CSCI 3300 Assignment 7

Total estimated time for this assignment: **12 hours**

When you see "Richard Ricardo" in the example screen captures, change it to **<your name>**.
When you see "Richard" in the example screen captures, change it to **<your first name>**.
If you do not put **<your name> / <your first name>** in the above mentioned fields, you will get **0 points** for the question(s).

No two students should submit webpages with exactly the same code, or same content, or same layout, or same color combination. If found, **both** students will get **0 points**.

Create a folder on your hard disk, name the folder **lastname_firstname_assignment7.** Save all the files from this assignment in this folder.

Use Firefox **Web Console** (Tools > Web Developer > Web Console) to help debugging JavaScript. All html (JavaScript) files must pass JavaScript validation at Firefox Web Console without any error, without any warning **(-2 points for each error, each warning**).

- Turn on your Firefox **Menu Bar** (Hint: right-click).
- Make sure your Firefox is up to date (Help > About Firefox).
- Turn on Web Console when you code (Tools > Web Developer > Web Console).
- Fix any error/warning immediately when you see them. Do NOT accumulate errors.

When you view page source in a web browser, **`<!DOCTYPE html>`** must be at the top of every page. In other words, all pages must be written in HTML5. **(-20 points** if not)

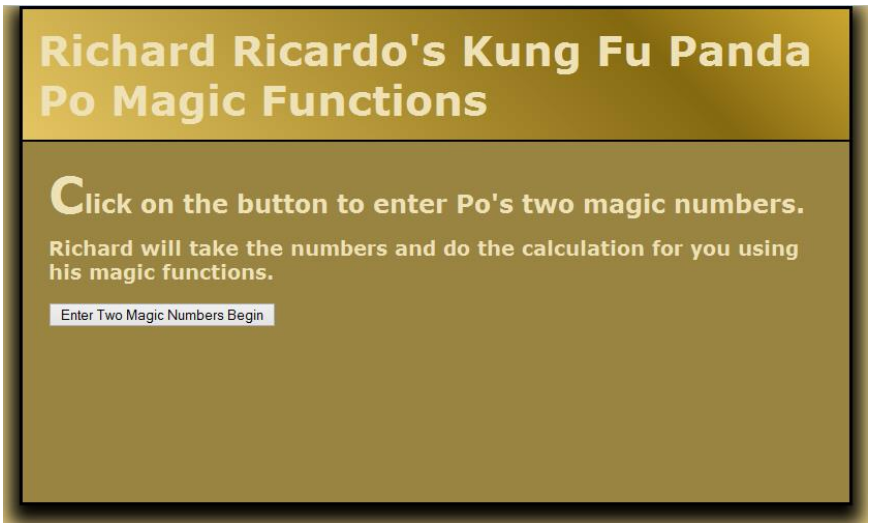
Question 1 – JavaScript Chapter 7 (25 points) **Estimated time: 3 hours**

- Save question 1 files in subfolder "**lastname_firstname_assignment7\q1**\". (-20 points if no JavaScript)
- Create a web page that displays the default information (example shown). (1 point each, total 3 points)
- The initial page and related outputs should look like the examples shown below. (4 points output format)
- Create your page using "**<your name>**'s Richard Ricardo's Kung Fu Panda Po Magic Functions**"** as the page title. Save the page as **index.htm**. Remember to document the html file with html comments. (1 point each, total 3 points)
- Allow the user to enter two magic numbers.
  - Make sure the numbers are **positive** (3 points)
- The JavaScript code should include **four functions** as described below (4 points each, total 16 points)
  - The main function **RichardMath()** describe the selections, prompts user for two numbers (save as variables **x** and **y**), and **call the other three functions**
  - Function **RichardExp(x,y)** calculate the value x^y, and **return** the result
  - Function **RichardArea(x,y)** calculate the area of a right triangle (area = ½ * base * height), and **return** the result

