Recursion - Practice Problems

Do the given problems using JavaScript.

1. Write a Program to print the first n fibonacci numbers.

   Example:- 0 1 1 2 3 . . .

   Nth Fibonacci Number - Sum of n-1th and n-2nd number

   According to Wikipedia, In mathematics, the Fibonacci numbers, commonly denoted Fn, form a sequence, the Fibonacci sequence, in which each number is the sum of the two preceding ones. The sequence commonly starts from 0 and 1, although some authors start the sequence from 1 and 1 or sometimes (as did Fibonacci) from 1 and 2. Starting from 0 and 1, the first few values in the sequence are:

   0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144.
2. Write a Program to print the product of even numbers from 1 to N where N is the number inputted by the user.
3. Write a Program to count the number of digits in a number N using a recursive method.
4. Write a Program to print the sum of digits of a number N using a recursive method.
5. Write a Program to reverse the string using a recursive method.
6. Write a Program to find the power of a number using a recursive method where base and exponent is entered by the user.

Solutions

1.

```
function printFibonacciNumbers(n)
{
    let f1 = 0, f2 = 1, i;

    if (n < 1)
        return;
    document.write(f1 + " ");
    for (i = 1; i < n; i++) {
        document.write(f2 + " ");
        let next = f1 + f2;
        f1 = f2;
        f2 = next;
    }
}
 printFibonacciNumbers(15);
```

2.

```
function evenProduct(n)
{
    let even = 1;

    for (let i = 1; i <= n; i++) {
         if (i % 2 == 0)
            even *= i;
    }

    document.write("Even Numbers Product : " + even + "<br>");
}

    let n = 7;
    evenProduct(n);
```

3.

```
function countDigit(n)
{
    let count = 0;
    while (n != 0)
    {
        n = Math.floor(n / 10);
        ++count;
    }
    return count;
}

 n = 7163813;
 document.write("Number of digits : "+ countDigit(n));
```

4.

```
function sum_of_digit(n)
{
    if (n == 0)
    return 0;
    return (n % 10 + sum_of_digit(parseInt(n / 10)));
}
var num = 12345;
var result = sum_of_digit(num);
document.write( "Sum of digits in "+ num +" is "+result );
```

5.

```
function reverse(str, len) {
            if (len == str.length) {
                return;
            }
            reverse(str, len + 1);

            document.write(str[len]);

        }
 let a = "RecurString";
 reverse(a, 0);
```

6.

```
var exponent = function(a, n)
{
   if (n === 0)
   {
    return 1;
    }
  else
  {
    return a * exponent(a, n-1);
  }
};
console.log(exponent(5, 2));
```