

Q →

Odd or even

eg → 5 →

0 1 0 1
5 1

1 → odd

0 → even

if (n & 1)

odd

else

even

5 →

1
5 1
1 → odd

4 →

1 0 0
4 1
1 0 0
even



Q → a, b

a = 11 b = 15

a = 1 0 1 1

b = 1 1 1 1

Binary

0	1	0	0
---	---	---	---

↑

1

min
no. of → a → b

Set(1)

Count the no of set bits \rightarrow

count $\leftarrow 0$

while ($n > 0$)

{ count = count + (count += (n & 1))

n = n >> 1

} return count;

count = 0 + 1 + 0
+ 1 = 2

5 \rightarrow 101
 & 1

 1

001
 & 1

 1

5 >> 1

\leftarrow 010 [1 Discard]

010
 & 1

 0

Activities

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Sat 12:56

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https://www.youtube.com/watch?v=aId6iahUGLI&list=PLX0iyO9CrCF1-4je7G0JMSr_

YouTube

bit manipulation for competitive programming

Q \Rightarrow Playing with Bits \Rightarrow
eg \Rightarrow $a = 10$, $b = 15$ $a \rightarrow b$ (inclusive)
 $a = 10 \rightarrow 1010 - 2$
 $11 \rightarrow 1011 - 3$
 $12 \rightarrow 1100 - 2$
 $13 \rightarrow 1101 - 3$
 $14 \rightarrow 1110 - 3$
 $b = 15 \rightarrow 1111 - 4$
17 (Output)

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Unique
Number
3 (C++) 10:30

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https://meet.google.com/ohu-uvie-wmm?authuser=2

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Byte Ordering

BYTE ORDERING



- An arrangement of bytes when data is transmitted over the network is called byte ordering.
- Different computers will use different byte ordering.
- When communication taking place between two machines byte ordering should not make discomfort.
- Generally an Internet protocol will specify a common form to allow different machines byte ordering. TCP/IP is the Internet Protocol in use.
- Two ways to store bytes : Big endian and little endian

Big-endian

- High order byte is stored on starting address and low order byte is stored on next address

Little-endian

- Low order byte is stored on starting address and high order byte is stored on next address

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People (61)

Chat

SHALINI SHREE (RA1811003010758) 1:52 PM
758 present ma'am

CH ROSHNI (RA1811003010760) 1:52 PM
Present Ma'am

DRISHTI JAIN (RA1811003010762) 1:53 PM
762 present ma'am

You 1:53 PM
773 present mam

Shreejan Mishra (RA1811003010776) 1:53 PM
Present ma'am

ARVETI RAGHAVENDRA RA1811003010779 1:53 PM
Present mam

Send a message to everyone

Bitmasking / Bitmanipulation 03- Questions on Bitmasking from hackerrank and GeeksForGeeks

```
14 }
15 int main()
16 {
17     ios_base::sync_with_stdio(false);
18     cin.tie(NULL); cout.tie(NULL);
19     ll test; cin >> test;
20     while(test--)
21     {
22         int a, b; cin >> a >> b;
23         int count = 0;
24         for (int i = a; i <= b; i++)
25         {
26             // Check if the no is even and is less than b
27             if ((i&1) == 0 && i < b)
28             {
29                 count += 2 * countSetBits(i) + 1;
30                 i++;
31                 continue;
32             }
33             count += countSetBits(i);
34         }
35         cout << count << '\n';
36     }
37     return 0;
38 }
```

Even
→ 10 → 1010 → 2
→ 11 → 1011
odd

$2 \times 2 + 1$
4 + 1 = 5

10, 11, 12, 13, 14

C_{11}^{10}

Eg \rightarrow 1, 1, 2, 3 - Sequence
 Unique

Approach \rightarrow not $\rightarrow 1 \wedge 1 \wedge 2 \wedge 3 = 2 \wedge 3$

② \rightarrow 10

③ \rightarrow $\begin{array}{r} \wedge 11 \\ \hline 0 \end{array}$ 0-th bit

\rightarrow set bit(1)

$\begin{array}{r} x \\ 1, 1, 2, 3 \end{array}$

temp Arr \rightarrow 1, 1, 3

$1 \wedge 1 \wedge 3 = 3$

$\begin{array}{r} 1 \\ \wedge 1 \\ \hline 0 \end{array}$ 0-th bit



Bitmasking / Bitmanipulation 03- Questions on Bitmasking from hackerrank and GeeksForGeeks

```
6   int n;
7   cin >> n;
8   int *arr = new int[n];
9   int res = 0;
10  for (int i = 0; i < n; i++)
11  {
12      cin >> arr[i];
13      res ^= arr[i];
14  }
15  int tempRes = res, index = 0;
16  // Check the first bit which is set(1)
17  while (tempRes > 0)
18  {
19      if (tempRes & 1)
20          break;
21      index++;
22      tempRes = tempRes >> 1;
23  }
24  int mask = (1 << index);
25  vector<int> tempArr;
26  for (int i = 0; i < n; i++)
27  {
28      if (arr[i] & mask)
29          tempArr.push_back(arr[i]);
30  }
31  int a = 0;
```

← size
← dynamic array
res = ^ of each no.

(tempRes & 1) == 1
break;

old 0010 >> 1
0010