

## CSCI 3300 Assignment 4

**Total estimated time** for this assignment: **7 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\_assignment4**. Save all the files from this assignment in this folder.

Create the following subfolders (in the folder lastname\_firstname\_assignment4): **q1, q2, q3**.

As a result, you should have the following folder (directory) structure for this assignment:

- lastname\_firstname\_assignment4\q1\
- lastname\_firstname\_assignment4\q2\
- lastname\_firstname\_assignment4\q3\

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.

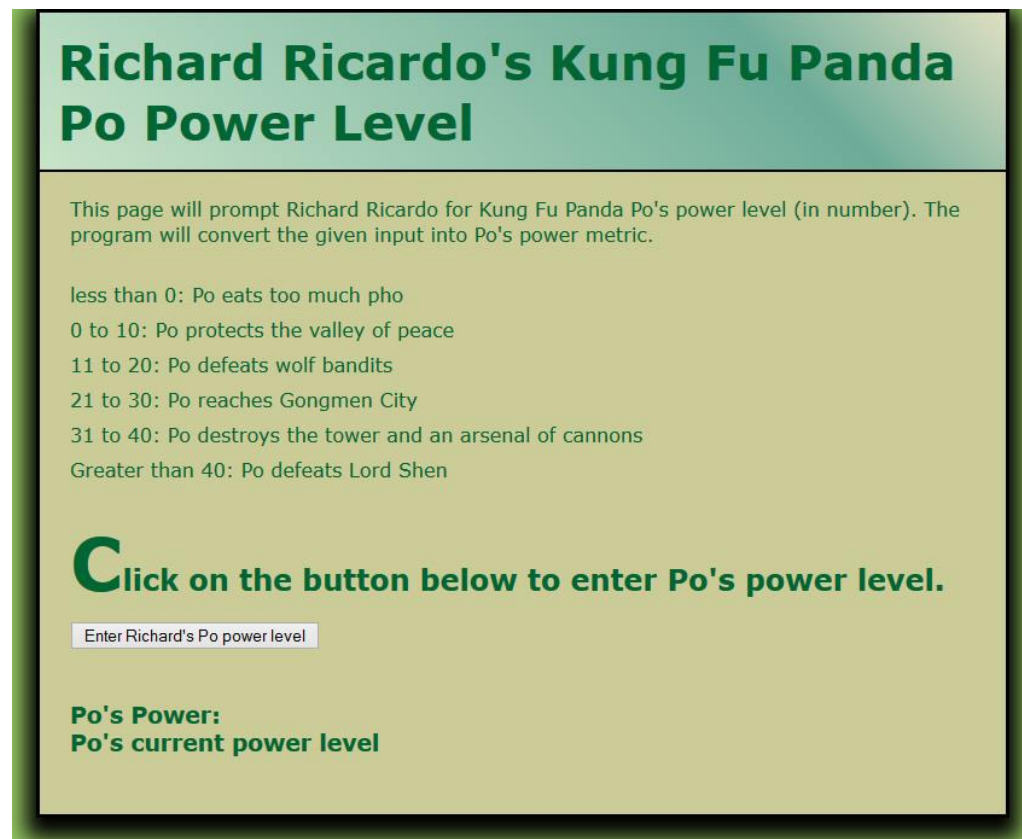
When you view page source in a web browser, **<!DOCTYPE html>** must be at the top of every page. In other words, all pages must be written in HTML5. (**-20 points** if not)



**Question 1 – JavaScript Chapter 3 (30 points)****Estimated time: 2 hours**

- Save question 1 files in subfolder “**lastname\_firstname\_assignment4\q1\**”.
- Create a web page that displays the default information (example shown).
- The initial page and related outputs should look like the examples shown below.
- Create your page using “<**your name**>’s Kung Fu Panda Po Power Level” as the page title. Save the page as **index.htm**. Remember to document the html file with html comments.
- **Prompt** the user to **enter a number** representing Kung Fu Panda Po's power level.
- The power level conversions are as follows:
  - less than 0: Po eats too much pho
  - 0 to 10: Po protects the valley of peace
  - 11 to 20: Po defeats wolf bandits
  - 21 to 30: Po reaches Gongmen City
  - 31 to 40: Po destroys the tower and an arsenal of cannons
  - Greater than 40: Po defeats Lord Shen
- 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.

