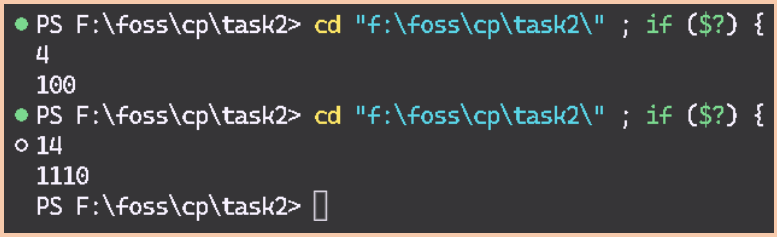
1) Write a program to find the binary representation of a given number.

Sample Input: num = 4
Sample Output: 100
Explanation: The Binary Representation of 4 is 100

Code:

```
//21161 Shaik Nazeer CSE-B
#include<bits/stdc++.h>
#define ll long long
#define loop(i,n) for(int i = 0; i < n; i++)
#define loop1(i,n) for(int i = 1; i <= n; i++)
using namespace std;
int main()
{
   int n;
   cin>>n;
   string s,temp;
   while(n) {
      temp = n%2+'0';
      s = temp+s;
      n/=2;
   }
   cout<<s<<endl;
   return 0;
}
```

Screenshot:



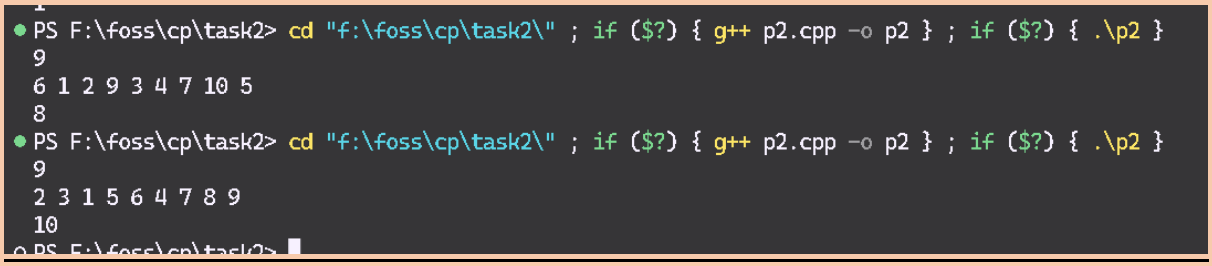
2) Given an array of size N-1 such that it only contains distinct integers in the range of 1 to N. Find the missing element.

Sample Input: N = 10
A[] = {6,1,2,9,3,4,7,10,5}
Sample Output: 8
Explanation: The Missing Number is 8 in the array.

Code:

```
//21161 Shaik Nazeer CSE-B
#include<bits/stdc++.h>
#define ll long long
#define loop(i,n) for(int i = 0; i < n; i++)
#define loop1(i,n) for(int i = 1; i <= n; i++)
using namespace std;
int main()
{
   int n;
   cin>>n;
   int a[n];
   loop(i,n) cin>>a[i];
   sort(a,a+n);
   loop(i,n) {
      if(a[i]!=i+1) {
         cout<<i+1<<endl;
         return 0;
      }
   }
   cout<<n+1<<endl;
   return 0;
}
```

Screenshot:



3) Find the first set bit for a given number.

