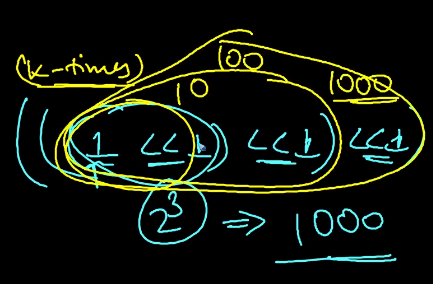
TECHZAROS



Left shift happens with multiplying with 2



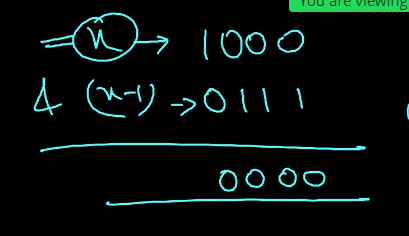
Appending the 0 is done by Base 10 system.

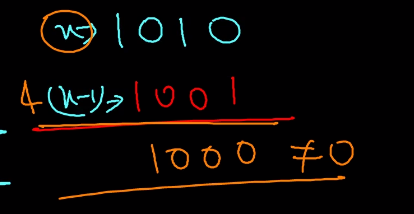
 

Let us take if(n&1)==0 this condition gives the exponentials of 2.

All the non significant bit is zero

For Example:





2. Count number of 1s in the binary representation in N;

Let us take n=17;

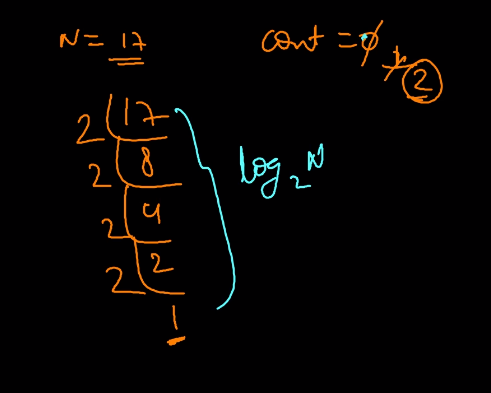
Count=0;

If (n&1==1) check whether the n is only 1.

Count++;

Count will give the number of 1’s in the binary representation.

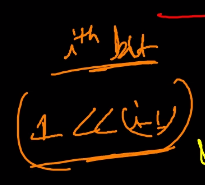
T.C = Log n



3. Check if the ith bit is a set?

Set means 1

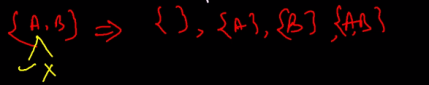
Unset means 0

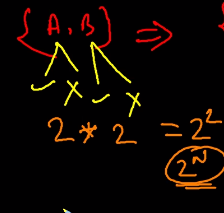


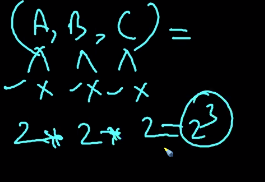
It will create the mask ( The second representation to check whether it is a set.

For Unset Condition: if(N&(1<<(i-1))==0)

4. To Generate all possible subset of the set.

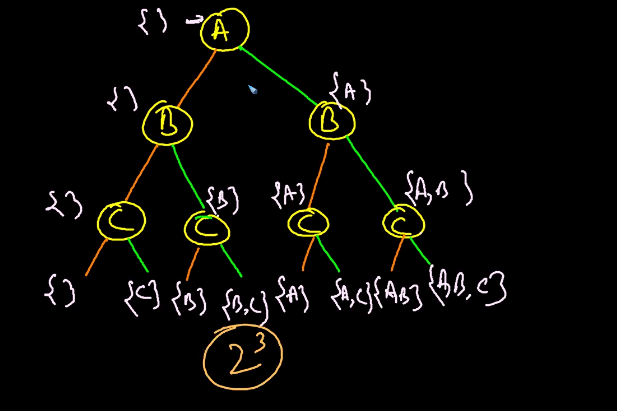


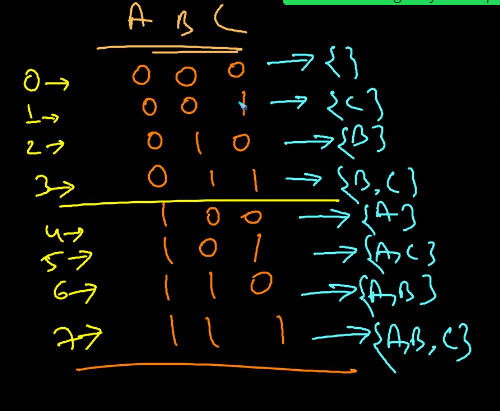




Using this method we can find the number of subset.

