BTI220- Assignment 1

Due: Sunday, Feb 16, 2014 @ 23:59

Objectives:

- Practice basic programming in JavaScript.
- Understand and apply the concepts of objects and prototype inheritance in JavaScript.

Task:

- Write a JavaScript program to solve a problem. Specification follows.
- This is an **INDIVIDUAL** assignment.

Specifications:

There are 30 students in a class.
Everybody in this class takes four (4) courses: BTP200, BTD210, BTI220, and BTC240.
Students can get marks for each course from 0 to 100, with 2 decimal for display.
Each course is taught by a teacher. (To make things easier, we also assume every teacher teaches only one course.)

Create two object prototypes: `student` and `teacher`. From these two object prototypes, construct 30 student object instances and 4 teacher object instances. The properties for each object are listed below:

Properties for object `student`:

- studName
- studentId
- courses (array of four courses)
- marks (array of marks for the four courses, parallel array to the array of courses)

Properties for object `teacher`:

- profName
- course
- office
- email

Input - `Student`**:**

- Ask user to repeatedly input (MAX 30 students) information for `student` objects (input values for all the properties for every object instance).
- Input name as "`!!!`" will stop input (even before finishing 30 students)
- Validate each mark as number in the range of [0 .. 100].

Note: for `student` object, since we assume everybody takes the same 4 courses, you can have a way to set (initialize) the values for courses once and do not need the user to input the same values for every student.

Input - `Teacher`:

- User finishes input all information for all 4 teachers.
- Validate email input ending with @senecacollege.ca

Calculation:

- Calculate the average mark for all the (4) courses for each student. Report the `student's` full information (i.e., studName, studentId, courses, marks) who has the highest average mark.

- Calculate the average mark for each course among all the students. Report the `teacher's` full information (i.e., profName, course, office, email) who teaches this course.

HINT: You can add more attribute(s)/ properties to each object (prototype) if needed.

Instruction:

Further explanation with example data as follows (you can have more or less or different data). Also note that the data is presented in table format just for explanation. You need to construct your own data structure (e.g., objects) in programming.

Table 1: Student

studName	studentId	courses	marks	Average
Ada	1001	BTP200, BTD210, BTI220, BTC240	67,65,70,75	69.25
Betty	1002	BTP200, BTD210, BTI220, BTC240	79, 89,90,87	86.25
Cindy	1003	BTP200, BTD210, BTI220, BTC240	90, 87, 96, 95	92
David	1004	BTP200, BTD210, BTI220, BTC240	94,86,98,87	91.25
Frank	1005	BTP200, BTD210, BTI220, BTC240	63,76,82,67	72
Average			78.6,80.6,87.2,82.2	

Note that, the gray column and row are the averages from your program. The example calculation is as follows:

For Ada: her average mark for all the (4) courses she takes is calculated as:

(67+65+70+75)/ 4 = 69.25

For course BTP200, the average mark for the class (the existing students, there are 5 students in this example) is calculated as:

(67+ 79+ 90+ 94+ 63) / 5 = 78.6

The conclusion from the above data, your program reports (with your own wording and format):

The student with the highest overall average is:
Student Name: Cindy,
Student ID: 1003,
courses: BTP200, BTD210, BTI220, BTC240
marks: 90, 87, 96, 95
average mark: 92

Table 2: Teacher

profName	course	office	email
Prof1	BTP200	Office1	Email1@senecacollege.ca
Prof2	BTD210	Office2	Email2@senecacollege.ca
Sunny	BTI220	T2095	Sunny.shi@senecacollege.ca
Prof4	BTC240	Office4	Email4@senecacollege.ca

Refer to `Student` information in Table 1, we conclude that the course BTI220 has the highest average mark for the whole class. Refer to Table 2, we find that BTI220 is taught by professor Sunny. So your program reports the information as follows (you can have your own different wording and format):

The course with the highest average mark is BTI220. It is taught by:
Prof Name: Sunny
Course: BTI220
Office: T2095
Email: sunny.shi@senecacollege.ca
Average mark: 87.2

Submission:

Blackboard (my.senecacollege.ca) -> Assignments -> A1.

Your submission will include the JavaScript source code (a1.js) and another file with screenshots for input and output.

Academic Policy:

Seneca's Academic Policy will be strictly enforced.
http://www.senecacollege.ca/academic-policy/index.html

Student Oath:

A signed declaration of honesty must be included as the comment in the beginning of your JavaScript code.

```
I declare that this is wholly my own work in accordance with Seneca
Academic Policy.  No part of this work has been copied manually or
electronically from any other source (including web sites) or
distributed to other students.

Name  _____________________   Student ID _________________
```

Grading:

This assignment is worth 8% of your final grade.