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Question 1: Given an array of integers, find the maximum bitwise AND value of any two integers in the array.
Input: [3, 5, 8, 10, 12]
Output: 8
Explanation: The maximum bitwise AND value of any two integers in the array is 8, which is the result of the bitwise AND operation between 10 (1010 in binary) and 12 (1100 in binary).

CODE:

```
class MaxANDValueInArray{

    static int MaxValue(int [] arr){
        int max = 0;
        for(int i = 0; i<arr.length; i++){
            for(int j = i+1; j<arr.length; j++){
                int bitwiseAND = arr[i] & arr[j];
                if(max < bitwiseAND){
                    max = bitwiseAND;
                }
            }
        }
        return max;
    }
    public static void main(String[] args) {
        int [] arr = {3, 5, 8, 10, 12};
         System.out.println(MaxValue(arr));
    }
}
```

OUTPUT:

```
priyanshu@Priyanshus-MacBook-Pro Assignment % cd "/Users/priyanshu/Documents/Technical Training/DIT_BATCH_DSA_CODES-main/Bitwise/Assignment/" && javac MaxANDValueInArray.java && java MaxANDValueInArray
8
```

Question 2: Given a non-negative integer n, find the number of integers x such that 0 <= x <= n and n & x == x
Input: n = 5
Output: 4
Explanation: The integers x that satisfy the condition are 0, 1, 4, and 5.

CODE:

```java
public class FindX {
    public static void main(String[] args) {
        int n = 5;
        int x = 0 ;
        for(int i=0;i<=n;i++){
            if((i&n) == i){
                x++;
            }
        }
        System.out.println("Number of integers: "+ x);
    }
}
```

OUTPUT:

```
priyanshu@Priyanshus-MacBook-Pro Assignment % cd "/Users/priyanshu/Documents/Technical Training/DIT_BATCH_DSA_CODES-main/Bitwise/Assignment/" && javac FindX.java && java FindX
Number of integers: 4
```

Question 3: Given an integer A find the Ath number whose binary representation is a palindrome.
NOTE:
Consider the 1st number whose binary representation is palindrome as 1, instead of 0
Do not consider the leading zeros, while considering the binary representation.
Input : A = 9
Output : 27
Explanation: 9th Number whose binary representation is palindrome is 27 (11011)

CODE:

```
public class FindAthBinaryPalindrome {
    static int solve(int A) {
        int count =1;
        int len = 1;
        while(count < A){
            len++;
            int elementForLen = (1 << (len -1)/2);
            count+= elementForLen;
        }
        count-= (1 <<(len-1)/2) ;
        int offset = A - count -1;

        int ans = (1 << (len-1));
        ans |= (offset << (len/2));

        int valFr = (ans >> (len/2));
        ans |= rev(valFr);

        return ans;
    }

    static int rev(int valFr){
        int rev = 0;

        while(valFr !=0){
            int lb = valFr & 1;
            rev = rev|lb;
            rev = rev<< 1;
        valFr = valFr >> 1;
        }
        rev = rev>>1;
        return rev;
    }
    public static void main(String[] args) {
        System.out.println(solve(9));
    }
```

```
}
```

OUTPUT:

```
priyanshu@Priyanshus-MacBook-Pro Assignment % cd "/Users/priyanshu/Documents/Technical Training/DIT_BATCH_DSA_CODES-main/Bitwise/Assignment/" && javac FindAthBinaryPalindrome.java && java FindAthBinaryPalindrome
27
```