Exercise 8

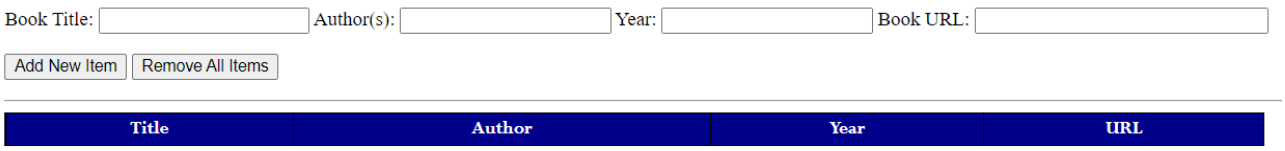
1. Data Creation and Deletion using Local Storage:

   Please develop a web page to add book data to the Local Storage and clear all newly added data.

   (During development, please open the Local Storage viewer in the Chrome DevTools: [F12]->[Application]->[Storage]->[Local Storage]->[files://])

   (1) Initial user interface:

   It should contain four <input> elements to be entered: Book Title, Author(s), Year, and Book URL. The Book Title and Author(s) field are "text", the Year field is "number", and the Book URL field is "url".



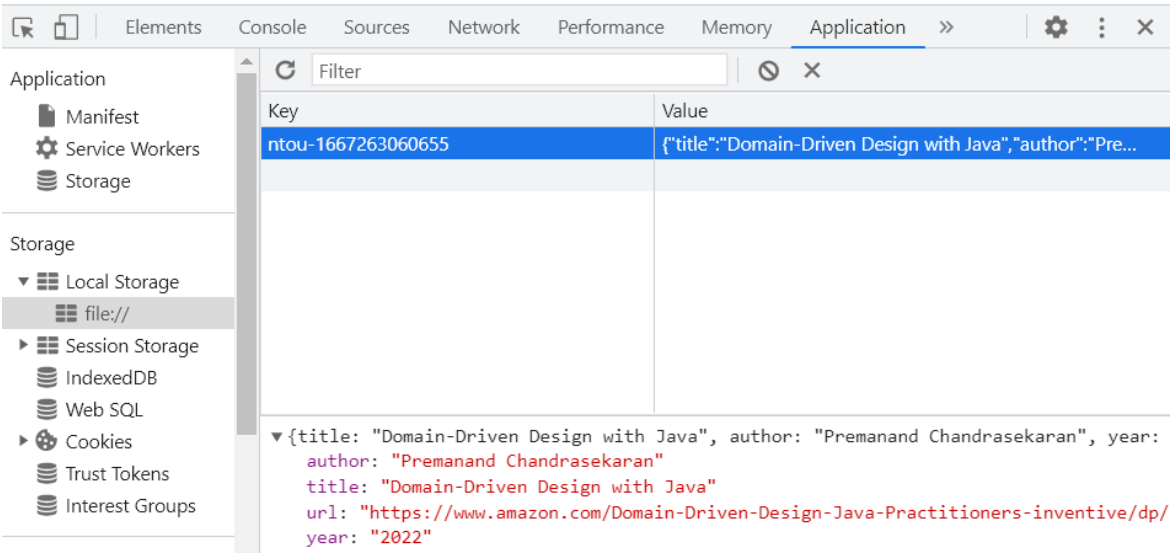
   If the user enters data and clicks the button [Add New Item], the data entered by the user will be stored in the Local Storage in JSON and shown as the table below (the URL needs to be linkable)

   The key and value of each element for the Local Storage:

   - *key:* Use the getTime() function of the Date object to obtain the number of milliseconds since 1970/1/1, plus the prefix: "ntou-".
   - *value:* Convert the values of the above four fields into JSON objects, for example:

     {"title":"Domain-Driven Design: Tackling Complexity in the Heart of Software",
     "author":"Ross Venables",
     "year":"2003",
     "url":"https://www.amazon.com/-/zh_TW/dp/0321125215/ref=sr_1_4?dchild=1&keywords=DDD&qid=1605534390&sr=8-4"}

   Note that the Local Storage viewer of the developer tools should display the corresponding information. Please also notice that if there are items that do not start with "ntou-", they should not be displayed on this page.



(2) If the user closes and reopens the browser, and reloads this webpage again, the user must still be able to see the stored data (because it has been stored in the browser's Local Storage). Please note that if the item is not included on this page, please do not display it.

(3) If the user clicks the button [Remove All Items], all the data added to this webpage in Local Storage should actually be cleared (that is, the data whose key starts with "ntou-" are removed), and the message "All items were removed!" will be displayed, and all data in the page should also be removed.

Hint:

(1) For the usage of Local Storage, please refer to the example Fig. 11.17.

(2) To check the prefix of a string, please use the API: startsWith().