Example: Initial Page



**Richard Ricardo's Kung Fu Panda Po Power Level**

This page will prompt Richard Ricardo for Kung Fu Panda Po's power level (in number). The program will convert the given input into Po's power metric.

less than 0: Po eats too much pho  
0 to 10: Po protects the valley of peace  
11 to 20: Po defeats wolf bandits  
21 to 30: Po reaches Gongmen City  
31 to 40: Po destroys the tower and an arsenal of cannons  
Greater than 40: Po defeats Lord Shen

**Click on the button below to enter Po's power level.**

Enter Richard's Po power level

**Po's Power:**  
**Po's current power level**



Example: Input q1a

## Richard Ricardo's Kung Fu Panda Po Power Level

This page will prompt Richard Ricardo for Kung Fu Panda Po's power level (in number). The program will convert the given input into Po's power metric.

less than 0: Po eats too much pho  
0 to 10: Po protects the valley of peace  
11 to 20: Po defeats wolf bandits  
21 to 30: Po reaches Gongmen City  
31 to 40: Po destroys the tower and an arsenal of cannons  
Greater than 40: Po defeats Lord Shen

**C**lick on the button below to enter Po's power level.

Enter Richard's Po power level

**Po's Power:**  
**Po's current power level**

Example: Output q1a

## Richard Ricardo's Kung Fu Panda Po Power Level

This page will prompt Richard Ricardo for Kung Fu Panda Po's power level (in number). The program will convert the given input into Po's power metric.

less than 0: Po eats too much pho  
0 to 10: Po protects the valley of peace  
11 to 20: Po defeats wolf bandits  
21 to 30: Po reaches Gongmen City  
31 to 40: Po destroys the tower and an arsenal of cannons  
Greater than 40: Po defeats Lord Shen

**C**lick on the button below to enter Po's power level.

Enter Richard's Po power level

**Po's Power:**  
**Po's power level is -15.**  
**Po eats too much pho.**



Example: Input q1b

## Richard Ricardo's Kung Fu Panda Po Power Level

This page will prompt Richard Ricardo for Kung Fu Panda Po's power level (in number). The program will convert the given input into Po's power metric.

less than 0: Po eats too much pho  
0 to 10: Po protects the valley of peace  
11 to 20: Po defeats wolf bandits  
21 to 30: Po reaches Gongmen City  
31 to 40: Po destroys the tower and an arsenal of cannons  
Greater than 40: Po defeats Lord Shen

**Click on the button below to enter Po's power level.**

Enter Richard's Po power level

**Po's Power:**  
**Po's current power level**

Enter po's power level:

OK Cancel

Example: Output q1b

## Richard Ricardo's Kung Fu Panda Po Power Level

This page will prompt Richard Ricardo for Kung Fu Panda Po's power level (in number). The program will convert the given input into Po's power metric.

less than 0: Po eats too much pho  
0 to 10: Po protects the valley of peace  
11 to 20: Po defeats wolf bandits  
21 to 30: Po reaches Gongmen City  
31 to 40: Po destroys the tower and an arsenal of cannons  
Greater than 40: Po defeats Lord Shen

**Click on the button below to enter Po's power level.**

Enter Richard's Po power level

**Po's Power:**  
**Po's power level is 25.**  
**Po reaches Gongmen City.**



**Question 2 – JavaScript Chapter 3 (35 points)****Estimated time: 2 hours**

- Save question 2 files in subfolder “**lastname\_firstname\_assignment4\q2\**”.
- Create a web page that displays the default information (example shown).
- The initial page and related outputs should look like the examples shown below.
- Create your page using “<**your name**>’s Kung Fu Panda Po Body Mass Index” as the page title. Save the page as **index.htm**. Remember to document the html file with html comments.
- Write a program that calculates and displays Kung Fu Panda Po’s body mass index (BMI). Po’s BMI is calculated with the following formula:
  - $BMI = weight \times 703 / height^2$
  - Weight is in pounds, and height is in inches
- The program should also indicate if Po has optimal weight, is underweight, is overweight, or is obese.
  - If Po's BMI is less than 18. Po is underweight
  - If Po's BMI is between 18 and 24.9. Po has normal weight
  - If Po's BMI is between 25 and 29.9. Po is overweight
  - If Po's BMI is greater than 30. Po is obese
- Note: The BMI reading is **not for humans**. It is **modified** for Po. Please do not use it for humans.
- Hint: You may use `toFixed()` JavaScript method to display a number with the exact number of decimals.
- 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.

