ANNOUNCEMENTS

- You must implement programming projects by yourself.
DOM (DOCUMENT OBJECT MODEL)

- **DOM** – representation of the elements of a web page (e.g., headings, lists, paragraphs, styles, etc.) used by a JavaScript programs to manipulate web page elements.

- **DOM** – Allows JavaScript programs to *dynamically* access and update the content, structure, and style of documents.
  - From a JavaScript program you can control the image displayed in your page every hour.
  - From a JavaScript program you can let users decide what background color to use.
  - You could add/remove new items from a list
  - Others.
DOM (DOCUMENT OBJECT MODEL)

- DOM represents elements of a web page as a tree structure consisting of nodes.
  - Each pair of tags (e.g., `<p>`, `</p>` ) is represented by a node.
  - Three types of nodes
    - text nodes
    - element nodes
    - attribute nodes
- Manipulation of these nodes allows a JavaScript program to access any information present in a web page.
<html>
  <head><title>DOM Example</title></head>
  <body>
    <p id="message">Traveling the road less traveled. </p>
  </body>
</html>
DOM (DOCUMENT OBJECT MODEL)

- To access any element of your web page you could traverse the tree.
  - Easier approach
    - `document.getElementById` method
      - Returns element with specified id.
    - `getElementsByTagName` method
      - Can be used with document and every single element node.
      - Returns a list of nodes.
- To read and write attributes of an element “elem”
  - `elem.getAttribute("nameOfAttribute")`
  - `elem.setAttribute("nameOfAttribute", "newValue")`
- **Example:** GetSetAttribute.html
DHTML (Dynamic HTML) – It is a combination of HTML, CSS, and JavaScript where scripts dynamically alter the style of a document.
**EVENTS**

- **Event** – Notification that something has occurred.
- Example of situations that make the web browser generate an event
  - Browser finishes loading a document.
  - When the user clicks on a button.
  - When the user moves the mouse.
  - Others
- **Event handler** (also known as event listener)
  - JavaScript function or code fragment that is executed when a particular event occurs.
- **Event handler registration**
  - Associating an event handler with a particular event.
- **Example:** EventEx.html
EVENT-DRIVEN PROGRAMMING

- Normal (control flow-based) programming
  - Approach
    - Start at main()
    - Continue until end of program or exit()

- Event-driven programming
  - Start at main()
  - Register event handlers.
  - Await events & perform associated computation.

- GUIs (Graphical User Interfaces)
  - Example of event-driven software.
EVENT HANDLER ATTRIBUTES FOR MOST HTML

- **Mouse Related**
  - `onclick` - mouse button is pressed and released.
  - `ondblclick` - mouse button is double-click over element.
  - `onmouseover` - mouse moves over element.
  - `onmouseout` - mouse moves off element.
  - `onmousemove` - mouse pointer is moved.
  - `onmousedown` - mouse is pressed down while cursor is over the element.
  - `onmouseup` - mouse is released while the cursor is over the element.

- **Keyboard Related**
  - `onkeypress` - key pressed and released.
  - `onkeydown` - key is pressed.
  - `onkeyup` - key is released.

- **Other**
  - Keep in mind that there additional handlers that are specific to certain tags. We will address those later on.