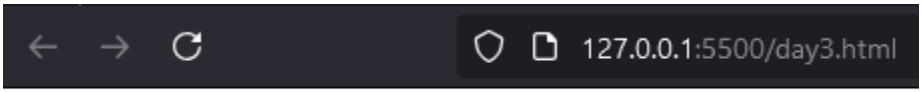
Task 1: Implement a function to calculate the factorial of a number using recursion

```
<!DOCTYPE html>
<html>
   <head>
      <title>
         task26
      </title>
   </head>
   <body>
      <script>
       function factorial(n,f=1)
       {
         if(n>0)
         {return f=n*(factorial(n-1));
       }
       else
       return f;}
       let n=prompt("enter to number to find factorial");
       document.writeln(factorial(Number(n)));
      </script>
   </body>
</html>
```

Output



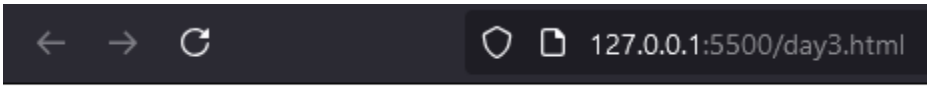
1.6507955160908452e+136

Task 2: Write a recursive function to find the nth Fibonacci number

```
<!DOCTYPE html>
<html>
   <head>
      <title>
         Tasks
      </title>
   </head>
   <body>
      <script>
       function fab(n)
```

```
        {
          if(n<=1)
          {return n;}
         else
         {return (fab(n-1)+fab(n-2));}
        }
         let n=prompt("enter to number to find factorial");
         document.writeln(fab(Number(n)));
        </script>
    </body>
</html>
```

Output



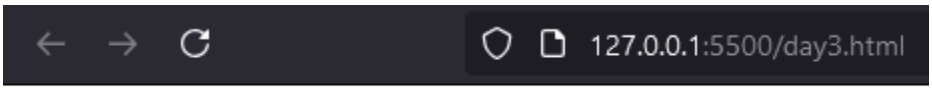
13

Task 3: Create a function to determine the total number of ways one can climb a staircase with 1, 2, or 3 steps at a time using recursion.

```
<!DOCTYPE html>
<html>
    <head>
        <title>
            Tasks
        </title>
    </head>
    <body>
        <script>
         function steps(n)
         {
            if (n === 0) { return 1; }
            if (n === 1) { return 1; }
            if (n === 2) { return 2; }
            return steps(n-1) + steps(n-2) + steps(n-3);
        }
         let n=prompt("enter to number to find factorial");
         if (n < 0) {
            document.writeln("Please enter a non-negative integer.");
        } else {
            document.writeln("The number of ways to climb " + n + " steps is: " +
steps(Number(n)));
```

```
    }
    </script>
  </body>
</html>
```

Output



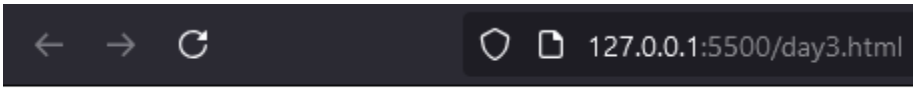
The number of ways to climb 4 steps is: 7

Task 4: Write a recursive function to flatten a nested array structure

```
<!DOCTYPE html>
<html>
  <head>
    <title>
      Tasks
    </title>
  </head>
  <body>
    <script>var res=[];
     function a(arr)
     {

       for(let i=0;i<arr.length;i++)
     {
       if(Array.isArray(arr[i]))
     {
       res=res.concat(arr[i]);
     }
     else{
      res.push(arr[i]);
     }
     }
     return res;
     }
     let f=[7,8,[3,44],[67,56,567]];
     document.writeln(a(f));
    </script>
  </body>
</html>
```

Output



7,8,3,44,67,56,567

Task 5: Implement the recursive Tower of Hanoi solution.

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Tower of Hanoi</title>
</head>
<body>
  <script>
    function towerOfHanoi(n, fromPeg, toPeg, auxPeg) {
        if (n === 1) {
            console.log(`Move disk 1 from ${fromPeg} to ${toPeg}`);
            return;
        }
        towerOfHanoi(n - 1, fromPeg, auxPeg, toPeg);
        console.log(`Move disk ${n} from ${fromPeg} to ${toPeg}`);
        towerOfHanoi(n - 1, auxPeg, toPeg, fromPeg);
    }
    towerOfHanoi(3, 'A', 'C', 'B');
  </script>
</body>
</html>
```

Output