

# Using Objects

Objects, properties, primitive and reference types

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1. Write functions for working with shapes in standard Planar coordinate system
  - ◆ Points are represented by coordinates  $P(X, Y)$
  - ◆ Lines are represented by two points, marking their beginning and ending
    - ◆  $L(P_1(X_1, Y_1), P_2(X_2, Y_2))$
  - ◆ Calculate the distance between two points
  - ◆ Check if three segment lines can form a triangle

2. Write a function that removes all elements with a given value

```
var arr = [1, 2, 1, 4, 1, 3, 4, 1, 111, 3, 2, 1, "1"];  
arr.remove(1); //arr = [2, 4, 3, 4, 111, 3, 2, "1"];
```

- ♦ Attach it to the array class
  - ♦ Read about prototype and how to attach methods
3. Write a function that makes a deep copy of an object
    - ♦ The function should work for both primitive and reference types
  4. Write a function that checks if a given object contains a given property

```
var obj = ...;  
var hasProp = hasProperty(obj, "length");
```

5. Write a function that finds the youngest person in a given array of persons and prints his/hers full name
- Each person have properties `firstname`, `lastname` and `age`, as shown:

```
var persons = [  
  {firstname : "Gosho", lastname: "Petrov", age: 32},  
  {firstname : "Bay", lastname: "Ivan", age: 81}, ...];
```

6. Write a function that groups an array of persons by age, first or last name. The function must return an associative array, with keys - the groups, and values - arrays with persons in this groups
- Use function overloading (i.e. just one function)

```
var persons = {...};  
var groupedByFname = group(persons, "firstname");  
var groupedByAge = group(persons, "age");
```