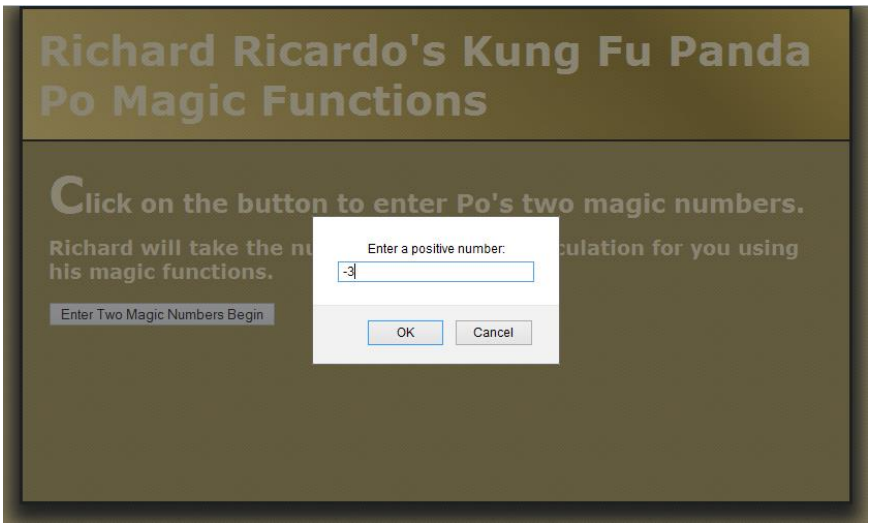
- Function **RichardDistance(x,y)** calculate the distance between two points **(x,y)** and **(0,0)**, and **return** the result. You may need the distance formula: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

- Create a css file named **style.css** to format index.htm by creating your own layout (no two students should have the same layout). Use css comments to document the css program. You can use **the same (or similar) css file(s)** to format all questions. (1 point each, total 2 points)