Sample Input: num = 12

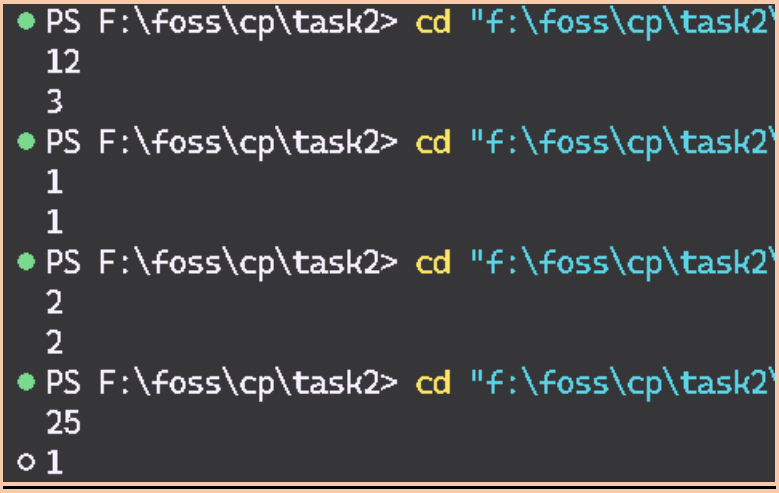
Sample Output: 3

Explanation: 1100 is the binary representation of the given number 12. Set bit is nothing but the '1' bits that are present in a binary number. In 1100 the first set bit from the right occurs in third position. Thus, the output is 3.

Code:

```
//21161 Shaik Nazeer CSE-B
#include<bits/stdc++.h>
#define ll long long
#define loop(i,n) for(int i = 0; i < n; i++)
#define loop1(i,n) for(int i = 1; i <= n; i++)
using namespace std;
int main()
{
   int n,bitmask=1,pos=1;
   cin>>n;
   while(true) {
      if(n&bitmask){
         cout<<pos<<endl;
         break;
      }
      pos++;
      n = n>>1;
   }
   return 0;
}
```

Screenshot:



4) Find the two numbers with odd occurrences in an unsorted array.

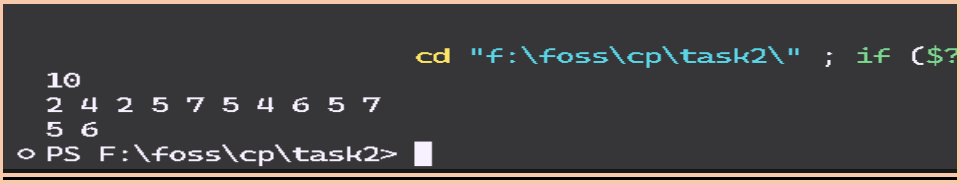
Sample Input: {2, 4 , 2, 5, 7, 5, 4, 6, 5, 7}
Output: 5 and 6
Explanation: The element 5 and 6 occurs odd times in the array that is element 5 occurs three times while element 6 occurs one time. Thus, the output is 5 and 6
Input Constraints: The array should contain only two elements that occurs odd no of times and not more than two.
Other Constraints: You cannot use nested loops to solve this problem

Code:

```
//21161 Shaik Nazeer CSE-B
#include<bits/stdc++.h>
#define ll long long
#define loop(i,n) for(int i = 0; i < n; i++)
#define loop1(i,n) for(int i = 1; i <= n; i++)
using namespace std;
int main()
{
   int n,x=-1,y=-1;
   cin>>n;
   int a[n];
   loop(i,n) cin>>a[i];
   sort(a,a+n);
```

```
    loop(i,n){
        if(a[i]==a[i+1]){
            i++;
        }else{
            if(x==-1) x=a[i];
            else if(y==-1) y=a[i];
        }
        if(x!=-1 && y!=-1){
            cout<<x<<" "<<y<<endl;
            break;
        }
    }
    return 0;
}
```

Screenshot:



5) Count the no of set bits i.e no of '1' bits in an integer.

Sample Input: 7

Sample Output: 3

Explanation: The binary representation of 7 is 111 and the no of '1' bits present in 7 is three. Thus, the output is 3.

Code:

```
//21161 Shaik Nazeer CSE-B
#include<bits/stdc++.h>
#define ll long long
#define loop(i,n) for(int i = 0; i < n; i++)
#define loop1(i,n) for(int i = 1; i <= n; i++)
using namespace std;
int main()
{
    int n,bitmask=1,cnt=0;
```

```
    cin>>n;
    while(n) {
        if(n&bitmask){
            cnt++;
        }
        n = n>>1;
    }
    cout<<cnt<<endl;
    return 0;
}
```

Screenshot: