<!DOCTYPE html>

<html>

<head>

<title>CSCI 6314 Lab 3 and 4 by Ulvi Bajarani</title>

<script>

function PostfixCalculator() {

var emptyStringRegex = /\S+/g; // RegEx to remove all spaces to format the expression.

var isNumberRegex = /^-?[\d.]+(?:e-?\d+)?$/; // RegEx to check the format of the expression.

var PostfixExpression = prompt("JavaScript Prompt:\n\nEnter the postfix problem."); // Prompt to enter the expression.

var PostfixExpressionSeparator = PostfixExpression.match(emptyStringRegex); // to split the input string.

var FirstRow = "<td colspan=\"1\"><b>Postfix Problem: " // Printing the first row.

var top = 0; // defining the top for the arrays.

var stack = new Array(); // creating the stack.

// Check if the stack is empty.

function isStackEmpty() {

return (top === 0);

}

// Push element into the stack.

function push(element) {

top = top + 1;

stack[top] = element;

}

// Pop element from the stack.

function pop() {

element = stack[top];

top = top - 1;

return element;

}

// Printing the next parts of the first row.

for (let i = 0; i < PostfixExpressionSeparator.length; i++) {

// String to number operation.

if ((typeof PostfixExpressionSeparator[i] === 'string') && (PostfixExpressionSeparator[i].match(isNumberRegex))) {

PostfixExpressionSeparator[i] = Number.parseFloat(PostfixExpressionSeparator[i]);

}

// The print of the table (the middle and the end).

if ((i + 1) != PostfixExpressionSeparator.length) {

FirstRow += (PostfixExpressionSeparator[i] + " ");

} else {

FirstRow += (PostfixExpressionSeparator[i] + " </b></td>");

}

}

// Insert the first row to the table.

document.getElementById("History").insertRow(-1).innerHTML = FirstRow;

// Starting the calculation and the print.

for (let i = 0; i < PostfixExpressionSeparator.length; i++) {

// If the type is number.

if (typeof PostfixExpressionSeparator[i] === 'number') {

// Pushing the value.

push(PostfixExpressionSeparator[i]);

document.getElementById("History").insertRow(-1).innerHTML = "<td colspan=\"1\">Pushed " + PostfixExpressionSeparator[i] + " </td>";

} else if (typeof PostfixExpressionSeparator[i] === 'string') {

// Popping the value and the operations.

let operand1 = pop();

let operand2 = pop();

if ((PostfixExpressionSeparator[i] === "+")) {

let result = operand2 + operand1;

document.getElementById("History").insertRow(-1).innerHTML = "<td colspan=\"1\">Popped " + operand1 + " " + operand2 + " +" + " </td>";

push(result);

document.getElementById("History").insertRow(-1).innerHTML = "<td colspan=\"1\">Pushed " + result + " </td>";

} else if ((PostfixExpressionSeparator[i] === "-")) {

let result = operand2 - operand1;

document.getElementById("History").insertRow(-1).innerHTML = "<td colspan=\"1\">Popped " + operand1 + " " + operand2 + " -" + " </td>";

push(result);

document.getElementById("History").insertRow(-1).innerHTML = "<td colspan=\"1\">Pushed " + result + " </td>";

} else if ((PostfixExpressionSeparator[i] === "\*")) {

let result = operand2 \* operand1;

document.getElementById("History").insertRow(-1).innerHTML = "<td colspan=\"1\">Popped " + operand1 + " " + operand2 + " \*" + " </td>";

push(result);

document.getElementById("History").insertRow(-1).innerHTML = "<td colspan=\"1\">Pushed " + result + " </td>";

} else if ((PostfixExpressionSeparator[i] === "/")) {

let result = operand2 / operand1;

document.getElementById("History").insertRow(-1).innerHTML = "<td colspan=\"1\">Popped " + operand1 + " " + operand2 + " /" + " </td>";

push(result);

document.getElementById("History").insertRow(-1).innerHTML = "<td colspan=\"1\">Pushed " + result + " </td>";

} else {

alert("Error: The operator is not defined");

location.reload();

}

}

}

// Insert the result.

document.getElementById("History").insertRow(-1).innerHTML = "<td colspan=\"1\"><b>The result of the operation is--> " + pop() + " </b></td>";

// Check if the stack is empty.

if (!(isStackEmpty())) {

alert("Error: The stack is not empty. I assume you have entered either more operators or numbers than required. Or some operators are not defined. Anyway, try again.");

location.reload();

}

}

</script>

</head>

<body onload="PostfixCalculator()">

<table border="1px" id="History"></table>

</body>

</html>



