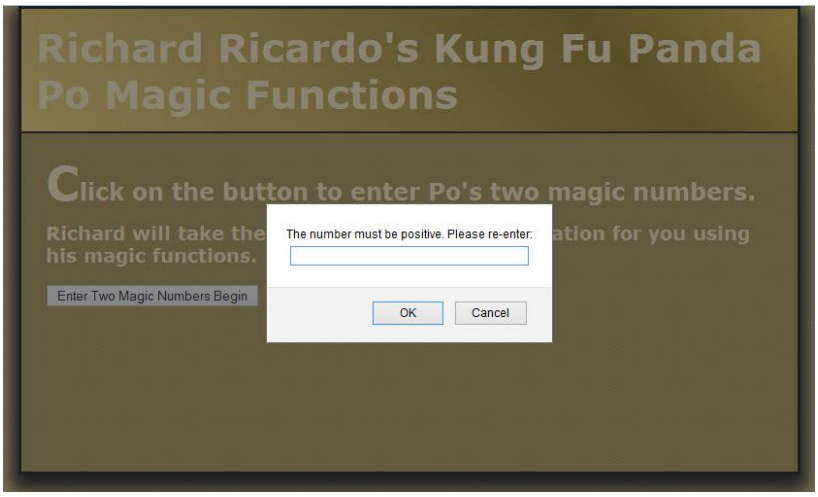
Example: Initial Page



Example: Input q1a

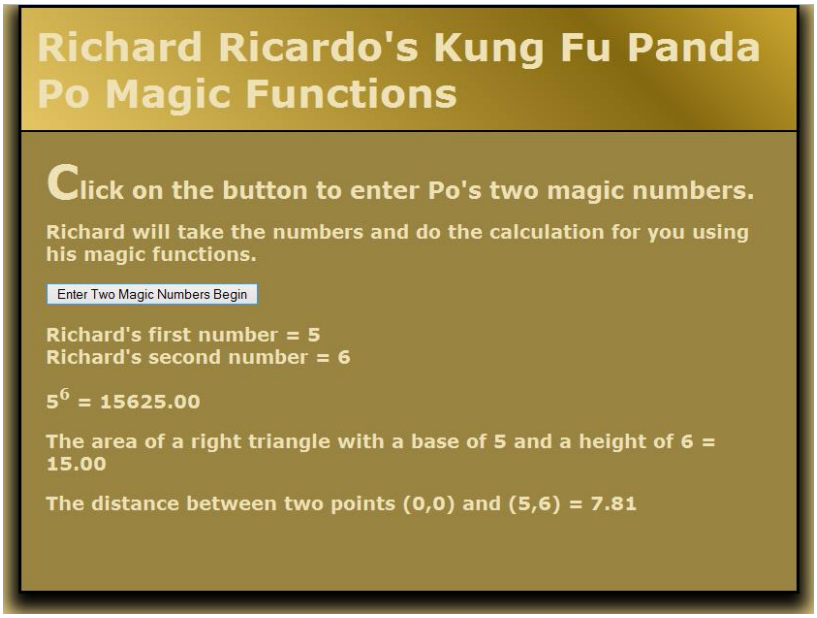


Example: Output q1a



Example: Input q1b

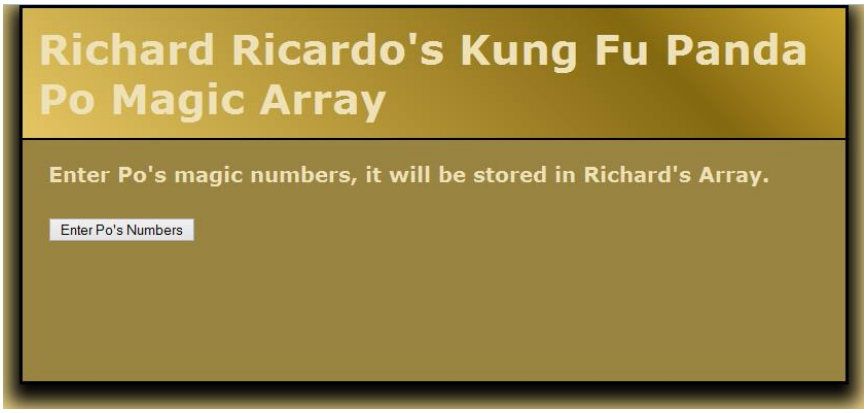
Example: Output q1b



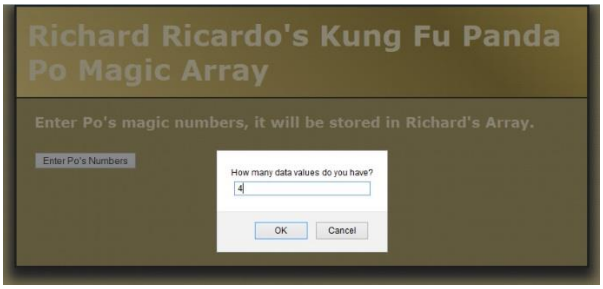
Question 2 – JavaScript Chapter 8 (25 points) **Estimated time: 3 hours**

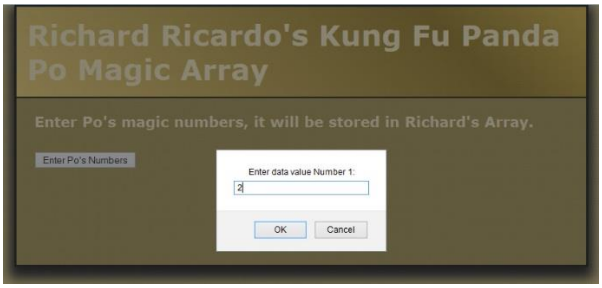
- Save question 2 files in subfolder "**lastname_firstname_assignment7\q2**". (-20 points if no JavaScript)
- Create a web page that displays the default information (example shown). (1 point each, total 3 points)
- The initial page and related outputs should look like the examples shown below. (2 points output format)
- Create your page using "**<your name>**'s Kung Fu Panda Po Magic Array**"** as the page title. Save the page as **index.htm**. Remember to document the html file with html comments. (1 point each, total 3 points)
- Write a program that asks the user for Po's magic numbers.
  - The magic numbers must be stored in an **array**. (-10 points if not in array)
  - The program needs to calculate the **mean (average)** of the numbers (from the **array**). (4 points)
  - The program needs to count the number of magic numbers that are **bigger than the mean** number (from the **array**). (3 points)
  - The program needs to count the number of magic numbers that are **smaller than the mean** number (from the **array**). (3 points)
- Create a css file named **style.css** to format index.htm by creating your own layout (no two students should have the same layout). Use css comments to document the css program. (1 point each, total 2 points)

