Computing Powers

Computing a positive integer power of a number is easily seen as a recursive process. Consider a^n:

- If n = 0, a^n is 1 (by definition)
- If n > 0, a^n is a * a^{n-1}

File *Power.java* contains a main program that reads in integers *base* and *exp* and calls method *power* to compute $base^{exp}$. Fill in the code for *power* to make it a recursive method to do the power computation. The comments provide guidance.

```
// ****************************************************************
//   Power.java
//
//   Reads in two integers and uses a recursive power method
//   to compute the first raised to the second power.
// ****************************************************************

import java.util.Scanner;

public class Power
{
    public static void main(String[] args)
    {
      int base, exp;
      int answer;

      Scanner scan = new Scanner(System.in);

      System.out.print("Welcome to the power program! ");
      System.out.println("Please use integers only.");

      //get base
      System.out.print("Enter the base you would like raised to a power: ");
      base = scan.nextInt();

      //get exponent
      System.out.print("Enter the power you would like it raised to: ");
      exp = scan.nextInt();

      answer = power(base,exp);
      System.out.println(base + " raised to the " + exp + " is " + answer);
    }

    // -----------------------------------------------
    //   Computes and returns base^exp
    // -----------------------------------------------
    public static int power(int base, int exp)
    {
      int pow;

      //if the exponent is 0, set pow to 1

      //otherwise set pow to base*base^(exp-1)

      //return pow

    }
}
```