Аудиториски вежби 7

Интернет програмирање

Иван Китановски Бојан Илијоски Влатко Спасев



Полиња во JavaScript

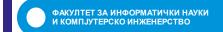
- JavaScirpt Arrays JARRAY
- Служат за чување на повеќе вредности во една променлива

■ Креирање на полиња

```
let cars = ["Saab", "Volvo", "BMW"];
или
let cars = new Array("Saab", "Volvo", "BMW");
```

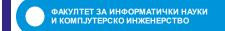
Полиња во JavaScript (2)

- Пристап до елементи
 - □ let cars = ["Saab", "Volvo", "BMW"];
 - □ console.log(cars[0]);
- Елементите може да бидат објекти
 - □ myArray[0] = Date.now;
 - □ myArray[1] = myFunction;
 - □ myArray[2] = myCars;
- Својства и методи
 - \square let x = cars.length; // број на елементи
 - □ let y = cars.sort(); // го сортира полето



Полиња во JavaScript (3)

- Додавање на елементи
 - □ let fruits = ["Banana", "Orange", "Apple", "Mango"да];
 - □ fruits.push("Lemon");
- Препознавање на полиња
 - □ let fruits = ["Banana", "Orange", "Apple",
 "Mango"];
 - □ fruits instanceof Array // returns true



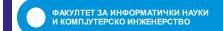
Пример 1

```
let days = ["Sunday", "Monday"];
alert(days.length); // => 2
let cars = [];
cars[1] = "Honda";
cars[3] = "Fiat";
alert(cars.length); // => 4
cars["six"] = "Volkswagen";
alert(cars.length); // => still returns 4
```



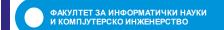
Пример 1 (2)

```
for (let i = 0; i < cars.length; i++) {
    if (cars[i] === undefined) // skip
        undefined elements
        continue;
    alert(cars[i]); // => Ford, BMW
}
```



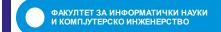
Пример 2

```
let twoDim = [];
for (let row = 0; row < 5; row++) {
        let oneDim = [];
        for (let col = 0; col < 5; col++) {
                 oneDim[col] = (row === col) ? 1 : 0; \frac{1}{0} or 1 (diag)
        twoDim[row] = oneDim;
console.log(twoDim[4][2]); // => 0
console.log(twoDim[3][3]); // => 1
console.log(twoDim); // =>[Array(5), Array(5), Array(5), Array(5), Array(5)]
console.log(twoDim[0]); //=> [1, 0, 0, 0, 0]
```



Пример 3

```
let days = ["Sunday", "Monday", "Tuesday", "Wednesday"];
delete days[2]; // => delete the element at index 2
alert(days[2]); // => undefined
alert(days.length); // => still 4
alert(days); // =>["Sunday", "Monday", empty, "Wednesday"]
```



Функции на низи

Method & Description

concat()Returns a new array comprised of this array joined with other array(s) and/or value(s).

every()Returns true if every element in this array satisfies the provided testing function.

filter() Creates a new array with all of the elements of this array for which the provided filtering function returns true.

forEach()Calls a function for each element in the array.

indexOf()Returns the first (least) index of an element within the array equal to the specified value, or -1 if none is found.

join() Joins all elements of an array into a string.

<u>lastIndexOf()</u>Returns the last (greatest) index of an element within the array equal to the specified value, or -1 if none is found.

map()Creates a new array with the results of calling a provided function on every element in this array.

pop()Removes the last element from an array and returns that element.

push()Adds one or more elements to the end of an array and returns the new length of the array.

reduce()Apply a function simultaneously against two values of the array (from left-to-right) as to reduce it to a single value.

reduceRight()Apply a function simultaneously against two values of the array (from right-to-left) as to reduce it to a single value.

reverse()Reverses the order of the elements of an array -- the first becomes the last, and the last becomes the first.

shift()Removes the first element from an array and returns that element.

slice() Extracts a section of an array and returns a new array.

some()Returns true if at least one element in this array satisfies the provided testing function.