Example: Initial Page

## Richard Ricardo's Kung Fu Panda Po Body Mass Index

This page will prompt Richard Ricardo for Kung Fu Panda Po's weight and height. The program will convert the given input into Po's body mass index, and will inform Richard is Po is overweight or underweight.

$BMI = weight \times 703 / height^2$   
 Weight in pounds. Height in inches.

If Po's BMI is less than 18. Po is underweight  
 If Po's BMI is between 18 and 24.9. Po has normal weight  
 If Po's BMI is between 25 and 29.9. Po is overweight  
 If Po's BMI is greater than 30. Po is obese

**C**lick on the button below to enter Po's weight and height.

Enter Richard's Po weight and height

**Po's BMI:**  
**Po's current Body Mass Index**



Example: Input q2a

## Richard Ricardo's Kung Fu Panda Po Body Mass Index

This page will prompt Richard Ricardo for Kung Fu Panda Po's weight and height. The program will convert the given input into Po's body mass index, and will inform Richard if Po is overweight or underweight.

BMI = weight x 703 / height<sup>2</sup>  
 Weight in pounds. Height in inches.

If Po's BMI is less than 18. Po is underweight  
 If Po's BMI is between 18 and 24.9. Po has normal weight  
 If Po's BMI is between 25 and 29.9. Po is overweight  
 If Po's BMI is greater than 30. Po is obese

**C**lick on the button below to enter Po's weight and height.

Enter Richard's Po weight and height

Po's BMI:  
 Po's current Body Mass Index

## Richard Ricardo's Kung Fu Panda Po Body Mass Index

This page will prompt Richard Ricardo for Kung Fu Panda Po's weight and height. The program will convert the given input into Po's body mass index, and will inform Richard if Po is overweight or underweight.

BMI = weight x 703 / height<sup>2</sup>  
 Weight in pounds. Height in inches.

If Po's BMI is less than 18. Po is underweight  
 If Po's BMI is between 18 and 24.9. Po has normal weight  
 If Po's BMI is between 25 and 29.9. Po is overweight  
 If Po's BMI is greater than 30. Po is obese

**C**lick on the button below to enter Po's weight and height.

Enter Richard's Po weight and height

Po's BMI:  
 Po's current Body Mass Index

Example: Output q2a

## Richard Ricardo's Kung Fu Panda Po Body Mass Index

This page will prompt Richard Ricardo for Kung Fu Panda Po's weight and height. The program will convert the given input into Po's body mass index, and will inform Richard if Po is overweight or underweight.

BMI = weight x 703 / height<sup>2</sup>  
 Weight in pounds. Height in inches.

If Po's BMI is less than 18. Po is underweight  
 If Po's BMI is between 18 and 24.9. Po has normal weight  
 If Po's BMI is between 25 and 29.9. Po is overweight  
 If Po's BMI is greater than 30. Po is obese

**C**lick on the button below to enter Po's weight and height.

Enter Richard's Po weight and height

**Po's BMI:  
 Po's weight is 190 pounds.  
 Po's height is 60 inches.  
 Po's BMI is 37.10.  
 Po is obese.**



Example: Input q2b

**Richard Ricardo's Kung Fu Panda Po Body Mass Index**

This page will prompt Richard Ricardo for Kung Fu Panda Po's weight and height. The program will convert the given input into Po's body mass index, and will inform Richard is Po is overweight or underweight.

BMI = weight x 703 / height<sup>2</sup>  
 Weight in pounds. Height in inches.