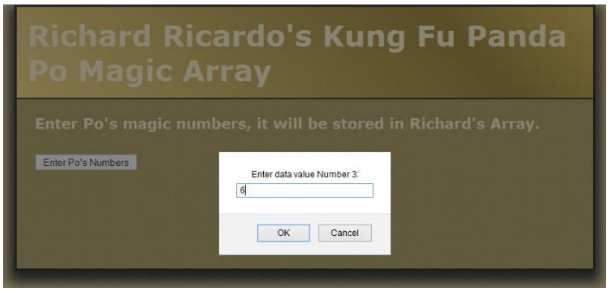
Example: Initial Page

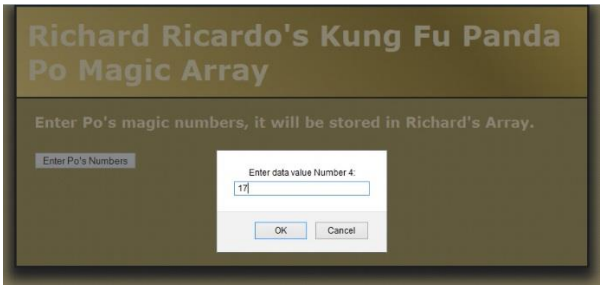


Example: Input q2

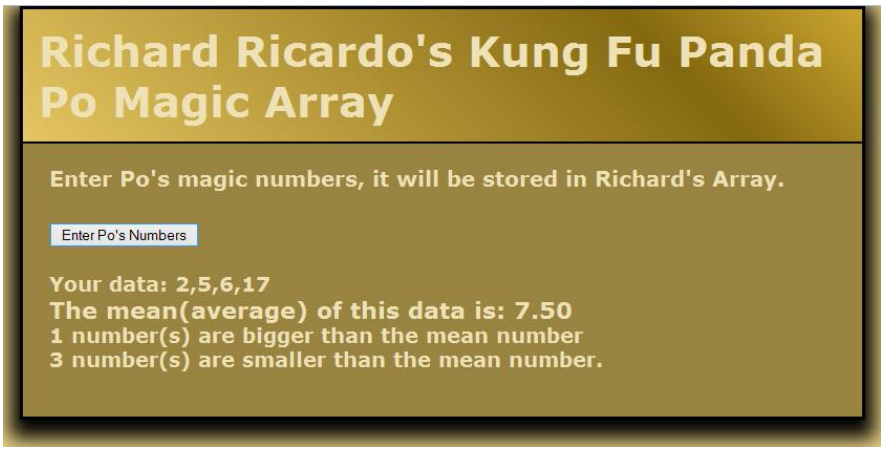








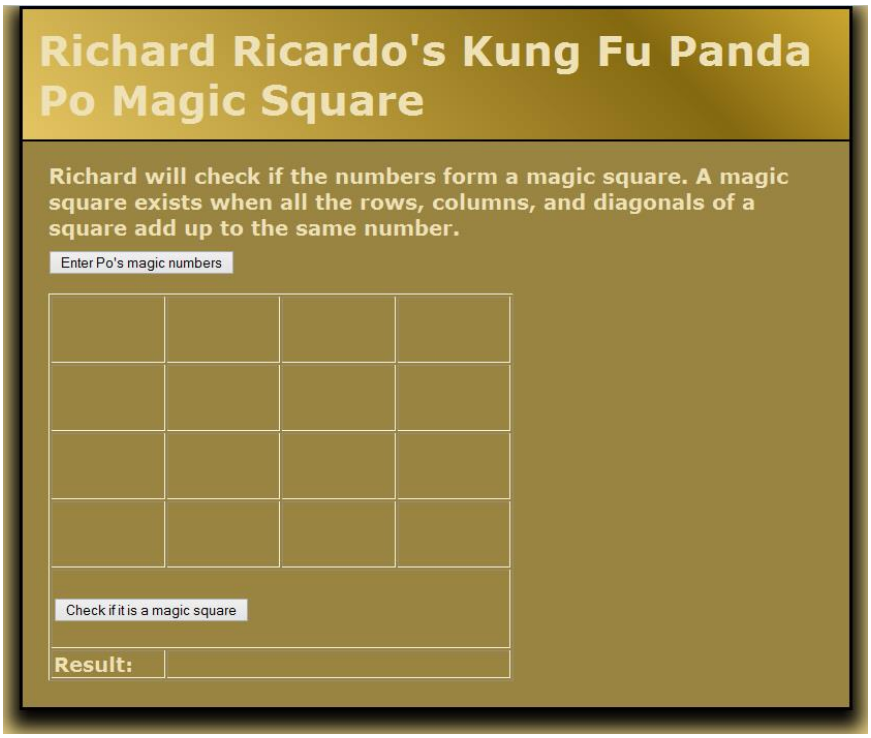
Example: Output q2



Question 3 – JavaScript Chapter 8 (25 points) **Estimated time: 3 hours**

- Save question 3 files in subfolder "**lastname_firstname_assignment7\q3**". (-20 points if no JavaScript)
- Create a web page that displays the default information (example shown). (total 7 points, 5 points for table)
- The initial page and related outputs should look like the examples shown below. (2 points output format)
- Create your page using "**<your name>**'s Kung Fu Panda Po Magic Square**"** as the page title. Save the page as **index.htm**. Remember to document the html file with html comments.(1 point each, total 3 points)
- Write a program that allows the user to enter Po's magic numbers.
    - Po's magic square is a **two-dimensional array** of **positive integers** in which the following is true:
        - The number of rows equals the number of columns.
        - **Every row**, **column**, and the **two diagonals** add up to the same number.
    - The web page must have a table that has **four rows** and **four columns**.
    - Allow the user to enter values for each cell.
    - Store the values in a **two-dimensional array** named **RichardMagic** and determine if it is Po's magic square. (-10 points if it is not a 2-D array, 8 points for magic square checking)
- Create a css file named **style.css** to format index.htm by creating your own layout (no two students should have the same layout). Use css comments to document the css program. (1 point each, total 2 points)