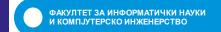
toSource()Represents the source code of an object

sort()Sorts the elements of an array

splice() Adds and/or removes elements from an array.

toString()Returns a string representing the array and its elements.

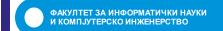
unshift() Adds one or more elements to the front of an array and returns the new length of the array.



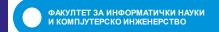
 Напишете JavaScript функција која како аргумент прима поле и параметар n, a како резултат ги враќа првите n елементи од полето

```
Влез:
console.log(first([],3));
console.log(first([7, 9, 0, -2],3));
console.log(first([7, 9, 0, -2],6));
console.log(first([7, 9, 0, -2],-3));

Излез:
[]
[7, 9, 0]
[7, 9, 0, -2]
[]
```

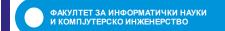


```
first = function(array, n) {
    if (array == null)
      return void 0;
    if (n == null)
      return array[0];
    if (n < 0)
      return [];
    return array.slice(0, n);
  };
console.log(first([7, 9, 0, -2]));
console.log(first([],3));
console.log(first([7, 9, 0, -2],3));
console.log(first([7, 9, 0, -2],6));
console.log(first([7, 9, 0, -2], -3));
```

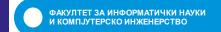


 Напишете JavaScript код кој ќе ги спои сите елементи во еден стринг

```
Влез:
myColor = ["Red", "Green", "White", "Black"];
Излез:
"Red,Green,White,Black"
"Red,Green,White,Black"
"Red+Green+White+Black"
```



```
myColor = ["Red", "Green", "White", "Black"];
console.log(myColor.toString());
console.log(myColor.join());
console.log(myColor.join('+'));
```



 Напишете JavaScript код кој прима број како влез и вметнува "-" помеѓу секои два парни броеви.

Влез:

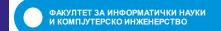
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Излез:

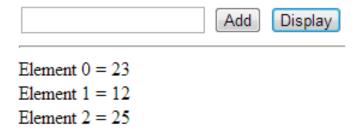
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```
let num = window.prompt();
let str = num.toString();
let result = [str[0]];

for(let x=1; x<str.length; x++) {
   if((str[x-1]%2 === 0)&&(str[x]%2 === 0)) {
      result.push('-', str[x]);
   } else {
      result.push(str[x]);
   }
} console.log(result.join(''));</pre>
```



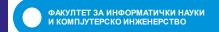
 Направете веб страница каде преку текстуално поле и копче "Add" се внесуваат елементи во поле. При клик на копче "Display" полето се печати на страницата.



```
<!DOCTYPE html>
<html>
<head>
<meta charset=utf-8 />
<title>JS</title>
<style>
body {padding-top:50px}
</style>
</head>
<body>
<input type="text" id="text1"></input>
<input type="button" id="button1" value="Add" onclick="</pre>
add element to array();"></input>
<input type="button" id="button2" value="Display" oncli</pre>
ck="display_array();"></input>
<div id="Result"></div>
</body>
</html>
```

Решение (2)

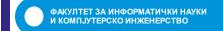
```
let x = 0;
let array = Array();
function add element to array()
 array[x] = document.getElementById("text1").value;
 alert("Element: " + array[x] + " Added at index " + x);
 X++;
 document.getElementById("text1").value = "";
function display array()
   let e = "<hr/>";
   for (let y=0; y<array.length; y++)</pre>
     e += "Element " + y + " = " + array[y] + " < br/>";
   document.getElementById("Result").innerHTML = e;
```



 Напишете функција во JavaScript која како аргументи прима две полиња, а како резултат враќа унија од двете полиња

```
Пример: console.log(union([1, 2, 3], [100, 2, 1, 10])); [1, 2, 3, 10, 100]
```