We can use Recursion to do that.





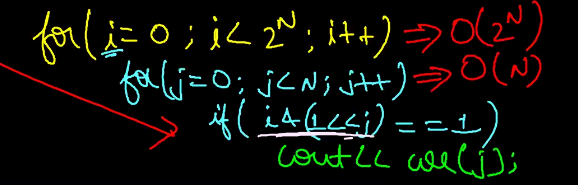
Code represenrtation:

for(i=0;i<2^n;i++)

for(j=0;j<n;j++)

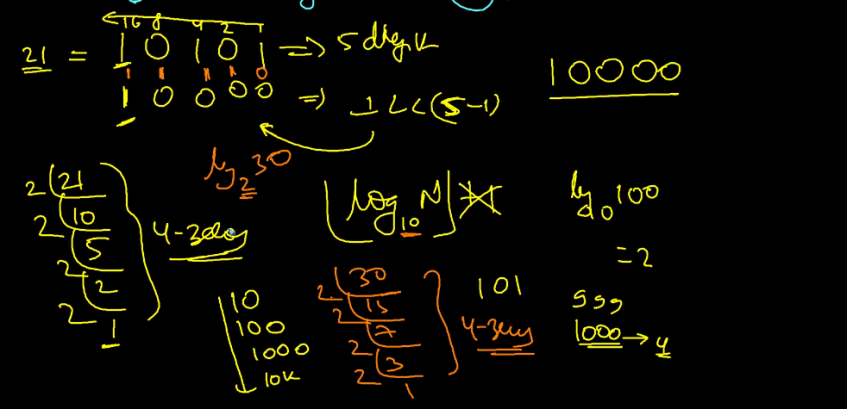
if(i&(1<<j)==1) to check whether it is set.

Print(arr[j]);



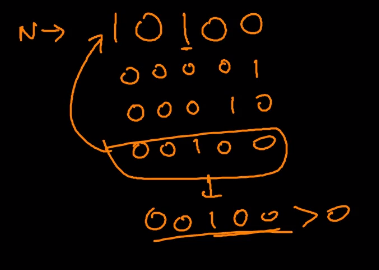
5. Find the largest power of 2 which is less than equal to given number n.

To generate the sequence of 10000 -> 1<<(5-1) which gives the 5 place as 1.

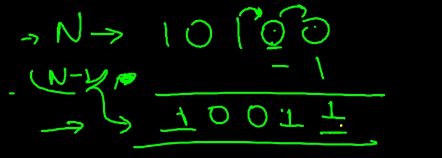


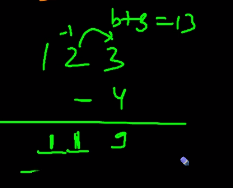
6. Find the right most 1 in binary representation

Keep on creating the mask it reaches the set.

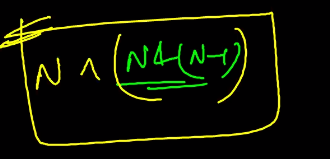


Binary representation subtraction follows same subtraction formula as decimal.





It also works. But the above is recommended.



Important Questions:

Compute XOR 1 to n;

Constraint does not exceed 10^8.

Code:

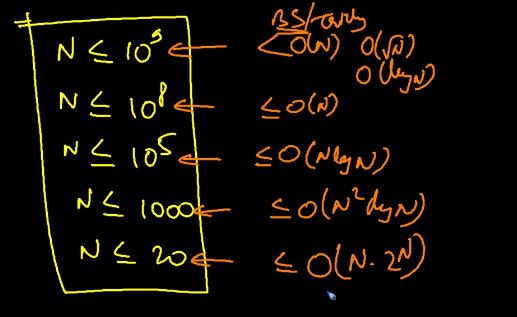
int ans=0;

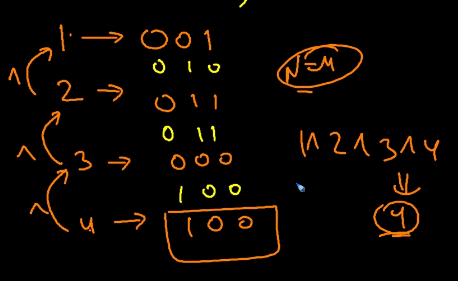
for(int i=1;i<=n;i++)

ans^=i;

