1.Write a java program to print first 10 natural number using recursion?

**import** java.util.Scanner;

**public** **class** Recursion1 {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Scanner sc = **new** Scanner(System.***in***);

System.***out***.println("Enter a number up which find natural number ");

**int** num2 = sc.nextInt();

**int** num1=1;

**if**(num2<=0) {

System.***out***.println("Natural number is not less than 0");

}

**else** {

*recursion*(num1,num2);

}

sc.close();

}

**public** **static** **void** recursion(**int** num1,**int** num2) {

**if**(num1<=num2) {

System.***out***.println(num1);

*recursion*(num1+1,num2);

}

}

}

Output: Enter a number up which find natural number

8

1

2

3

4

5

6

7

8

2.Write a java program to calculate the sum of numbers from 1 to N using recursion?

**import** java.util.Scanner;

**public** **class** Recursion2 {

**public** **static** **void** recursion(**int** num1,**int** num2,**int** sum) {

**if**(num1<num2) {

sum=sum+num1;

*recursion*(num1+1,num2,sum);

}

System.***out***.println("Sum :"+sum);

}

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Scanner sc = **new** Scanner(System.***in***);

System.***out***.println("Enter a number for sum calculation: ");

**int** num2 = sc.nextInt();

**int** num1=1;

**int** sum=0;

**if**(num2<=0) {

System.***out***.println(num1);

}

**else** {

*recursion*(num1,num2,sum);

}

sc.close();

}

}

**Output:**

Enter a number for sum calculation:

10

Sum :45

3. Write a program to calculate the product of two integers using recursion? (Multiplication & Division operators are not allowed)

**import** java.util.Scanner;

**public** **class** Recursion3 {

**public** **static** **int** getproduct(**int** num1,**int** num2) {

**if**(num1==0 || num2==0) {

**return** 0;

}

**else** {

**return** num1 + *getproduct*(num1, num2-1);

}

}

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

**int** mul=0;

Scanner sc = **new** Scanner(System.***in***);

System.***out***.println("Enter a 2 number for Multiplication : ");

**int** num1 = sc.nextInt();

**int** num2 = sc.nextInt();

**if**(num2<0 || num1<0) {

mul=0;

}

**else** {

mul=*getproduct*(num1,num2);

}

System.***out***.println("Mul : "+mul);

sc.close();

}

}

Output:

Enter a 2 number for Multiplication :

4

4

Mul : 16

4. Write a program to calculate the power of any number using recursion?

**import** java.util.Scanner;

**public** **class** Recursion4 {

**public** **static** **int** getpower(**int** num,**int** pow) {

**if**(pow>=1) {

**return** (num\**getpower*(num,pow-1));

}

**else** {

**return** 1;

}

}

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Scanner sc = **new** Scanner(System.***in***);

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

**int** num=sc.nextInt();

System.***out***.println("Enter a power : ");

**int** pow=sc.nextInt();

**int** result;

**if**(pow==0) {

result=1;

}

**else** {

result=*getpower*(num,pow);

}

System.***out***.println(num+" to the power "+pow +":"+result);

sc.close();

}

}

Output:

Enter a number :

4

Enter a power :

4

4 to the power 4:256

5. Write a recursive program to print Fibonacci Series for given number of terms?

Input number of terms for the Series (< 20) : 10

The Series are :

1 1 2 3 5 8 13 21 34 55

6. Write a program to find the sum of digits of a number using recursion?

**import** java.util.Scanner;

**public** **class** Recursion6 {

**public** **static** **int** getSum(**int** num) {

**if**(num!=0) {

**return** num%10+*getSum*(num/10);

}

**else** {

**return** 0;

}

}

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Scanner sc = **new** Scanner(System.***in***);

System.***out***.println("Enter a number to calculate sum of its digit : ");

**int** num=sc.nextInt();

**int** result;

**if**(num<10) {

result=num;

}

**else** {

result=*getSum*(num);

}

System.***out***.println("Sum of digit : "+result);

sc.close();

}

}

Output:

Enter a number to calculate sum of its digit :

541

Sum of digit : 10

7. Write a program to find the Factorial of a number using recursion?

**import** java.util.Scanner;

**public** **class** Recursion7 {

**public** **static** **int** getfactor(**int** num) {

**if**(num>0) {

**return** num\**getfactor*(num-1);

}

**else** {

**return** 1;

}

}

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Scanner sc = **new** Scanner(System.***in***);

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

**int** num=sc.nextInt();

**int** result=1;

**if**(num<=2) {

result=num;

}

**else** {

result=*getfactor*(num);

}

System.***out***.println("Factorial of number :"+result);

sc.close();

}

}

Enter a number :

6

Factorial of number :720

8. Write a program to get the largest element of an array using recursion?