Solution  Objects and Prototypes

- Exercises are given every week on the PL page of the SCG website (http://scg.unibe.ch/teaching/pl)
- Solutions to each assignment must be sent to mohammadreza.hazhirpasand@inf.unibe.ch
- The solutions of the assignments are to be delivered before every Thursday at 11 PM. Solutions handed in later than the specified time will not be accepted. In case of serious reasons send an e-mail to mohammadreza.hazhirpasand@inf.unibe.ch

Exercise (6 points)

1. You should implement the Person prototype which has the following characteristics: (3 pts)

   (a) The name property which is accessible by other objects of this prototype.
   (b) The password property which cannot be accessed by other objects of this prototype.
   (c) The counter property whose value is shared among all objects of this prototype.

You need to create two objects of this prototype in order to do the following tasks:

   (a) Show how to access the name property in both objects.
   (b) What output do you get if you try to access the password property? How can you correct it?
   (c) How to access the counter property? If you change the value of the counter property in one object, does it affect the property value on the second object?

Note: please only submit your JavaScript code

Answer:

```javascript
var person = function (nm) {
    this.name = nm
    var secret = "Secret";
    person.shared_secret = 25;

    this.getSecret = function () {
        return secret;
    }
    this.setSecret = function () {
        secret = "not secret";
    }
    this.getName = function () {
```
return this.name;
}
this.getAge = function() {
    return person.shared_secret;
};
this.growOlder = function () {
    person.shared_secret++;
}

    return this;
};

var person1 = new person("mh1");
var person2 = new person("mh2");
console.log(person1.name);
console.log(person2.name);
console.log(person2.secret);
console.log(person2.secret);
console.log(person1.getSecret());
person1.setSecret();
console.log(person1.getSecret());
console.log(person2.getSecret());

console.log(person1.getAge()); // 25
console.log(person2.getAge()); // 25
person1.growOlder();
console.log(person1.shared_secret)
console.log(person1.getAge()); // 26
console.log(person2.getAge()); // 26

console.log(person1.shared_secret);

2. A possible classification for animals is shown in Figure 1. When it comes to classify the platypus you realize that it nurses but it also spawns. Therefore, implement the class diagram shown in figure 1 including the poor platypus in Java Script. Use the Platypus.html file as skeleton for your implementation. (3 pts)

**Answer:**

var animal = {}
Animal

Mammal
  numberOfNipples
  nurse

Oviparus
  spawn

Dolphin
  swim

Snake
  crawl

platypus

Figure 1: Animal classification

```javascript
var mammal = Object.create(animal);
mammal.numberOfNipples = 2;
mammal.nurse = function () {
  alert("I am nursing");
}
mammal.getNumberofNipples = function(){
  alert(this.numberofNipples);
}

dolphin = Object.create(mammal);
dolphin.numberOfNipples = 4;
dolphin.swim = function() {
  alert("I am swimming");
}

var oviparus = Object.create(animal);
```
oviparus.spawn = function() {
  alert("I am spawning");
}

var snake = Object.create(oviparus);
snake.crawl = function() {
  alert("I am crawling");
}

var platypus = Object.create(mammal);
platypus.numberofNipples = 6;
platypus.spawn = oviparus.spawn;

function display(text) {
  document.getElementById("output").innerHTML += text + "\n";
}