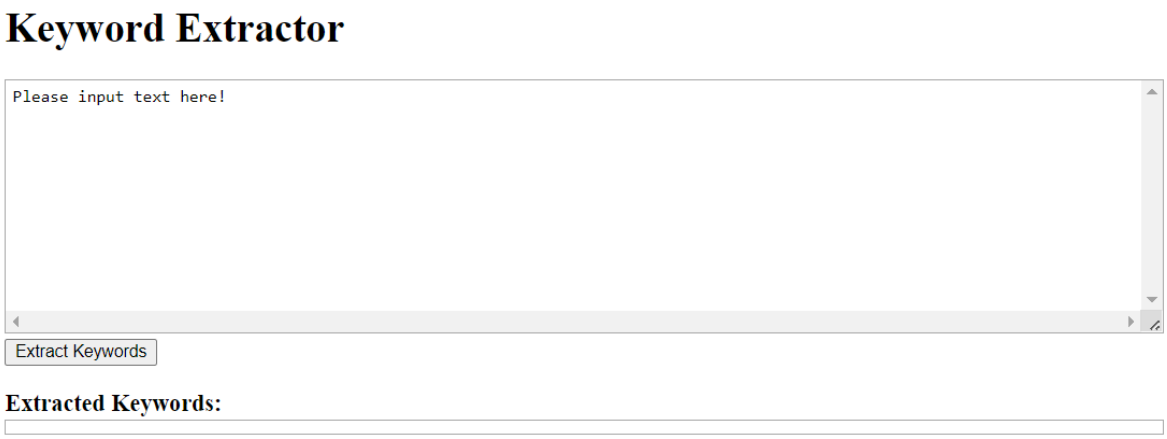
(3) To know how to create objects and how to convert objects to JSON strings, please refer to:
https://www.w3schools.com/js/tryit.asp?filename=tryjs_object_create_new
https://www.w3schools.com/js/js_json_stringify.asp
https://www.w3schools.com/js/js_json_parse.asp

(4) Please use the Chrome DevTools, especially the Local Storage viewer, to debug effectively.

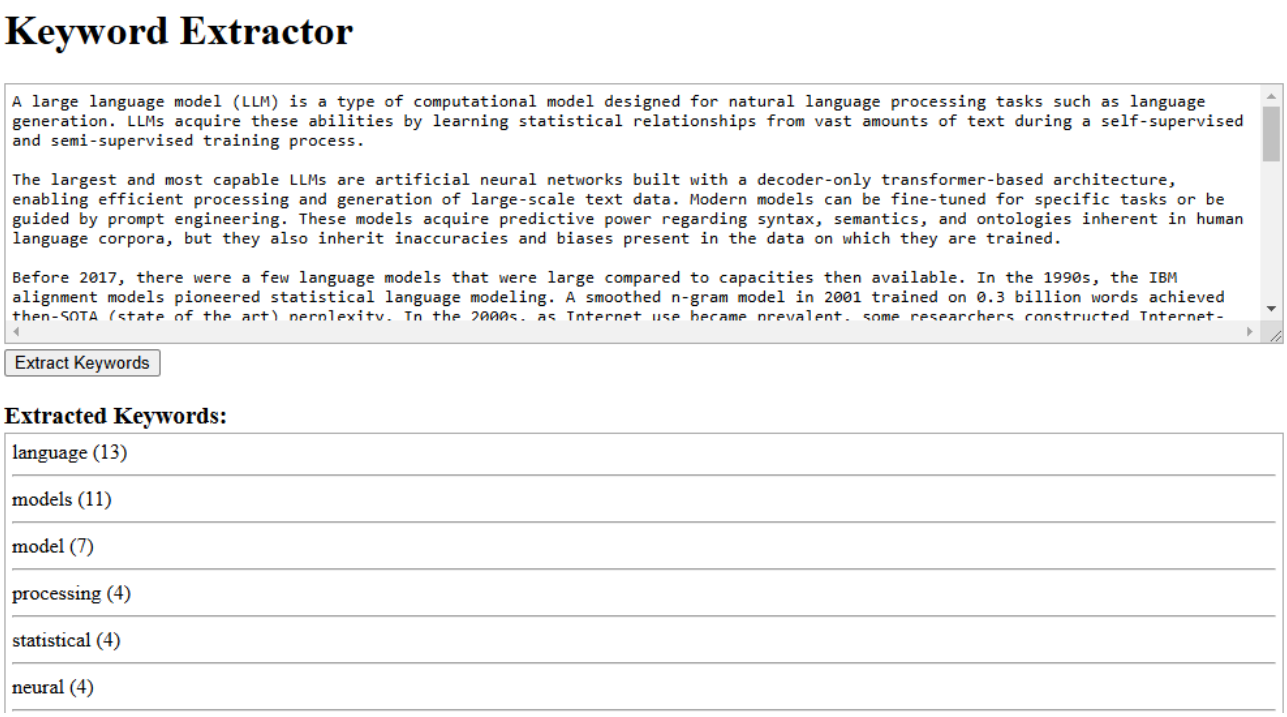
2. Keyword Extraction for an Article:

   This webpage allows users to input a text segment, which is then automatically converted to all lowercase, tokenized, and filtered to remove stop words, pure numbers, or very short words (length <= 2). Finally, only keywords with a word count >= 2 are retained, and these keywords are sorted by frequency. The keywords are output along with their word counts, such as olympic (20).

   The initial screen is as follows:



   After the user inputs a text segment and clicks "Extract Keywords," the screen displays extracted keywords along with their frequencies. (Please refer to text.txt to check the sample text).



   Please complete the [TODO] sections in ex-8-2-partial.html.

Hint:

(1) "Term frequency" refers to the number of times a particular word/term appears in a document (this is a simplified definition).

(2) "Stop word" refers to words or terms that should be ignored.

(3) To obtain unique tokens, you can make good use of the Set structure (which is already included in the example).https://www.w3schools.com/js/tryit.asp?filename=tryjs_set_add_equals

(4) To add elements to an array, refer to https://developer.mozilla.org/zh-TW/docs/Web/JavaScript/Reference/Global_Objects/Array/push。

(5) It is recommended to store the "objects" containing keywords and their frequencies in an array to facilitate sorting. (This is not the only solution.)

(6) You can refer to the page to know how to sort an array of objects: https://developer.mozilla.org/zh-TW/docs/Web/JavaScript/Reference/Global_Objects/Array/sort