If Po's BMI is less than 18. Po is underweight  
 If Po's BMI is between 18 and 24.9. Po has normal weight  
 If Po's BMI is between 25 and 29.9. Po is overweight  
 If Po's BMI is greater than 30. Po is obese

**Click on the button below to enter Po's weight and height.**

Enter Richard's Po weight and height

**Po's BMI:**  
 Po's current Body Mass Index

**Enter po's weight:**  
 150  
 OK Cancel

**Enter po's height:**  
 69  
☐ Prevent this page from creating additional dialogs  
 OK Cancel

Example: Output q2b

**Richard Ricardo's Kung Fu Panda Po Body Mass Index**

This page will prompt Richard Ricardo for Kung Fu Panda Po's weight and height. The program will convert the given input into Po's body mass index, and will inform Richard is Po is overweight or underweight.

BMI = weight x 703 / height<sup>2</sup>  
 Weight in pounds. Height in inches.

If Po's BMI is less than 18. Po is underweight  
 If Po's BMI is between 18 and 24.9. Po has normal weight  
 If Po's BMI is between 25 and 29.9. Po is overweight  
 If Po's BMI is greater than 30. Po is obese

**Click on the button below to enter Po's weight and height.**

Enter Richard's Po weight and height

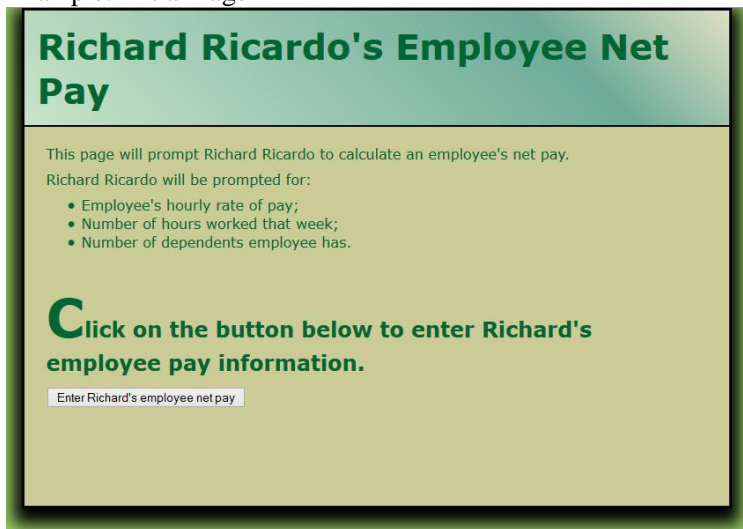
**Po's BMI:**  
**Po's weight is 150 pounds.**  
**Po's height is 69 inches.**  
**Po's BMI is 22.15.**  
**Po has normal weight.**



**Question 3 – JavaScript Chapter 3 (35 points)****Estimated time: 3 hours**

- Save question 3 files in subfolder “**lastname\_firstname\_assignment4\q3\**”.
- Create a web page that displays the default information (example shown).
- The initial page and related outputs should look like the examples shown below.
- Create your page using “<**your name**>’s Employee Net Pay” as the page title. Save the page as **index.htm**. Remember to document the html file with html comments.
- Write a program that calculated an employee’s net pay.
  - The program should prompt for
    - Hourly pay rate
    - Number of hours worked in a week
    - Number of dependents claimed
  - If the employee works more than 45 hours in a week, overtime is calculated at 1.5 times the regular hourly rate.
  - Taxes are then deducted from the gross pay as follows:
    - No dependents: tax rate is 25%
    - 1 to 3 dependents: tax rate is 20%
    - 4 to 6 dependents: tax rate is 10%
    - More than 6 dependents: tax rate is 5%
- 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.

Example: Initial Page



Input q3a	Output q3a and logic
Employee's hourly rate: \$30. Number of hours worked this week: 50 hours. Number of dependents: 3.	First 45 hours pay = $\$30 \times 45 \text{ hours} = \$1350$ Next 5 hours pay (overtime) = $\$30 \times 5 \text{ hours} \times 1.5 = \$225$ Gross pay = $\$1350 + \$225 = \$1575$ Tax rate for 3 dependents = 20% Tax deduction = $\$1575 \times 20\% = \$315$ Net pay = $\$1575 - \$315 = \$1260$ This employee earned: <u>\$1260</u> this week.
Input q3b	Output q3b and logic
Employee's hourly rate: \$40. Number of hours worked this week: 30 hours. Number of dependents: 4.	First 40 hours pay = $\$40 \times 30 \text{ hours} = \$1200$ Next 0 hours pay (overtime) = $\$30 \times 0 \text{ hours} \times 1.5 = \$0$ Gross pay = $\$1200 + \$0 = \$1200$ Tax rate for 4 dependents = 10% Tax deduction = $\$1200 \times 10\% = \$120$ Net pay = $\$1200 - \$120 = \$1080$ This employee earned: <u>\$1080</u> this week.



