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";  }  }  } |

1. 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 |

1. 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 |

1. 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 |