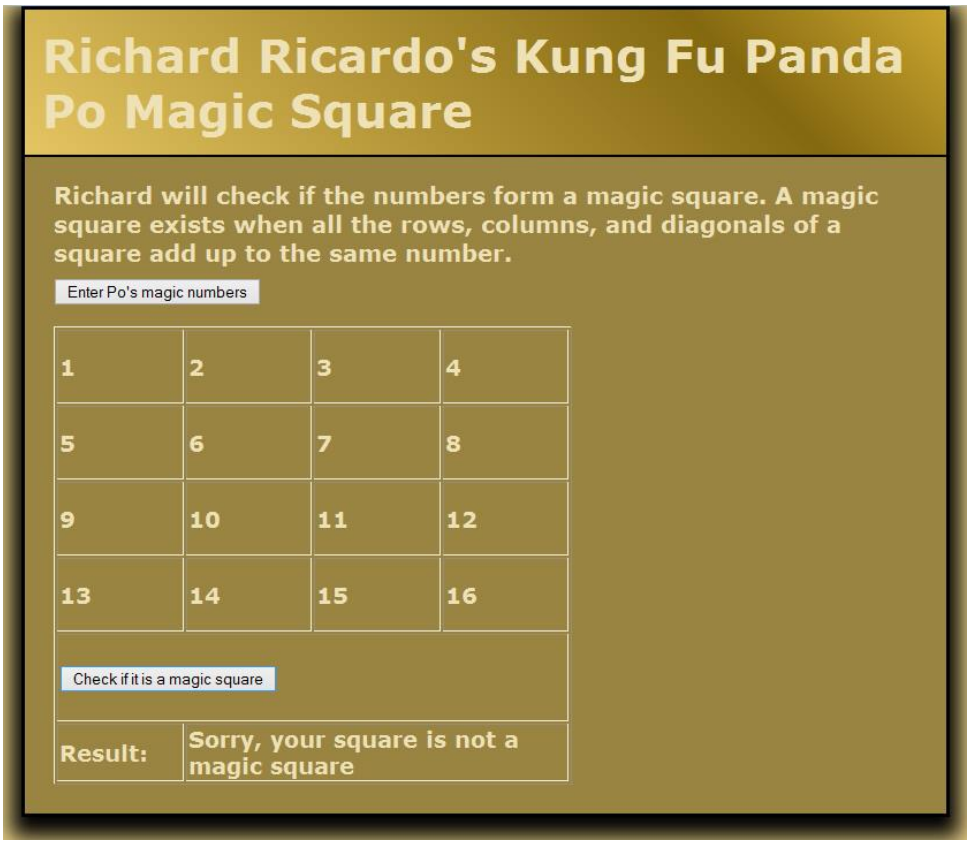
Example: Initial Page



Example: Input q3a

Skip screen captures…
Enter all 16 numbers as shown in the output screen.