```
function union(arra1, arra2) {
  if ((arra1 == null) || (arra2==null))
    return void 0;
  let obj = {};
 for (let i = arra1.length-1; i >= 0; -- i)
     obj[arra1[i]] = arra1[i];
  for (let i = arra2.length-1; i >= 0; -- i)
     obj[arra2[i]] = arra2[i];
  let res = [];
 for (let n in obj) {
    if (obj.hasOwnProperty(n))
      res.push(obj[n]);
  return res;
}
console.log(union([1, 2, 3], [100, 2, 1, 10]));
```



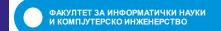
 Напишете функција во JavaScript која како аргументи прима две полиња, а како резултат ја враќа разликата помеѓу полињата (односно елементите кои им се различни)

```
Примери:
console.log(difference([1, 2, 3], [100, 2, 1, 10]));
["3", "10", "100"]

console.log(difference([1, 2, 3, 4, 5], [1, [2], [3, [[4]]],[5,6]]));
["6"]

console.log(difference([1, 2, 3], [100, 2, 1, 10]));
["3", "10", "100"]
```

```
function difference(arr1,arr2) {
 let a1= flatten(arr1,true);
 let a2= flatten(arr2,true);
 let a=[], diff=[];
 for(let i=0;i<a1.length;i++)</pre>
            a[a1[i]]=false;
 for(i=0;i<a2.length;i++)</pre>
            if(a[a2[i]]===false) {
                         delete a[a2[i]];
            } else a[a2[i]]=true;
 for(let k in a)
 diff.push(k);
 return diff;
let flatten = function(a, shallow, r){
  if(!r){ r = [];}
  if (shallow) {
            return r.concat.apply(r,a);
  for(i=0; i<a.length; i++){</pre>
            if(a[i].constructor == Array){
              flatten(a[i],shallow,r);
            }else{
              r.push(a[i]);
  }
  return r;
console.log(difference([1, 2, 3], [100, 2, 1, 10]));
console.log(difference([1, 2, 3, 4, 5], [1, [2], [3, [[4]]],[5,6]]));
console.log(difference([1, 2, 3], [100, 2, 1, 10]));
```



- Да се напише функција која ќе пополнува низа со вредности (број и карактер) според дадени параметри
- Пример

```
console.log(num_string_range('a', "z", 2));
["a", "c", "e", "g", "i", "k", "m", "o", "q", "s", "u", "w", "y"]
```

```
function num_string_range(start, end, step) {
  let range = [];
 if ((step === 0) || (typeof start == "undefined" || typeof end == "undefined") || (typeof start != typeof end))
    return false;
 if (end < start) {</pre>
    step = -step;
 if (typeof start == "number") {
   while (step > 0 ? end >= start : end <= start) {</pre>
      range.push(start);
      start += step;
    }
  } else if (typeof start == "string") {
   if (start.length != 1 || end.length != 1) {
      throw TypeError("Strings with one character are supported.");
    }
    start = start.charCodeAt(0);
    end = end.charCodeAt(0);
    while (step > 0 ? end >= start : end <= start) {</pre>
      range.push(String.fromCharCode(start));
      start += step;
    }
  } else {
    throw TypeError("Only string and number are supported");
  return range;
}
console.log(num_string_range('a', "z", 2)); //=> ["a", "c", "e", "g", "i", "k", "m", "o", "q", "s", "u", "w", "y"]
console.log(num_string_range("Z", "A", 2)); //=> ["Z", "X", "V", "T", "R", "P", "N", "L", "J", "H", "F", "D", "B"]
console.log(num string range(0, -5, 1)); //=> [0, -1, -2, -3, -4, -5]
console.log(num_string_range(0, 25, 5)); //=> [0, 5, 10, 15, 20, 25]
console.log(num string range(20, 5, 5)); //=> [20, 15, 10, 5]
```