

# EECS 3461: Assignment 1

Due: Tuesday, October 1, 2019 at 21:00

(7.5 % of the final grade, may be done in groups of two)

## Motivation

This assignment will allow you to practice implementing a simple graphical user interface using HTML and CSS.

## Introduction

An electronic calculator is typically a portable electronic device used to perform calculations, ranging from basic arithmetic to complex mathematics<sup>1</sup>. While originally they were stand-alone electronic devices, there are also many software applications implementing this functionality (see Figure 1 below).

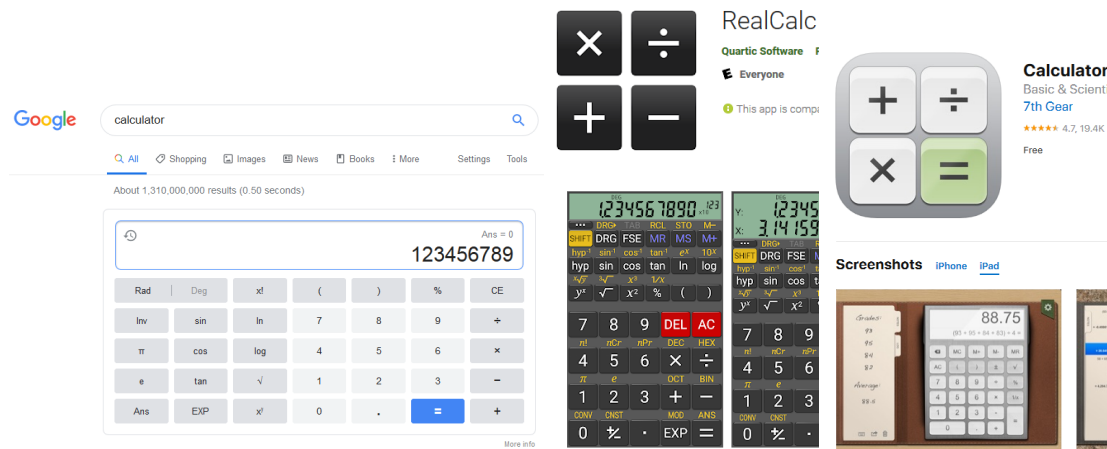


Figure 1: Calculator applications: online, RealCalc for Android, Calculator for iOS.

The first calculator your instructor owned was an *Elektronika MK-51* (see Figure 2) produced in the now defunct USSR. The calculator is for the most part a clone of a Japanese *Casio FX-2500*<sup>2</sup>. In this assignment, you will only have to consider the original Japanese version.

## Description

In this assignment you will have to create an HTML-based design simulating the overall appearance and a small subset of the functionality of the Casio calculator mentioned above. Try to recreate the dimensions of the buttons, the colours, and the overall layout of the physical device. For the display, you may display just the numeric output, and you

<sup>1</sup> <https://en.wikipedia.org/wiki/Calculator>

<sup>2</sup> <https://www.google.ca/search?q=casio+fx-2500&tbm=isch>



Figure 2: Soviet MK-51 calculator

may use any of the basic web fonts (e.g., *Arial*); no need to simulate the exact look of numbers on a 7-segment indicator.

In terms of functionality, implement the following:

- number input (scientific format is *not* required)
- 4 arithmetic operations (+ − × ÷)
- $\sqrt{\quad}$  and *sin* operations

w3schools<sup>3</sup> is a good resource on HTML, CSS and JavaScript. In addition, a rudimentary example is included with this assignment.

You might find the following HTML/CSS functionality relevant:

grid-gap  
grid-template-columns  
grid-column  
grid-row  
CSS classes

If you have questions, don't hesitate to contact the instructor ([andriyp@cse.yorku.ca](mailto:andriyp@cse.yorku.ca)).

Note: if you would like to learn how the other calculator functions were designed to work, the 2500 model is similar in behaviour to other models, e.g., *FX-82SX* or *FX-250HC*.

## Grading

The assignment will be graded using *the Common Grading Scheme for Undergraduate Faculties*<sup>4</sup>. “Exceptional skill or great originality” may include, but not be limited to, the aspects like attention to detail, allowing your application handle resizing of the browser window appropriately, keyboard input, etc.

The submission should work properly when the submitted *html* file is opened using *Mozilla Firefox*, running under *Linux* or *Windows*. Note that *Chrome* does not allow running local *JavaScript* code – thus you might not be able to use it during the development.

## Submission

Name your files **a1.\*** (e.g., a1.html, a1.css, a1.js) and submit them electronically via Moodle. Do not archive them. If working in a group, make only one submission and include a **group.txt** file containing the names and the student numbers of the group members. If there are any special notes to the marker (for example, there are features that sometimes do not work properly, a specific window sizes is expected, etc.), include them in an optional file named **readme.txt**.

<sup>3</sup> <https://www.w3schools.com/>

<sup>4</sup> <https://secretariat-policies.info.yorku.ca/policies/common-grading-scheme-for-undergraduate-faculties/>

The deadline is firm. Contact the instructor *in advance* if you cannot meet the deadline explaining your circumstances.

## **Academic Honesty**

Direct collaboration (e.g., sharing your work results) is not allowed (plagiarism detection software may be employed). However, you're allowed to discuss the assignment requirements, approaches you take, etc. Also, make sure to state any sources you use (online sources, books, etc.). Although using outside sources is allowed – with proper citing, if the amount of non-original work is excessive, your grade may be reduced.