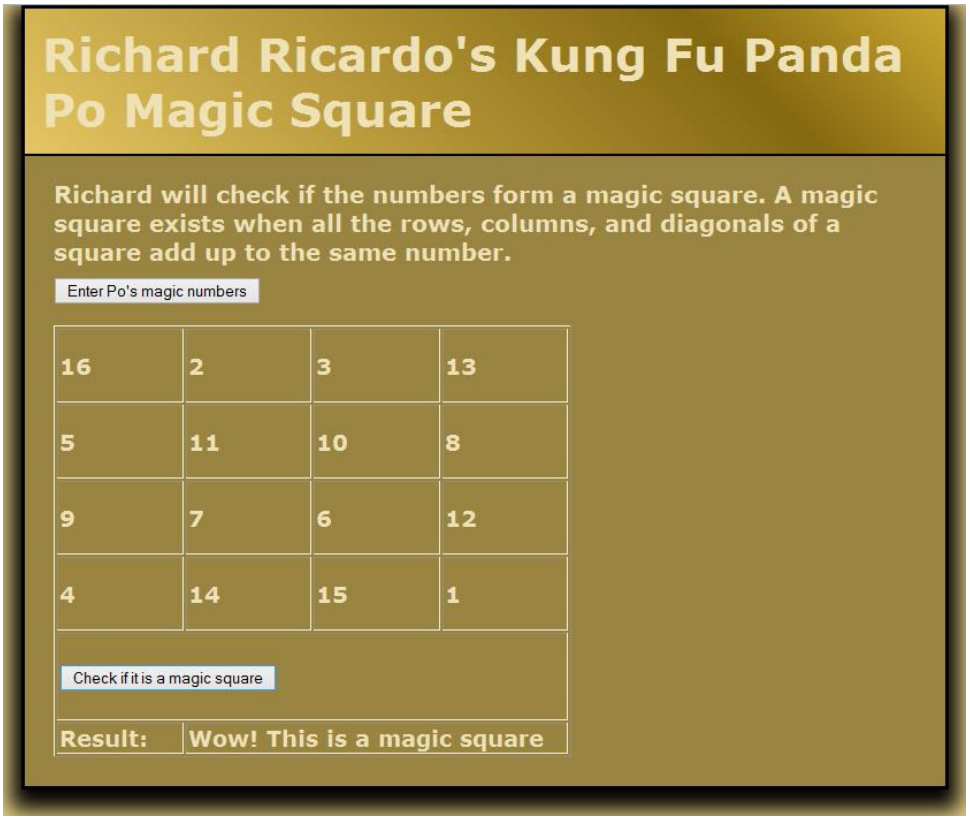
Example: Output q3a



Example: Input q3b

Skip screen captures…
Enter all 16 numbers as shown in the output screen.

Example: Output q3b



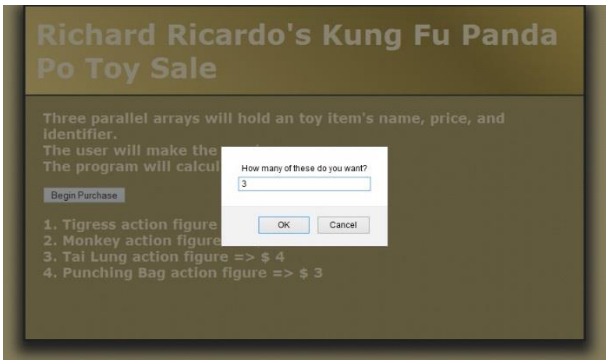
Question 4 – JavaScript Chapter 8 (25 points) **Estimated time: 3 hours**

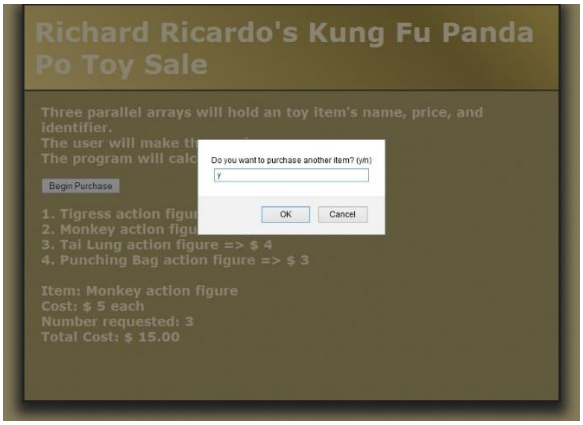
- Save question 4 files in subfolder "**lastname_firstname_assignment7\q4**". (-20 points if no JavaScript)
- Create a web page that displays the default information (example shown). (1 point each, total 3 points)
- The initial page and related outputs should look like the examples shown below. (4 points output format)
- Create your page using "**<your name>**'s Kung Fu Panda Po Toy Sale**"** as the page title. Save the page as **index.htm**. Remember to document the html file with html comments. (1 point each, total 3 points)
- Allow the user to buy Po's toys as listed on the page.
    - The page should include **parallel arrays** (at least two).
        - One **array** (**RichardItem)** holds the **names** of the toys. (-7 points if no array)
            - `var RichardItem = new Array("Tigress action figure", "Monkey action figure", "Tai Lung action figure", "Punching Bag action figure");`
        - One **array** (**RichardPrice)** holds the corresponding **prices** for each toy.
            - `var RichardPrice = new Array(6, 5, 4, 3);` (-7 points if no array)
    - Retrieve values from the **parallel arrays**, display the toys' names/prices as shown (hint: onload). (4 points)
    - The user should be prompted to select a toy and a quantity. (4 points)
        - The page will display the total cost for that quantity of the toy chosen (by using the values from the **parallel arrays**). (6 points)

