

Answer on Question #63618, Programming & Computer Science | JavaScript

Question:

Make a javascript code for Horner's rule polynomial evaluation

Solution:

```
function horner(coeffs, x) {  
    return coeffs.reduce( // Reduce mean apply function (that passed as first argument)  
        to the array from left to right  
        function (acc, coeff) { return (acc * x + coeff) },  
        0); // Initial value == 0  
}  
// evaluate polynomial at x=3  
var x = 3;  
// -19*x^7 + 17*x^6 - 13*x^5 + 11*x^4 - 7*x^3 + 5*x^2 - 3*x^1 + 2*x^0  
var coeff = [-19, 17, -13, 11, -7, 5, -3, 2]  
// Evaluate and print result  
console.log(horner(coeff, x)); // ==> -31579
```

Example test RUN within HTML page:

```
<!DOCTYPE html>  
<html>  
  <head>  
    <title>Horner rule</title>  
    <script>  
      function horner(coeffs, x) {  
        return coeffs.reduce( // Reduce mean apply function (that passed as first argument) to the array from  
            left to right  
            function(acc, coeff) { return(acc * x + coeff) },  
            0); // Initial value == 0  
      }  
      // evaluate polynomial at x=3  
      var x = 3;  
      // -19*x^7 + 17*x^6 - 13*x^5 + 11*x^4 - 7*x^3 + 5*x^2 - 3*x^1 + 2*x^0  
      var coeff = [-19,17,-13,11,-7,5,-3,2]  
      // Evaluate and print result  
      console.log(horner(coeff, x)); // ==> -31579  
  
      function printPoly(coeff) {  
        s = ''  
        for(var i = 0; i < coeff.length; ++i) {  
          if( coeff[i] == 0 ) continue;  
          s += (coeff[i] > 0 ? "+" : "") + coeff[i] + "*x^" + (coeff.length - i - 1);  
        }  
        return s;  
      }  
  
      function run() {  
        var coeff = prompt("Enter polynomial coefficients (from highest to lowest degree) separated by coma:  
", "-19,17,-13,11,-7,5,-3,2").split(",")  
        var x = prompt("Enter point at witch you want to evaluate your polynomial, x=", "3");  
        for(var i = 0; i < coeff.length; ++i) {  
          coeff[i] = parseInt(coeff[i], 10);  
        }  
        document.write("Your polynomial: " + printPoly(coeff) + "<br>");  
        document.write("Your point x=" + x + "<br>");  
        document.write("Evaluation result=" + horner(coeff, x) + "<br>");  
      }  
  
    </script>  
  </head>  
  <body onload="run();">  
  </body>  
</html>
```