

JAVASCRIPT III

IT1301 UX Design

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OVERVIEW

- Control Statement (Repeat)
- Using Array
- JavaScript Built-in Objects

CONTROL STATEMENTS (REPEAT)



```
while ( hungry==true) {  
    food=food+1;  
}
```

hungry !! EAT!

Still hungry ?! EAT!

Still hungry ?! EAT!

CONTROL STATEMENTS (REPEAT)



Counter initialization

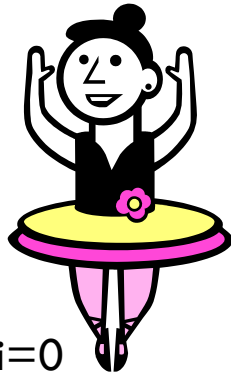
Counter update

```
for ( noOfhours=0; noOfhours < 8; noOfhours++) {  
    working=true;  
}
```

Condition checking

CONTROL STATEMENTS (REPEAT)

dancers is an array of dancer objects



```
for ( i=0; i < dancers.length; i++) {  
    dancers[i].dance();  
}
```

No of dancers

USING ARRAY

Declare an Array

```
var marks=[];
```



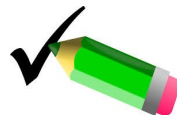
We use this

or

```
var marks=new Array(); // new Array(4);
```

Declare and initialize an Array

```
var marks=[45,60,90,100];
```



We use this

or

```
var marks=new Array(45,60,90,100);
```

JAVASCRIPT: ARRAY

Suppose I wanted to model a group of friends:

```
var friend1="Daniel";
```

```
var friend2="John";
```

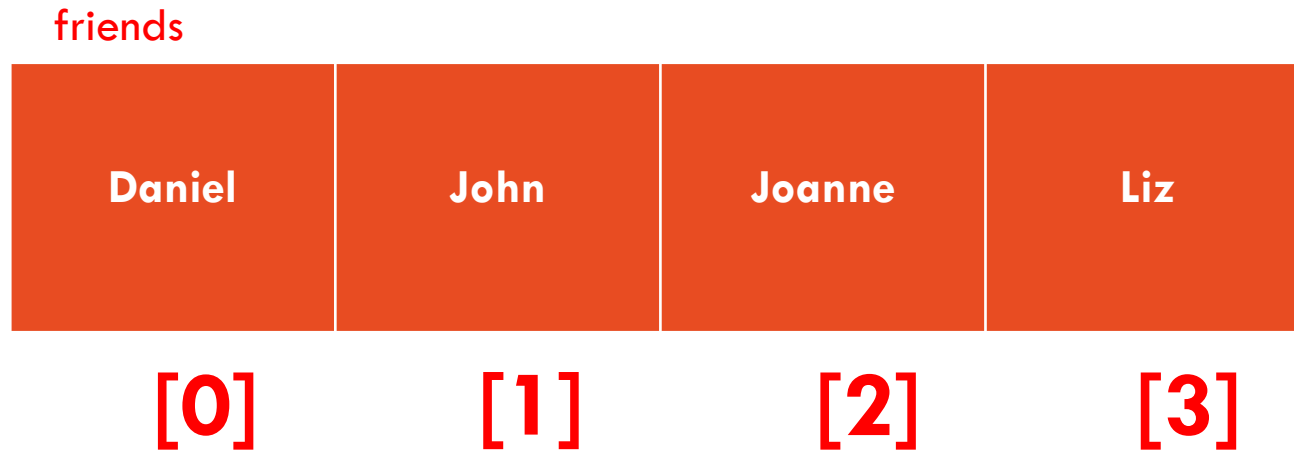
```
var friend3="Joanne";
```

```
var friend4="Liz";
```

The list for friend may grow... what is a better way to group them?

