Q1. Write a java program to check whether given number is Armstrong number or not?

```
package LAB1;
import java.util.Scanner;
public class Armstrong {

	public static void main(String[] args) {
	Scanner obj = new Scanner(System.in);

	int num, sum=0, r, num1,num2, count=0, multiply;

	System.out.println("Enter your number to Check for
Armstrong");

	num = obj.nextInt();

	num2=num1 =num;

	while(num1>0)
	{
		num1=num1/10;
		count++;
	}

	while(num>0)
	{
		r=num%10;

		multiply=1;
		for(int j=1;j<=count;j++)
		multiply = multiply * r;
		sum=sum+multiply;
		num=num/10;

	}

	//System.out.println("sum="+sum);
	if(sum==num2)
	System.out.println("Given number is Armstrong");
	else
	System.out.println("Given number is NOT Armstrong");
```

```
    }
}
```

Output:

```
Enter your number to Check for Armstrong
5
Given number is Armstrong
                        (OR)
Enter your number to Check for Armstrong
34
Given number is NOT Armstrong
```

Q2. Write a Program to display all the Armstrong number between 10 to 1000

```
package LAB1;
import java.util.Scanner;
public class AllArmstrong {

	public static void main(String[] args) {
	Scanner obj = new Scanner(System.in);

	int i, num, r, sum;

	for(i=10;i<=1000;i++)
	{
		sum=0;
		num=i;

		while(num>0)
		{
		   r=num%10;
		   sum=sum+(r*r*r);
		   num/=10;

		}
		if(sum==i)
		System.out.println(i);
	}
  }
}
```

Output:

```
153
370
371
407
```

Q3. Write a program to find sum of the following series

a. Sum = x-1/x+2/x-3/x….n/x

```
package LAB1;
import java.util.*;
public class Sum_Of_Series {

     public static void main(String[] args) {
          Scanner obj = new Scanner(System.in);
          int i,n;
          float x,sum=0;
         System.out.println("Program to find of x-1/x+2/x-
3/x….n/x");
          System.out.println("Enter x value");
          x=obj.nextFloat();
          System.out.println("Enter n value");
          n=obj.nextInt();
          for(i=1;i<=n;i++)
          {
               if(i%2==0)
                    sum=sum-(float)i/x;
               else
                   sum=sum+(float)i/x;;

          }

          System.out.println("sum of series: "+sum);
     }
}
```

Output:

```
Program to find of x-1/x+2/x-3/x.n/x
Enter x value
2
Enter n value
3
sum of series: 1.0
```

b. 1!+2!+3!+…..n!

```
package LAB1;
import java.util.Scanner;
public class Factorial {

	public static void main(String[] args) {
	Scanner obj = new Scanner(System.in);

	int i,j,n;
	long fact=1;
	long sum=0;

	System.out.print("Enter n value");
	n= obj.nextInt();

	for(i=1;i<=n;i++)
	{
	   fact=1;
	   for(j=1;j<=i;j++)
	   {
	         fact=fact*j;
	   }
	   sum=sum+fact;
	   System.out.print(fact+" ! + ");
	 }
	  System.out.println("\n sum of above series "+sum);
   }
}
```

Output:

```
Enter n value
10
1 ! + 2 ! + 6 ! + 24 ! + 120 ! + 720 ! + 5040 ! + 40320 !
+ 362880 ! + 3628800 ! +
 sum of above series 4037913
```

Q4. Write a java program to check given number is perfect number or not

```
package LAB1;
import java.util.Scanner;
public class Perfect_No {

	public static void main(String[] args) {
	Scanner sc = new Scanner(System.in);

	int num,i,sum=0;

	System.out.println("Enter the number");
	num=sc.nextInt();

	for(i=1;i<num;i++)
	{
		if(num%i==0)
		{
			sum +=i;
		}
	}
	if(sum==num)
	{
		System.out.println("It is a perfect number");

	}
	else
	{
		System.out.println("It is not a perfect number");
	}
  }
}
```