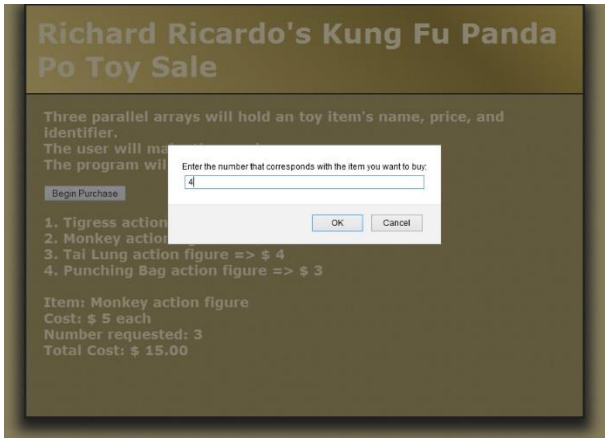
- Create a css file named **style.css** to format index.htm by creating your own layout (no two students should have the same layout). Use css comments to document the css program. You can use **the same (or similar) css file(s)** to format all questions. (1 point each, total 2 points)

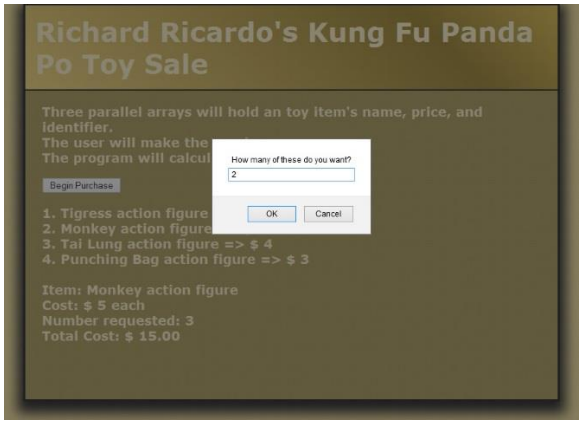
Example: Initial Page

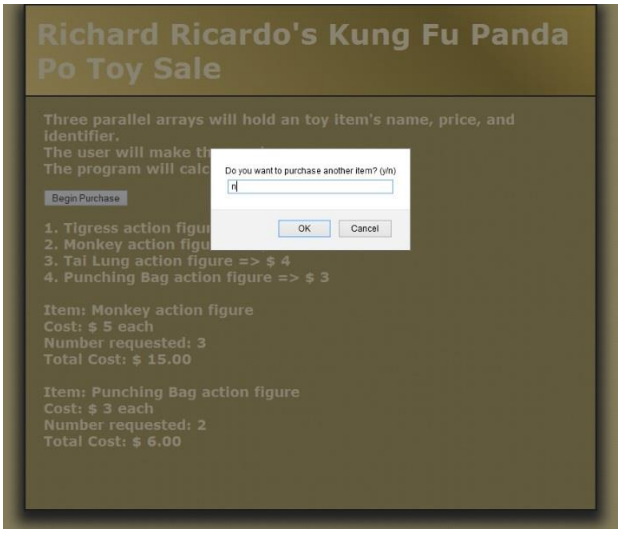
Example: Input q4



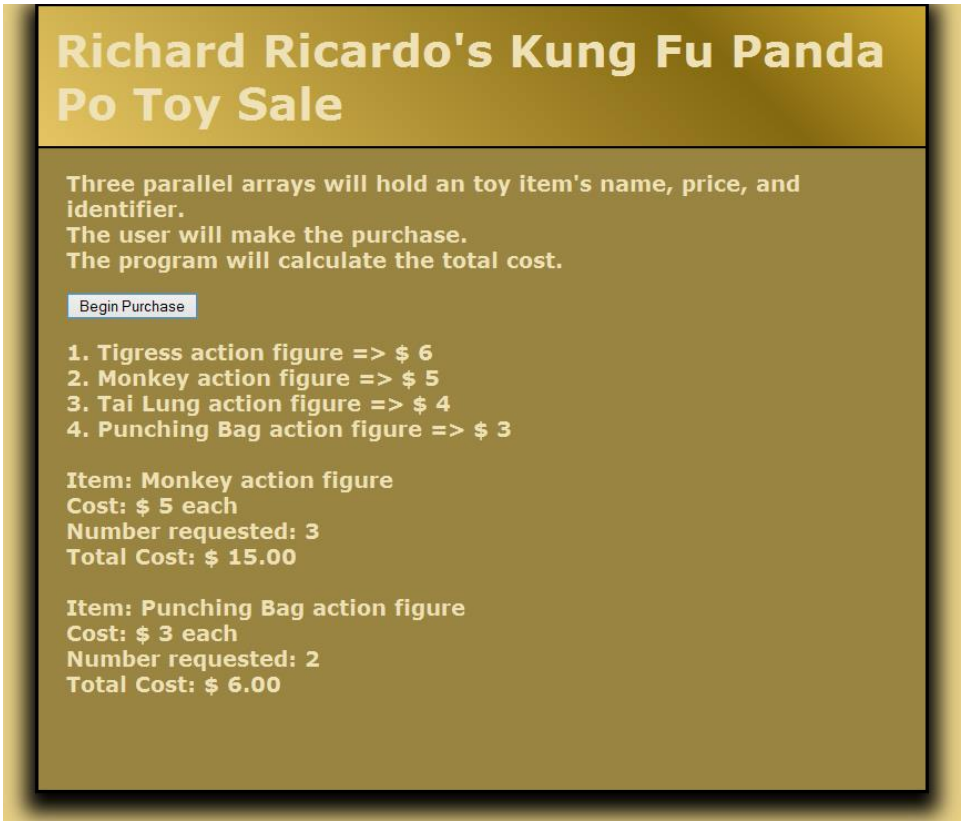








Example: Output q4



Important:

1. If you do not put **<your name> / <your first name>** in the above mentioned fields (as shown in the examples), you will get **0 points** for the question(s).
2. **No two students** should submit webpages with exactly the same cod, or the content, or same layout, or same color combination. If found, both students will get **0 points**.
3. When you view page source in a web browser, **`<!DOCTYPE html>`** must be at the top of every page. In other words, all pages must be written in HTML5. **(-20 points** if not)
4. All html files must pass html validation at http://validator.w3.org/ without any **error/warning** (with only 2 warnings). Use the validator's "File Upload" tab to check each file. **(-2 points** for each error/warning, **2 warnings allowed**)
5. All css files must pass css validation at http://jigsaw.w3.org/css-validator/ without any **error/warning**. **(-2 points** for each error/warning)
6. If your html file contains any css component, your html file must pass both html validation (3 above), and css validation (4 above) without any error.
7. If your files do not pass the validations, **2 points will be deducted** for **each error** (and each JavaScript warning) found.
8. Document (comment) your html files (`<!-- -->`), css files (`/* */`), and JavaScript files (`/* */`). **(-1 point** for each file with insufficient comments)

Submission instructions:

- You need to test the above document(s) in your web browser.
- Do screen capture(s) of the **initial page** and the related **output(s)**. Use any graphic editing software (e.g. Microsoft Paint, Adobe Fireworks, GIMP, or Microsoft Expression Design etc) to cut out the browser output (from the screen capture), paste them into a word document.
- For this assignment, you only need to do screen capture(s) of the **initial page** and the related **output(s)**, you do not need to do screen capture(s) of the input pages. Provide **2 different test cases** for each question. In other words, for **each question**, you need to have **1 initial page** screen capture and **2 related output(s)** screen captures. (-50 points for no test cases, -5 points for only 1 test case)
