# Name:

# Date:

**Lab 12: Using Function Libraries**

**Archive the html files you created for each exercise, images and the images of your web page rendering and submit the resulting zip file at this Canvas location.**

**Your delivery to Canvas should contain the following files:**

1. **metric.html**
2. **convert1.js**
3. **MegaMetric.html**
4. **randSeq.html**
5. randSeqUserInput.html

**Make sure to have the Lab lecture notes available.**

**Before starting download and unzip the file archive for this lab. You should have some starter html files**

**EXERCISE 12.1:** (2 pts.) .

The library file **convert.js** containsthetwo functions discussed in the lecture notes: **InchesToCentimeters** and**CentimetersToInches.**

1 inch = 2.54 cm

1 cm = 1 inch /(2.54)

The files **starterMetric.html** loads the library file convert.js and calls the I**nchesToCentimeters** function when the button is clicked

* Load the supplied **starterMetric.html**  file in your browser.
* Verify that when you load the page in your browser that the behavior is as expected.
* Once you have verified the expected behavior, modify the page so that it can also perform the opposite conversion, from centimeters to inches.
* You will need to add a new text box, where the user can enter a number of centimeters, and a button and a function for carrying out the conversion. The converted value should be displayed in the same page division, outputDiv, as before.

Graphical user interface, text, application, chat or text message

Description automatically generated Graphical user interface, text, application

Description automatically generatedGraphical user interface, text, application

Description automatically generated

* Update the beginning comment section
* Update the title of the web page to indicate what the page does
* *Save your modified file as***metric.html**

**EXERCISE 12.2:** (2 pts.)

Add four new functions to your convert.js library file that convert between pounds and kilograms, and also between square feet and square meters.

Note that:

1 kilogram = 2.205 pounds

1 square meter = 10.764 square feet

1 pound = 1 kilogram/ (2.205)

1 square foot = 1 square meter/(10.764)

* Make sure to include comments regarding expected inputs and outputs
* *Save your modified file as***convert1.js**

**EXERCISE 12.3:** (2 pts.)

* Modify your metric.html page so that the user can convert values using each of the functions on your **convert1.js** library file.
* You will need to add four new text boxes, where the user can enter numbers for
  1. weight in pounds
  2. weight in kilograms
  3. area in square feet
  4. area in square meters
* Each of the text boxes need to have an associated button and a function for carrying out the conversion.
* The converted value should be displayed in the same page division, outputDiv, as before.
* *Save your modified file as***MegaMetric.html**

Graphical user interface, text, application, email

Description automatically generatedYour web page should look similar to the following images

Graphical user interface, text, application, email

Description automatically generatedGraphical user interface, text, application

Description automatically generatedGraphical user interface, text, application, email

Description automatically generated

Graphical user interface, text, application

Description automatically generated

**EXERCISE 12.4:** (2 pts.)

Many secure computer systems require the use of complex passwords that are difficult to guess. One way to create secure passwords is to generate them as random sequences of characters. While a hacker might be able to predict your password if it is the mane of your pet dog, it is unlikely that they would be able to guess a random password such as b8DV2!r

* Create a Web page named **randSeq.html** that generates a random 3-letter sequence.
* When the user clicks on a button, a function named GenerateSequence should be called to generate and display a sequence of 3 randomly chosen letters.
* The function should contain the following statement, which calls the RandomChar function from the random.js function library to select the random letters and concatenate them.

sequence=RandomChar('abcdefghijklmnopqrstuvwx') +

RandomChar('abcdefghijklmnopqrstuvwxyz') +

RandomChar('abcdefghijklmnopqrstuvwxyz') ;

* There are approximately 550 different three-letter words in the English language and 263 = 17,576 possible three-letter sequences. As a result, the likelihood of obtaining a word at random is 550/17,576, or close to 1/32.
* Use your Web page to generate 32 random three-letter sequences. It will be useful to modify your output to

document.getElementById('outputDiv').innerHTML =

document.getElementById('outputDiv').innerHTML +

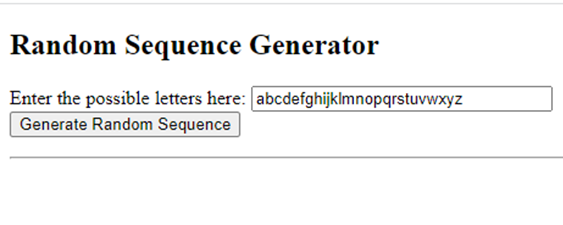
'<br>' + sequence;

This will display your three-letter sequences on separate lines.

1. **Did you obtain any words?**
2. **Would it surprise you if you didn't obtain any words, or obtained more than one? Explain**.
3. **Tired of clicking the button and counting the number of clicks**? Tune in when we discus **while loops!**

**EXERCISE 12.5:** (2 pts.)

* Modify your randSeq.html function so that the possible characters that make up the random sequence are **specified by the user**.
* *Save your modified file as*randSeqUserInput.html
* Your modified page(randSeqUserInput.html) should have a text box where the user can enter the possible characters.



* The GenerateSequence function should access the text box and use its contents as input to the RandomChar function calls.
* For example, if the user entered "abcdefghijklmnopqrstuvwxyz" in the text box, then the function should generate and display a random 3-letter sequence, as before. If the user enters "0123456789" in the text box, however, then the function should generate and display a random 3-digit sequence.
* The two most frequently used letters in the English language, ordered by frequency, are e, t, a, o, i, n, s, h, r, and d. As a result, if you generated random letter sequences using only these ten letters, you might expect to have a greater likelihood of obtaining words.
* Use your randSeqUserInput.html page to generate random 3-letter sequences using "etaionshrd" as the alphabet. Do you obtain more words than you did with the complete alphabet?