Tutorial 3: Amateur JavaScript

Objectives

- Practice JavaScript techniques, including:
  - variables, conditional,
  - array and loop,
  - create and invoke function,
  - manipulate with DOM elements,
  - …

Tutorial Exercises

Exercise 1: Equation Solver (45 mins)

Create folder `tut03/equations/`, with 2 files:

- `equations.js`: contains js functions to solve **linear & quadratic equations**
- `index.html`: the entry point for testing with reference to `equation-solvers.js`

Task 1: Linear Equation

- Create a function named `linearEquation`, to solve the linear equation:

$$\mathbf{ax + b = 0}$$

  - *Input*: numbers a, b
  - *Output*: return roots of the equation as a String.
- Test your solver:
  - Open **index.html** in your browser → "**Inspect Element**" → in tab **Console**, run `console.log(linearEquation(a, b));` with **a, b** are any numbers that you choose & observe the result.

Task 2: Quadratic Equation

- Create a function named `quadraticEquation`, to solve the quadratic equation:

$$\mathbf{ax^2 + bx + c = 0}$$

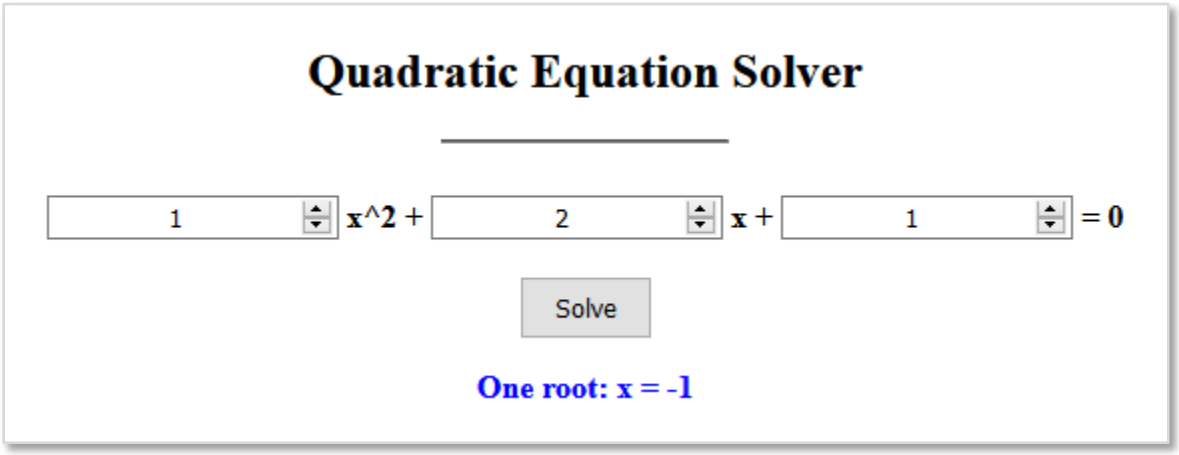
  - *Input*: numbers a, b, c
  - *Output*: return roots of the equation as a String.
- Test your solver:

- Open **index.html** in your browser → "**Inspect Element**" → in tab **Console**, run `console.log(quadraticEquation(a, b));` with **a, b, c** are any numbers that you choose & observe the result.

Task 3: Quadratic Equation GUI

Create HTML form to get user input for **Quadratic Equation**.

- Input fields with ids: **a, b, c** respectively.
- When user click button "**Solve**", get values a, b, c from inputs then invoke function `quadraticEquation` (created in *Task 2*). Append result string to result view & display.



Exercise 2: Cards (15 mins)

Create folder `tut03/cards/`, with 3 files:

- `card-sources.js`: contains an array of links for card images
- `cards.js`: a
- `index.html`:

Task 1: Prepare cards

- In `card-sources.js`, create an array of links for at least 5 cards. You can start with this one:

https://www.google.com/search?client=firefox-b-d&tbm=isch&sxsrf=ACYBGNQLB8C46QEZsVbU3mY_keQOiHqHdQ:1568662070926&q=playing+cards&chips=q:playing+cards,g_1:single:82NODTUYSd0%3D&usg=AI4_-kRfxnSyAQ--qQttQ_rsC-pXjZ_x8Q&sa=X&ved=0ahUKEwjX-onMidbkAhXSF4gKHYglBpsQ4lYIMigE&biw=958&bih=942&dpr=1#imgrc=3UkYNQ1OY_OqwM:

Task 2: Show card board

- Loop the array of images to create img elements add to the board view and display.

Task 3: Select card

- When user choose a card, it's enlarged by double of height.
- User can click another card, but only 01 card enlarged at a time.

Exercise 3: Browser Extension (15 mins)

Browser extension:

- Add-on that extends the functionality of the browser
- A piece of JavaScript that is injected into the webpage before or after it has loaded

Read the instruction to develop extension for:

- FireFox:

https://developer.mozilla.org/en-US/docs/Mozilla/Add-ons/WebExtensions/Your_first_WebExtension

OR

- Chrome: https://developer.chrome.com/extensions/getstarted

For example, auto like Youtube video:

```
document.querySelector('ytd-toggle-button-renderer.ytd-menu-renderer:nth-child(1) > a:nth-child(1)').click();
```

Try it with your own risk! 

Exercise 4: JavaScript Quiz (15 mins)

Try the following test to solidify your theory:

Here is the test path: https://www.w3schools.com/js/js_quiz.asp

Just follow it to challenge yourself individually as fast as possible (You can freely use the internet or any kind of material to find answers).

Remember to capture your score for submission.