**BIT MANIPULATION:**

[A - Check bit](https://vjudge.net/problem/HackerRank-si-basic-check-bit)

 #include <bits/stdc++.h>

using namespace std;

int main()

{

int n,i;

cin>>n>>i;

if(((n>>i) & 1) ==1)

cout<<"true"<<endl;

else

cout<<"false"<<endl;

return 0;

}

[B - Check Power of Two](https://vjudge.net/problem/HackerRank-si-check-power-of-two)

#include <bits/stdc++.h>

using namespace std;

int main()

{

long int t,n;

cin>>t;

while(t--){

cin>>n;

if((n & (n-1)) == 0)

cout<<"True"<<endl;

else

cout<<"False"<<endl;

}

return 0;

}

[C - Finding Missing Number](https://vjudge.net/problem/HackerRank-si-finding-missing-number)

#include <bits/stdc++.h>

using namespace std;

int main()

{

int t,n,a,sum;

cin>>t;

while(t--){

cin>>n;

sum=0;

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

cin>>a;

sum=sum^a^i;

}

cout<<(sum^(n+1))<<endl;

}

return 0;

}

[D - Flip Bits](https://vjudge.net/problem/HackerRank-si-flip-bits)

 #include <bits/stdc++.h>

using namespace std;

int main()

{

long int a,b,c,t,count;

cin>>t;

while(t--){

cin>>a>>b;

c=a^b;

count=0;

while(c != 0){

if((c & 1) == 1)

count++;

c=(c>>1);

}

cout<<count<<endl;

}

return 0;

}

[E - Reverse Bits](https://vjudge.net/problem/HackerRank-si-reverse-bits)

#include <bits/stdc++.h>

using namespace std;

int main()

{

unsigned int n,t,res,i;

cin>>t;

while(t--){

cin>>n;

res=0;

for(i=0;i<31;i++){

if((n&1) ==1){

res=(res|1);

}

res=(res<<1);

n=n>>1;

}

cout<<res<<"\n";

}

return 0;

}

[F - Swap Bits](https://vjudge.net/problem/HackerRank-si-swap-bits)

#include <bits/stdc++.h>

using namespace std;

int main()

{

long int n,t,res,i,even,odd;

cin>>t;

while(t--){

cin>>n;

odd=(n & 2863311530);

even=(n & 1431655765);

even=(even << 1);

odd=(odd >> 1);

cout<<(even | odd)<<endl;

}

return 0;

}

[G - Compute a power b](https://vjudge.net/problem/HackerRank-si-compute-a-power-b)

#include <bits/stdc++.h>

using namespace std;

int main()

{

long int t,base,ex,res;

cin>>t;

while(t--){

cin>>base>>ex;

res=1;

while(ex != 0){

if((ex&1)==1)

res=(res\*base)%1000000007;

base=(base\*base)%1000000007;

ex=(ex>>1);

}

cout<<res<<endl;

}

return 0;

}

[H - Set a bit](https://vjudge.net/problem/EOlymp-5315)

 #include <bits/stdc++.h>

using namespace std;

int main()

{

long int a,b;

cin>>a>>b;

int res=1;

res=(res<<b);

cout<<(a | res)<<endl;

return 0;

}

[I - Flipping bits](https://vjudge.net/problem/HackerRank-flipping-bits)

#include <bits/stdc++.h>

using namespace std;

//flipping

int main()

{

long int t,n;

cin>>t;

while(t--){

cin>>n;

cout<<(n ^ 4294967295)<<endl;

}

return 0;

}

[J - 2^k + 2^n](https://vjudge.net/problem/EOlymp-5314)

#include <bits/stdc++.h>

using namespace std;

int main()

{

int k,n,res1=1,res2=1;

cin>>k>>n;

cout<<(res1<<k)+(res2<<n)<<endl;

return 0;

}

[K - Subsets of an array](https://vjudge.net/problem/HackerRank-si-subsets-of-an-array)

#include <bits/stdc++.h>

using namespace std;

int main()

{

int t,n;

cin>>t;

while(t--){

cin>>n;

vector<int> v(n);

for(int i=0;i<n;i++){

cin>>v[i];

}

sort(v.begin(),v.end());

int len=pow(2,n);

vector<vector<int>> subset(len);

for(int i=1;i<len;i++){

vector<int> temp;

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

if(i & (1<<j))

temp.push\_back(v[j]);

}

subset[i-1]=temp;

}

sort(subset.begin(),subset.end());

int j=0;

for(int i=0;i<n;i++){

for(int j=0;j<len;j++){

if(!subset[j].empty() && subset[j][0] == v[i]){

for(int k=0;k<subset[j].size();k++){

cout<<subset[j][k]<<" ";

}

cout<<endl;

}

}

}

cout<<endl;

}

return 0;

}

## [L - Count Set Bits](https://vjudge.net/problem/HackerRank-si-count-set-bits)

#include <bits/stdc++.h>

using namespace std;

int main()

{

long int t,n,count;

cin>>t;

while(t--){

cin>>n;

count=0;

while(n != 0){

if((n & 1) == 1)

count++;

n=(n>>1);

}

cout<<count<<endl;

}

return 0;

}

[M - Triple Trouble](https://vjudge.net/problem/HackerRank-si-triple-trouble)

#include <bits/stdc++.h>

using namespace std;

int main()

{

int t,n,one,two;

cin>>t;

while(t--){

cin>>n;

vector<int> v(n);

for(int i=0;i<n;i++){

cin>>v[i];

}

one=0; two=0;

int common;

for(int i=0;i<n;i++){

two=two | (v[i] & one);

one=one ^ v[i];

common=one & two;

one=(one & (~(common)));

two=(two & (~(common)));

}

cout<<one<<endl;

}

return 0;

}

[N - Repeated Numbers](https://vjudge.net/problem/HackerRank-si-repeated-numbers)

#include <bits/stdc++.h>

using namespace std;

int main()

{

int t,n,sum,mx;

cin>>t;

while(t--){

cin>>n;

mx=INT\_MIN;

vector<int> v(n);

sum=0;

for(int i=0;i<n;i++){

cin>>v[i];

sum=sum^v[i];

mx=max(v[i],mx);

}

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

sum=sum^i;

int bit=sum & (~(sum-1));

int x=0,y=0;

for(int i=0;i<n;i++){

if(bit & v[i])

x=x^v[i];

else

y=y^v[i];

}

for(int i=1;i<=mx;i++){

if(bit & i)

x=x^i;

else

y=y^i;

}

if(x<y)

cout<<x<<" "<<y<<endl;

else

cout<<y<<" "<<x<<endl;

}

return 0;

}

[O - XOR of Sum of Pairs](https://vjudge.net/problem/HackerRank-si-xor-of-sum-of-pairs)

#include <iostream>

using namespace std;

int main() {

int t,n,a,sum;

cin>>t;

while(t--){

cin>>n;

sum=0;

while(n--){

cin>>a;

sum=(sum ^ (2\*a));

}

cout<<sum<<endl;

}

return 0;

}