```java
/*1st question Diasarium*/
import java.util.Scanner;
import java.lang.Math;
 class Diasarium
 {
   int Check(int n)
   {
     int m=n,sum=0,count=0;
     while(n>0)
     {
      count++;
      n=n/10;
     }
     for(int i=count;m>0;i--)
     {
      sum=sum+(int)Math.pow(m%10,i);
      m=m/10;
     }
     return sum;
   }
  public static void main(String args[])
  {
    Diasarium d=new Diasarium();
    Scanner sc=new Scanner(System.in);
    System.out.println("Tarun sai SAP =51834698");
    System.out.println("Enter the number : ");
    int num=sc.nextInt();
    if(d.Check(num)==num)
    {
     System.out.println(num+" is Diasarium number");
    }
    else
    {
     System.out.println(num+" is not Diasarium number");
    }
    System.out.println("Enter the number upto which the Diasarium num
    num=sc.nextInt();
    for(int i=1;i<=num;i++)
    {
     if(d.Check(i)==i)
     {
      System.out.print(i+" ");
```

```java
43          }
44      }
45      System.out.println();
46      System.out.println("Enter the start number : ");
47      int num1=sc.nextInt();
48      System.out.println("Enter the end number : ");
49      int num2=sc.nextInt();
50      for(int i=num1;i<=num2;i++)
51      {
52        if(d.Check(i)==i)
53        {
54          System.out.print(i+" ");
55        }
56      }
57    }
58 }
```

Tarun sai SAP =51834698
Enter the number :
135
135 is Diasarium number
Enter the number upto which the Diasarium numbers to be disp
100
1 2 3 4 5 6 7 8 9 89
Enter the start number :
100
Enter the end number :
250
135 175
Process finished.

```java
/*5th question String array binary search*/
import java.util.*;
public class Program
{
    public static void main(String[] args) {
      System.out.println ("Tarun sai SAP =51834698");
        Scanner s = new Scanner (System.in);
        System.out.println("Enter the length of the String");
        int length = s.nextInt();
        s.nextLine();
        String name[] = new String [length];
        int std[] = new int [length];
        boolean chk = false;
        System.out.println("Enter the string");
      for (int i = 0; i<length; i++)
      {
        name[i] = s.nextLine();


      }
      System.out.println("Enter the String  name you want to search");
      String search = s.nextLine();
      int f = 0;
      int l = length-1;
      int m;
      while (f<=l)
      {
        m = (f+l)/2;
        if (search.compareTo(name[m])>0)
        {
          f = m+1;
        }
        else if (search.compareTo(name[m])<0)
        {
          l = m-1;
        }
        else
        {
          chk = true;
          System.out.println("Search successful");
          System.out.println("String is found at : "+m+" "+ "Index");
```

```java
42
43              break;
44          }
45      }
46      if (chk == false)
47      {
48          System.out.println("Search unsuccessful");
49      }
50      }
51 }
```

```
Tarun sai SAP =51834698
Enter the length of the String
5
Enter the string
TARUN
sai
Manoj
Hemu
Robert
Enter the String  name you want to search
Robert
Search successful
String is found at : 4 Index

Process finished.
```

```java
1   /*Program to replace the digut ina number
2    3RD QUESTION*/
3
4   import java.util.Scanner;
5   class ReplaceAnumber
6   {
7   static int replaceDigit(int x, int d1, int d2)
8   {
9     int result = 0, multiply = 1;
10
11    while (x % 10 > 0)
12    {
13     int remainder = x % 10;
14     if (remainder == d1)
15       result = result + d2 * multiply;
16     else
17       result = result + remainder * multiply;
18     multiply *= 10;
19     x = x / 10;
20    }
21    return result;
22  }
23  public static void main(String[] args)
24  { Scanner scr = new Scanner(System.in);
25  System.out.println("Tarun sai SAP ID =51834698");
26  System.out.println("Enter the number: ");
27   int v1= scr.nextInt();
28  System.out.println("Enter the number you want to change: ");
29   int v2 = scr.nextInt();
30  System.out.println("Enter the number you want to replace: ");
31   int v3 = scr.nextInt();
32  System.out.println("Output: ");
33  System.out.println(replaceDigit(v1,v2,v3));
34  }
35  }
```

```
Terminal                          ⧉

Tarun sai SAP ID =51834698
Enter the number:
738289292
Enter the number you want to change:
2
Enter the number you want to replace:
6
Output:
738689696

Process finished.
```

```
Terminal                          ⧉

Tarun sai SAP ID =51834698
Enter the number:
578854678
Enter the number you want to change:
5
Enter the number you want to replace:
1
Output:
178814678
```

```java
1
2  /*Pattern 4th question*/
3  class Dcoder
4  {
5   public static void main(String args[])
6   {
7     System.out.println("Tarun sai SAP =51834698");
8     for(int i=1;i<=5;i++)
9     {
10      for(int j=1;j<=i;j++)
11      {
12       if(i==5 && j==3)
13       {
14         System.out.print("@");
15       }
16       else if(j==1 || j==i)
17       {
18         System.out.print("1");
19       }
20       else
21       {
22         System.out.print("0");
23       }
24      }
25      System.out.println();
26    }
27  }
28 }
```

```
Terminal                                    ⧉

Tarun sai SAP =51834698
1
11
101
1001
10@01

Process finished.
```

```java
/*2nd question */
import java.util.Arrays;
import java.util.Scanner;
class Binary
{
  // Function to sort binary array in linear time
  public static void sort(int[] arr)
  {
    // count number of 0's
    int zeros = 0;
    for (int val : arr)
    {
      if (val == 0)
      {
        zeros++;
      }
    }

    // put 0's in the beginning
    int k = 0;
    while (zeros-- != 0)
    {
      arr[k++] = 0;
    }

    // fill all remaining elements by 1
    while (k < arr.length)
    {
      arr[k++] = 1;
    }
  }

  // Sort binary array in linear time
  public static void main (String[] args)
  {
    System.out.println("Name : R.Tarun sai SAP ID : 51834698");
    Scanner sc=new Scanner(System.in);
    System.out.print("Enter the size of array :");
    int length =sc.nextInt();
    int[] arr=new int[length];
```

```java
41      System.out.println("enter the  elements :");
42      for (int i = 0; i <length; i++)
43        {
44          arr[i]= sc.nextInt();
45        }
46       sort(arr);
47
48      // print the rearranged array
49      System.out.println("Output");
50      System.out.println(Arrays.toString(arr));
51    }
52 }
```

Name : R.Tarun sai SAP ID : 51834698
Enter the size of array :8
enter the elements :
1 0 1 1 0 1 0 0
Output
[0, 0, 0, 0, 1, 1, 1, 1]

Process finished.