Output:

```
Enter the number
6
It is a perfect number
                        (OR)
Enter the number
10
It is not a perfect number
```

Q5. Display all perfect numbers between 1 to 100000

```
package LAB1;
import java.util.*;
public class All_Perfect_Nos {

	public static void main(String[] args) {
	Scanner sc=new Scanner(System.in);

	System.out.println("enter Start and End Range ");
	int num1=sc.nextInt();
	int num2=sc.nextInt();

	System.out.println("perfect numbers are: ");

	for(int i=num1;i<=num2;i++)
	{
		int n=i;
		int sum=0,factor=1;
		while(factor<n)
		{
			if((n%factor)==0)
			{
				sum=sum+factor;
			}
			factor++;

		}
		if(sum==i)
		{
		   System.out.println(i+" ");
		}
	}
  }
}
```

Output:

```
Enter Start and End Range
1
100000
perfect numbers are:
6
28
496
8128
```

Q6. Write a program to extract only character from a string.

Eg: Af02284khff -> Afkhff

```
package LAB1;
import java.util.Scanner;
public class ExtractChar {

	public static void main(String[] args) {

	String text,  string="";
	char ch;
	int i;

	Scanner key = new Scanner(System.in);

	System.out.println("Enter your text ");
	text = key.next();

	for(i=0;i<text.length();i++)
	{
		ch = text.charAt(i);

		if(ch>='a' & ch<='z' | ch>='A' & ch<='Z')
		string=string + ch;

	}
	System.out.println("Extracted string "+ string);

	}
}
```

Output:

```
Enter your text
Af02284khff
Extracted string Afkhff
```

Q7. Write a program to find reverse of digits

```
package LAB1;
import java.util.*;
public class Reverse {

	public static void main(String[] args) {
	Scanner obj = new Scanner(System.in);

	 int num, r, reverse=0;

	 System.out.println("Enter a number");

	 num = obj.nextInt();

	 while(num>0)
	 {
	     r=num%10;
	     reverse= (reverse*10) +r;
	     System.out.print(r);
	     num/=10;
	 }

	 System.out.println("reverse of the digits "+
reverse);
	}
}
```

Output:

```
Enter a number
523
325reverse of the digits 325
```

Q8. Write a program to find power value of given base and exponent number

```
package LAB1;
import java.util.*;
public class PowerValue {

	public static void main(String[] args) {

	Scanner sc=new Scanner(System.in);
	int base,expo;
	long power=1;

	System.out.println("Enter the value base");
	base=sc.nextInt();
	System.out.println("Enter the value exponent");
	expo=sc.nextInt();

	while(expo!=0)
	{
		power=power*base;
		--expo;
	}
	System.out.println(base+" to the power "+expo+"is
"+power);
    System.out.println("The value of the power : "+power);

  }
}
```

Output:

```
Enter the value base
2
Enter the value exponent
4
2 to the power 0is 16
The value of the power : 16
```

Q9. Write a program to convert every first letter of string to capital letter

a. eg: the Hindu -> The Hindu

```
package LAB1;
public class Captial_Letters {

     public static void main(String[] args)
     {
     String text = "the Hindu";
    int pos = 0;
          boolean capitalize = true;
          StringBuilder sb = new StringBuilder(text);
          while (pos < sb.length())
          {
              if (sb.charAt(pos) == ' ')
              {
                  capitalize = true;
              }
              else if (capitalize &&
!Character.isWhitespace(sb.charAt(pos)))
              {
                sb.setCharAt(pos,
Character.toUpperCase(sb.charAt(pos)));
                capitalize = false;
              }
              pos++;
          }
          System.out.println(sb.toString());
     }
}
```

Output:

```
The Hindu
```

Q10. Write a program to count no. of digits present in a string

```
package LAB1;
public class Count_Digits {

     public static void main(String[] args)
     {
           int count=0, num=92584302;

         while (num != 0)
         {
           num /= 10;
           ++count;
      }

       System.out.println("Number of digits: " + count);
  }
}
```

Output:

```
Number of digits: 8
```