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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 = $x-1/x+2/x-3/x....n/x$

```
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. $1!+2!+3!+\dots+n!$

```
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