

COM214 - Spring 2021 Programming Assignment 3

Due: Thursday, March 25 by 11:55 PM.

In this assignment, you will design a web page that displays a multiplication table with a size determined by the user. The user will be asked to enter the product for one of the cells in the table within a given time period. Feedback about whether the answer the user entered was right or wrong will also be provided. A detailed description is given below.

Groups

For this assignment you will work in groups of three - please [see this pre-assigned sheet](#). Since it is a group assignment you are expected to meet several times for the design and planning, and then as much as necessary for coding and debugging. Make sure to allow ample time to work on the assignment before the deadline. Please submit one copy of the assignment per group, include all group member details as part of the comments at the top of your code files.

NB: Unlike in PA1, each group member will submit a separate documentation text file (eg. readme.txt) containing YOUR ASSESSMENT of percentages of ALL your team member's contributions to this assignment, and a description of your contrition and your coding process - eg. how was the assignment completion process for you, your team process from your perspective, etc. This is private and will be submitted separately on Moodle. Your individual contribution, cooperation and accountability will be taken into consideration in grading where necessary.

	<Student 1> Contribution (%)	<Student 2> Contribution (%)	<Student 3> Contribution (%)
Assessment by <Student Name>			

File names for submission

Submit the files **pa2.html**, **pa2.js** and **pa2.css** in a folder called PA2_your-username. The submission should be made by the first person listed in the group's list. **NB: All CSS and JavaScript code should be in the two external files.**

Your personal readme.txt documentation will be submitted on a separate submission link.


Code

When launched in a browser, the web page will show a title, an input field, and a button. There will also be a placeholder image (of your choice) below the input field and the button. The opening

appearance is shown below. Feel free to be creative and add any other design components, just don't clutter your page. You can use any Bootstrap elements here, take my screenshots as a boring quick demo to demonstrate the code functionality.

The Multiplication Table Challenge

Size:



When the user enters a number and clicks the button, a table will be created through your JavaScript code and displayed as shown below. The size of the table will be determined by the number entered by the user in the input field. Limit the user input to 20 or lower, and make sure non-numeric inputs are ignored or handled gracefully - also notify the user. All cells of the multiplication table will be populated with the products. Only one cell, randomly determined on each button click will be left blank (replaced by an input field). The user is expected to enter the correct value in this blank cell (input field). An example is shown below.

The Multiplication Table Challenge

Size:

CREATE TABLE

	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

5 SECONDS LEFT

Once the button has been clicked and the table is created, some text will be displayed below the table indicating the remaining time the table will stay visible on the page. The initial remaining time should be equal to the size (one side) of the table in seconds. The table and the text will be removed from the page after the timer expires and a message about the correctness (eg. with green or red text - feel free to be more creative and artistic here) of the input provided by the user will be displayed for 2-3 seconds (see the screenshots below). The page will then revert back to the initial appearance with the image.

The Multiplication Table Challenge

Size: CREATE TABLE

CORRECT. GOOD JOB!

In green

The Multiplication Table Challenge

Size: CREATE TABLE

INCORRECT. TRY AGAIN...

In red

The background colors of the cells will have a checkerboard pattern and will be animated to alternate between two colors. The change will be gradual and should be done with animation (over 4 – 8 seconds). If you don't remember this from your reading and class, you can refer back to the in-class examples from Class 10, and Chapter 14: JQuery on the sections [JQuery Animations, CSS

& JQuery together, and Timers and Intervals]. The following two snapshots show the different color patterns created by the animation. The widths of the table cells should be uniform across the columns. All elements on the page as well as the numbers in the table should be centered.

The Multiplication Table Challenge

Size:

	1	2	3	4	5	6
1	1	2	3	4	5	6
2	2	4	6		10	12
3	3	6	9	12	15	18
4	4	8	12	16	20	24
5	5	10	15	20	25	30
6	6	12	18	24	30	36

6 SECONDS LEFT

The Multiplication Table Challenge

Size:

	1	2	3	4	5	6
1	1	2	3	4	5	6
2	2	4	6		10	12
3	3	6	9	12	15	18
4	4	8	12	16	20	24
5	5	10	15	20	25	30
6	6	12	18	24	30	36

5 SECONDS LEFT

Another example is shown below with an input of 15.

The Multiplication Table Challenge

Size:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
3	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
4	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
6	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
7	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105
8	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
9	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
10	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
11	11	22	33	44	55	66	77	88	99	110	121	132	143	154	165
12	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180
13	13	26	39	52	65	78		104	117	130	143	156	169	182	195
14	14	28	42	56	70	84	98	112	126	140	154	168	182	196	210
15	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225

12 SECONDS LEFT