8530 in binary.

⇒

2 | 8530	
2 | 4265	– 0
2 | 2132	– 1
2 | 1066	– 0
2 | 533	– 0
2 | 266	– 1
2 | 133	– 0
2 | 66	– 1
2 | 33	– 0
2 | 16	– 1
2 | 8	– 0
2 | 4	– 0
2 | 2	– 0
1	– 0

⇒ 1 0 0 0 0 1 0 1 0 1 0 0 1 0

6) 1 0 1 0 1 0 1 1 0 1 0 1 0 0 1 0 1 1 1 0

(1, 3, 5) 1 1 1 1 1 1 1 1 0 1 0 1 0 0 1 0 1 1

(8, 10, 12) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 1 0 1 1

(13, 15, 19) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1.

Minimun number of moves = 3.

sequence → Root (0).

Right (1).

left (0).

Right (1).

Right (1).

Right (1).

Has 4 is → even number.

5) Binary tree

1 → move to right.

0 → move to left.

given, 10111

root,	Root (R)
right	R
left	L
right + 3	R
	R
	R

7) 1001 → 9

1100 - 12

1110 - 14

1010 - 10

0111 - 7

0101 - 5

0011 - 3

1111 - 15

1101 - 13

1011 - 11

0110 - 6

0100 - 4

0010 - 2

0001 - 1

First divide into two parts and weight using the digital balance and keepon doing it till left with the heaviest weight.

10) rem = (rem×2 + current bit) mod 7.

First rem = 0.

for first bit

rem = (0×2+1) mod 7 = 1

2nd rem = (1×2+1) mod 7 = 3

3rd rem = (3×2+0) mod 7 = 6.

4th rem = (6×2+1) mod 7 = 13 mod 7 = 6.

5th rem = (6×2+0) mod 7 = 12 mod 7 = 5

6th rem = (5×2+1) mod 7 = 11 mod 7 = 4.

7th rem = (4×2+0) mod 7 = 8 mod 7 = 1

Final rem = 1

∴ Final rem is not equal to 0 the binary number is not divisible by 7.

7) Given → 0 1 2 3 4 | 5 6 7 8 9
1 0 1 1 0 | 1 1 1 0 1 is not palindrome because when we flip it, it won't be equal to the given original number.

If we flip ~~4 the~~ pl 4th & 5th position will interchange their values and will not be equal.

Ex of palindrome → 1 0 1 1 0 0 1 1 0 1 (and) 1 0 1 1 1 1 1 1 0 1.

a) Highest XOR values for → 000000 & 111111 which without having more than 3 consecutives is

011011 , 100110.