- Do screen capture(s) of html validation results and css validation results, cut and paste them into the word document. You do not need to do screen capture(s) of JavaScript Lint validation results.
- Save the word document as a pdf file.

You need to submit the following:
1. A pdf file containing the screen capture(s) of the web browser output (all html pages) and the screen capture(s) of all html validation results (from http://validator.w3.org/) and css validation results (from http://jigsaw.w3.org/css-validator/), name the file **lastname_firstname_assignment07.pdf**.
2. All html file(s), css file(s), and other related files (e.g. image files). Zip your file folder (lastname_firstname_assignment7) into a single zip file (or rar file) **lastname_firstname_assignment07.zip**.
In the above example, the zip file should contain the following files and subfolders. If there is any image, there should be a \images\ subfolder.

- lastname_firstname_assignment7\q1\index.htm
- lastname_firstname_assignment7\q1\style.css
- lastname_firstname_assignment7\q2\index.htm
- lastname_firstname_assignment7\q2\style.css // you may put style.css in a subfolder
- lastname_firstname_assignment7\q3\index.htm
- lastname_firstname_assignment7\q3\style.css
- lastname_firstname_assignment7\q4\index.htm
- lastname_firstname_assignment7\q4\style.css

Please submit an electronic copy (the above mentioned **two files**: .pdf and .zip) to D2L digital dropbox.

Grading guidelines (programming questions):
Your programs will be judged on several criteria, which are shown below.

- Correctness (50%): Does the program compile (run) correctly? Does the program do what it's supposed to do?
- Design (20%): Are operations broken down in a reasonable way (e.g. classes and methods)?
- Style (10%): Is the program **indented** properly? Do variables have **meaningful names**?
- Robustness (10%): Does the program handle erroneous or unexpected input gracefully?
- Documentation (10%): Do all program files begin with a **comment** that identifies the author, the course code, and the program date? Are all the classes, methods and data fields clearly **documented (commented)?** Are unclear parts of code **documented (commented)?** (Some items mentioned may not apply to some languages)

A program that does not compile (run) will get at most **50% of the possible points**.