

1. What is the time complexity of each of the following code segments?

```
for(int k=1;k<=n;k=k*2)
{
    for(int i=1;i<=n;i++)
    {
        cout<<k<<" "<<i<<"\n";
    }
}
```

```
for(int k=1;k<=n;k++)
{
    if(k==1){
        for(int i=1;i<=n;i++)
        {
            cout<<k<<" "<<i<<"\n";
        }
    }
}
```

```
for(int k=1;k<=n;k++)
{
    if(k%2==0){
        for(int i=1;i<=n;i++)
        {
            cout<<k<<" "<<i<<"\n";
        }
    }
}
```

2. WAP that takes n integer numbers, sorts them using Merge sort.

Sample input	Sample output
5 6 2 3 3 5	2 3 3 5 6
6 5 6 7 8 0 1	0 1 5 6 7 8

3. Write a recursive function to find the nth Fibonacci number. The first few fibonacci numbers are: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34.

Sample input	Sample output
6	8
7	13

4. Write a recursive function to find the sum of the elements in an array.

Sample input	Sample output
5 1 2 3 4 5	15
6 5 6 7 8 0 1	27