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**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 =  $x - 1/x + 2/x - 3/x + \dots n/x$**

```
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  $x - 1/x + 2/x - 3/x + \dots n/x$ ");
        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  $x - 1/x + 2/x - 3/x + \dots n/x$ 
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