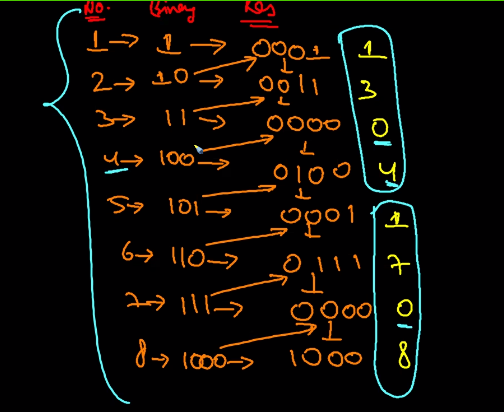
But the above code is not applicable for 10^8 < 10^9

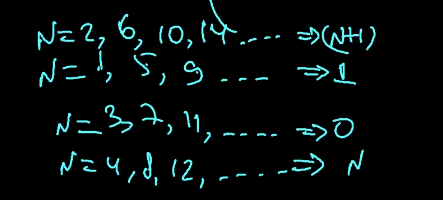
**Expectation with the constraint**



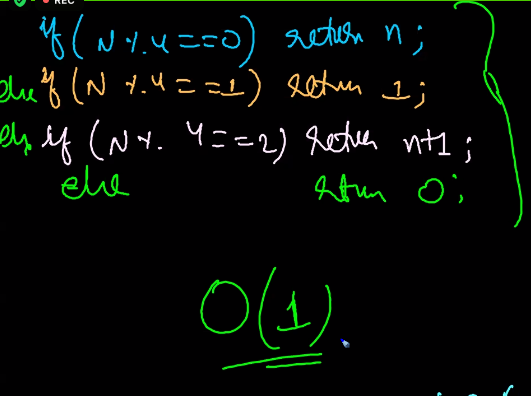


For the testcase above 10^9





Logic in Code:

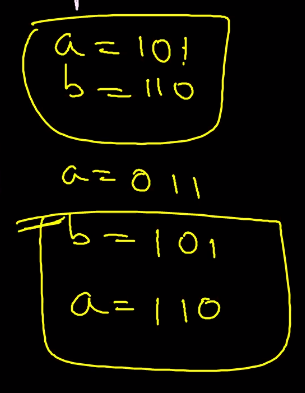


6. Fastest way to swap 2 numbers?

a^=b;

b^=a;

a^=b;

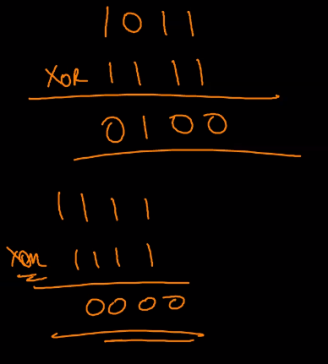


7. Flip all the bits of n:

N=1011

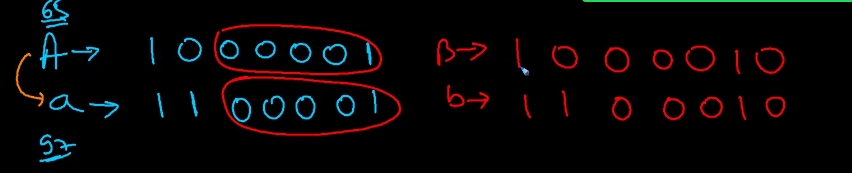
0100 -> ( 1011 needs to be changed to this representation) how will we do that!

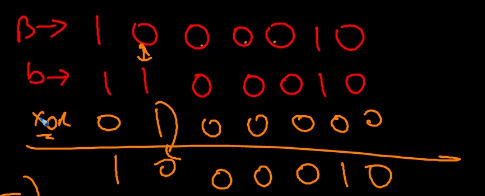
We can achieve this by Taking Xor for all representation with 1.

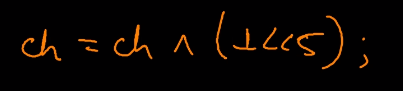


To generate the 1’s (2^d-1).

9. Lower case to upper case using Bit manipulation







10. Count of set bit; \_\_builtIn\_popout(num);

11. Count leading 0’s -> \_\_builtIn+clz(num); **(check again in Internet)**