Example: Input q3a

The figure consists of four screenshots arranged in a 2x2 grid, showing the step-by-step input process for a web application titled "Richard Ricardo's Employee Net Pay".

- Top-left screenshot:** A dialog box prompts for "Enter employee's hourly rate: \$" with the value "30" entered. The background page lists the required inputs: hourly rate, hours worked, and number of dependents.
- Top-right screenshot:** A dialog box prompts for "Enter number of hours worked this week:" with the value "50" entered. The background page shows the first two inputs filled in.
- Bottom-left screenshot:** A dialog box prompts for "Enter number of dependents:" with the value "3" entered. The background page shows the first three inputs filled in.
- Bottom-right screenshot:** The final state of the application. The background page displays the calculated results: "Employee's hourly rate: \$30.", "Number of hours worked this week: 50 hours.", "Number of dependents: 3.", and "This employee earned: \$1260 this week." The dialog box is no longer present.

Example: Output q3a

The figure shows a single screenshot of the "Richard Ricardo's Employee Net Pay" application after all inputs have been processed. The page has a green header and a light green body.

**Header:** Richard Ricardo's Employee Net Pay

**Text:** This page will prompt Richard Ricardo to calculate an employee's net pay. Richard Ricardo will be prompted for:

- Employee's hourly rate of pay;
- Number of hours worked that week;
- Number of dependents employee has.

**Instruction:** Click on the button below to enter Richard's employee pay information.

**Button:** Enter Richard's employee net pay

**Results:**

- Employee's hourly rate: \$30.
- Number of hours worked this week: 50 hours.
- Number of dependents: 3.
- This employee earned: \$1260 this week.



Example: Input q3b

The first screenshot shows a dialog box titled "Enter employee's hourly rate: \$" with the value "40" entered. The second screenshot shows a dialog box titled "Enter number of hours worked this week:" with the value "30" entered. The third screenshot shows a dialog box titled "Enter number of dependents:" with the value "4" entered. All three screenshots show the same background page titled "Richard Ricardo's Employee Net Pay" with a list of prompts and a button labeled "Enter Richard's employee net pay".

Example: Output q3b

The screenshot shows the "Richard Ricardo's Employee Net Pay" page with the following output:

Employee's hourly rate: \$40.  
Number of hours worked this week: 30 hours.  
Number of dependents: 4.  
This employee earned: \$1080 this week.



**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 code, or same content, or same layout, or same color combination. If found, both students will get **0 points**.
3. All html files must pass html validation at <http://validator.w3.org/> without any **error/warning** (with only 1 warning). Use the validator's "File Upload" tab to check each file.
4. 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)
5. All css files must pass css validation at <http://jigsaw.w3.org/css-validator/> without any **error/warning**.
6. All html (JavaScript) files must pass JavaScript validation at Firefox **Web Console** (Tools > Web Developer > Web Console) without any **error**, without any **warning**.
7. 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.
8. If your files do not pass the validations, **2 points will be deducted** for **each error / warning** found.
9. Document (comment) your html files (**<!-- -->**), css files (**/\* \*/**), and JavaScript files (**/\* \*/**).

**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.
- 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\_assignment04.pdf**.
2. All html file(s), css file(s), and other related files (e.g. image files). Zip your file folder (lastname\_firstname\_assignment4) into a single zip file (or rar file) **lastname\_firstname\_assignment04.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\_assignment4\q1\index.htm
- lastname\_firstname\_assignment4\q1\style.css
- lastname\_firstname\_assignment4\q2\index.htm
- lastname\_firstname\_assignment4\q2\style.css // you may put style.css in a subfolder
- lastname\_firstname\_assignment4\q3\index.htm
- lastname\_firstname\_assignment4\q3\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**.