JAVASCRIPT:ARRAY

```
var friends=["Daniel","John","Joanne","Liz"];
```



Array are indexed starting at 0. Every element has a corresponding number(index)

JAVASCRIPT ARRAY : RETRIEVING

```
var marks=[80,85,75,65];
```

Retrieve Data From Array

```
var englishMark=makes[0];
```

```
var friends=["Daniel","John","Joanne","Liz"];
```

```
var bestFriend=friends[2];
```

JAVASCRIPT ARRAY : UPDATE

Assign value/update an array item

```
marks[0]=80;
```

```
marks[1]=90;
```

```
friends[0]="David";
```

JAVASCRIPT ARRAY : ADD NEW DATA

```
var friends=["David","John","Joanne","Liz"];
```

David	John	Joanne	Liz
0	1	2	3

```
Friends[4]="Nicole";
```

David	John	Joanne	Liz	Nicole
0	1	2	3	4

JAVASCRIPT ARRAY : CREATE/INITIALIZE

Create a new friends array with no friends

```
var friends = [];
```



We use this

Or

```
var friends = new Array() //uncommon
```

JAVASCRIPT ARRAY : SIZE

```
var marks=[80,85,75,65];
```

Array property

marks.length tells the size of the array

```
document.write("number of marks "+marks.length);
```

```
for (var i=0; i<marks.length; i++){  
    console.log(marks[i]);  
}
```

JAVASCRIPT ARRAY EXAMPLE (QN 1)

```
<script>
    var students=["Ali","Ben","Cathy","David"];
    document.write("<ol>");
    for (var i=0; i<students.length; i++) {
        document.write("<li>" + students[i] + "</li>");
    }
    document.write("</ol>");
</script>
```

1. Ali
2. Ben
3. Cathy
4. David

JAVASCRIPT ARRAY METHODS

Use push to add to the end of the array

```
var colors = ["red", "orange", "yellow"];  
colors.push("green");
```

Elements in colors become:

```
["red", "orange", "yellow", "green"]
```

JAVASCRIPT ARRAY METHODS

Use **pop** to remove the last element in an array

```
var colors = ["red", "orange", "yellow", "green"];  
colors.pop();
```

Elements in colors become:

```
["red", "orange", "yellow"]
```


JAVASCRIPT ARRAY METHODS

Use unshift to add to the front of the array

```
var colors = ["red", "orange", "yellow"];  
colors.unshift("green");
```

Elements in colors become:

```
["green", "red", "orange", "yellow"]
```

JAVASCRIPT ARRAY METHODS

Use shift to remove the first element in an array

```
var colors = ["red", "orange", "yellow"];
```

```
colors.shift();
```

Elements in colors become:

```
["orange", "yellow"]
```

JAVASCRIPT ARRAY EXAMPLE (QN 2, 3)

```
<script>

var numbers=[];

numbers.push(80);

numbers.push(60);

numbers.push(40);

var total=0;

for (var i=0; i<numbers.length; i++){

    document.write(numbers[i]+"<br>");

    total=total+numbers[i];

}

document.write("<p>total of all numbers is "+

total+"</p>");

</script>
```

80
60
40
total of all numbers is 180

JAVASCRIPT ARRAY EXAMPLE

Joining the array elements

```
<script>
var chars=["A","p","p","l","e"];
var fruits=["apple","orange","banana"];
document.write("<h1>" + chars.join("") + "</h1>");
document.write("<h1>" + fruits.join("+") + "</h1>");
</script>
```

Apple

apple+orange+banana

JAVASCRIPT OBJECTS

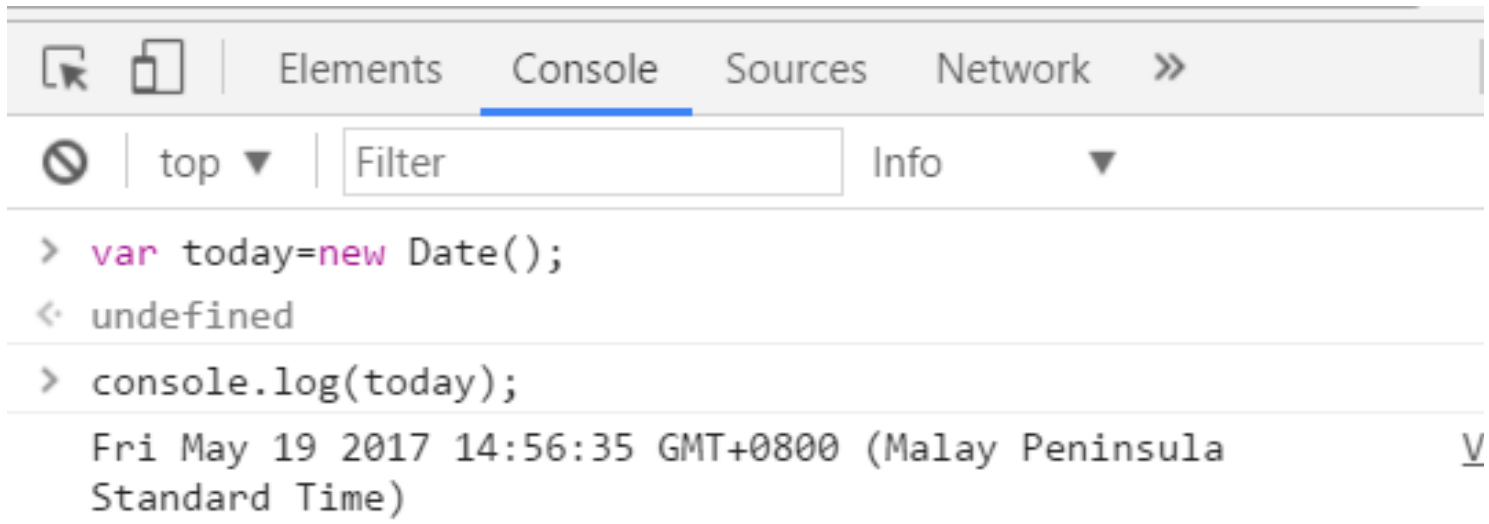
JavaScript comes with a number of built-in objects for the convenience of programmers, such as

