INST630 - Introduction to Programming for the Information Professional

Assignment 2

(Refer to Canvas for due date.)

- Please submit your answers as separate .js and .html files (not in a single zip file, not with any other extension) via Canvas (ELMS) using the link on the Assignment 2 page by the deadline. Name your files as outlined in each question.

- Make sure you include all sub-tasks for each script; otherwise you may lose points.

- Follow the instructions closely, and use the approaches suggested in the questions; otherwise, you may lose points. For example, if a question asks for an array (or a user-defined function, etc.) to be used, and you do not use an array (or a user-defined function, etc.), you will lose points even if your script provides the required functionality. If the question asks for an array of objects, and you used a different structure, you will lose points, etc.

- Contact the instructor if you think there is an error in any of the questions, or if you feel more clarification is needed.

- This and all remaining assignments are individual-work. You may discuss with others about how to approach a question, or how to structure your scripts overall, but each student must develop their own code. Copying and pasting others' code would constitute academic misconduct. As required by University of Maryland regulations, all cases of misconduct are reported to the Office of Student Conduct irrespective of scope and circumstances.

- Feel free to seek input from the instructor and the course TA, as needed. You can work with the instructor and the course TA whenever you get stuck, or you are not sure that what you are doing is the correct approach to building these scripts. Please attach the relevant scripts to your messages, even if the scripts do not work.

- There are three questions in this assignment, and each contributes differently towards the grade on this assignment, as stated next to each question. Questions start on the next page.

Q.1) (35 points) Develop a pair of HTML and JavaScript files that do the following:

- The JavaScript file
  - creates an array that holds eight objects that represent the planets in the solar system; each object represents a planet with the following attributes:
    - name,
    - position with respect to the Sun, (e.g., Earth is 3, Mars is 4, ...),
    - time to complete its orbit around the Sun in Earth years, (e.g., Earth is 1, Mars is 1.88, etc.), and
    - number of natural satellites, (e.g., Earth has 1, Mars has 2, etc.).

    (See table below for data).

  - when accessed by the HTML file, lists all of the planet data held in the array of objects outlined above, displaying one line per planet by making use of a loop structure. (Hint: Each iteration of the loop should produce one line of information about a planet). Below is a possible output structure you can use, with values pulled from the objects in bold type. (*Bold typed values here are for your reference only; it is not required that those values are in bold font in the output generated by your script*).

"...
...
Earth is planet #**3** from the Sun. Time to complete its orbit is **1** earth year(s). It has **1** natural satellite(s).
Mars is planet #**4** from the Sun. Time to complete its orbit is **1.88** earth year(s). It has **2** natural satellite(s).
...
..."

- The HTML file serves as the container, calling the JavaScript file and displaying the messages about the planets.

Name your files yourlastname_a2_q1.js and yourlastname_a2_q1.html

Optional exercise for Q1 (not for grade, not required): Develop a CSS file that would provide a better look-and-feel. Feel free to add images, etc., if you like.

Planet Data

Planet name	Position with respect to the Sun	Time to complete orbit around the Sun in Earth years	Number of natural satellites
Mercury	1	0.24	0
Venus	2	0.62	0
Earth	3	1	1
Mars	4	1.88	2
Jupiter	5	11.86	67
Saturn	6	29.46	62
Uranus	7	84.32	27
Neptune	8	164.79	14

I do not claim that the information presented in this table is completely accurate. However, please use this information for the assignment, and do not correct information that you find inaccurate.

Q.2) (30 points) Starting with the files you built for Q1, develop a pair of HTML and JavaScript files that do the following:

- The JavaScript file
    - creates an array that holds eight objects that represent the planets in the solar system; each object represents a planet with the following attributes:
        - name,
        - position with respect to the Sun, (e.g., Earth is 3, Mars is 4, ...),
        - length of orbit around the Sun in Earth years, (e.g., Earth is 1, Mars is 1.88, etc.), and
        - number of natural satellites, (e.g., Earth has 1, Mars has 2, etc.).

        (See table below for data).

    - asks for a numeric value between 1 and 8 (inclusive) from the user through a prompt; (use `window.prompt()` for this task);
    - checks whether the value entered is within range;

- if the value entered is a number within range, displays information about the planet that is at the chosen position from the Sun, pulling data held in the appropriate object from the array outlined above.
Here is a possible output structure you can use, with values pulled from the appropriate object in bold type. This assumes user entered "4" as the input value. (*Bold typed values here are for your reference only; it is not required that those values are in bold font in the output generated by your script*).

"`Mars is planet #4 from the Sun. Time to complete its orbit is 1.88 earth year(s). It has 2 natural satellite(s).`"

- if the value entered is not a number within range, displays an appropriate error message. Here is a possible message you can display when the input value is not within range:

"The value you entered is not within range. Please reload the page and enter a value that is within 1 and 8, inclusive."

- The HTML file serves as the container, calling the JavaScript file and displaying the messages about the planets.

Name your files yourlastname_a2_q2.js and yourlastname_a2_q2.html

Q.3)[1] (35 points) Revise and edit the pair of files you developed for Q2 as follows:

- The HTML file contains a form with a drop-down listing integers from 1 to 8 (inclusive)

- When the user picks a number on the drop-down and submits the form, the JavaScript file catches that value and uses it as input in place of the number entered via the prompt in the Q2 version of the script

- The rest of the functionality should stay the same as in Q2.

Name your files yourlastname_a2_q3.js and yourlastname_a2_q3.html

[1] You will be able to work on this question after the class session on Monday, October 15, during which we will cover HTML form handling in JavaScript.