- **Array** Provide efficient way of store & manipulate data
- **Date** Store and work with dates and time
- **Math** Access to useful math functions or operations
- **String** Provide efficient way of store & manipulate data

JAVASCRIPT DATE OBJECT

Example:

```
var today=new Date();  
console.log(today);
```



DEFINE JAVASCRIPT OBJECT: CREATE/INITIALIZE

JavaScript objects are containers for **named values** called properties.

```
var myCar = new Object();
```

Or

```
var myCar = {};
```



JAVASCRIPT OBJECT

Assign **properties** to the object

```
myCar.make = "Ford";
```

```
myCar.model = "Mustang";
```

```
myCar.year = 1969;
```

Now myCar has the attribute make, model and year with the values

```
console.log(myCar);
```

```
Object {make: "Ford", model: "Mustang", year: 1969}
```


JAVASCRIPT OBJECT

Properties of object can also be accessed using the bracket notation:

```
myCar["make"] = "Ford";
```

```
myCar["model"] = "Mustang";
```

```
myCar["year"] = 1969;
```

RETRIEVE OBJECT PROPERTIES (QN 4B)

Example:

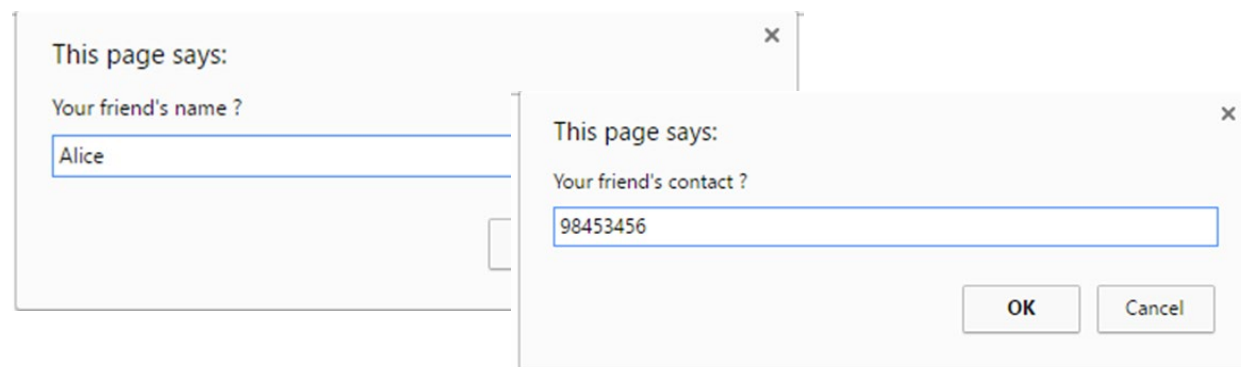
```
for (var p in myCar) {    // for each of the properties in myCar
    document.write(myCar[p]);
}
```

JAVASCRIPT OBJECT

```
<script>
var friend={};
var input_name=prompt("Your friend's name ?");
var input_contact=prompt("Your friend's contact ?");
friend.name=input_name;
friend.contact=input_contact;

for (var info in friend) {
    document.write(info+": "+friend[info]+"<br>");
}
</script>
```

name:Alice
contact:98453456



DECLARE AND INITIALIZE AN OBJECT (QN 4A)

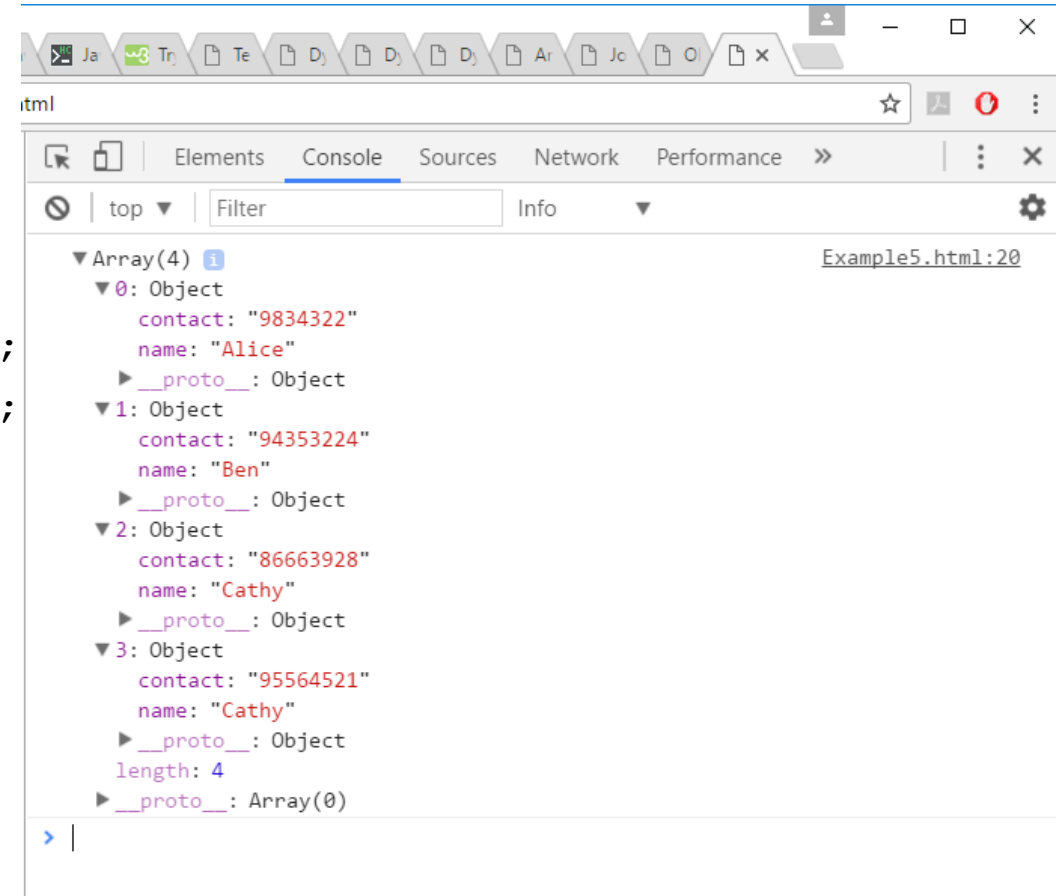
```
var myCar = {"make":"Ford", "model":"Mustang", "year":1969};
```

ARRAY OF OBJECTS

```
<script>
var friend1={"name":"Alice","contact":"9834322"};
var friend2={"name":"Ben","contact":"94353224"};
var friend3={"name":"Cathy","contact":"86663928"};
var friend4={"name":"Cathy","contact":"95564521"};

var allFriends=[];
allFriends.push(friend1);
allFriends.push(friend2);
allFriends.push(friend3);
allFriends.push(friend4);

console.log(allFriends);
</script>
```



DECLARE AND INITIALIZE AN ARRAY OF OBJECTS

```
var allMyCars=[  
    {"make":"Ford", "model":"Mustang", "year": 1969 },  
    {"make":"Toyota", "model":"Camry", "year": 2014 },  
    {"make":"Subaru", "model":"XV", "year": 2016 }  
];
```

JAVASCRIPT ARRAY VS OBJECT (QN 5)

```
var names=["David","John","Joanne","Liz"];
```

David	John	Joanne	Liz
names[0]	[1]	[2]	[3]

```
var scores=[80,85,75,65];
```

80	85	75	65
scores[0]	[1]	[2]	[3]

```
var students = [ ]; var student={"name":"David", "score":80}
```

name:David Score:80			
students[0]	[1]	[2]	[3]