**Learning Objectives**

* To introduce JavaScript codes into a web page through internal and external reference.

**Learning Contents**

* HTML controls content of a web page; CSS controls style of a web page; JavaScritp controls behavior of a web page. Tags in an HTML document represent contents in a web page. If you want to add a style to the HTML document, you may add **style** attribute in certain tag and write CSS style, e.g. **<p style="font-size:16px"><p/>**, or you can write style of different selectors under the tag **<style>//some css attributes</style>** in the HTML document **head**, or you can add an external link of CSS document to **link** tag under **head** in an HTML document, e.g. **<link rel="stylesheet" type="text/css" href="//path to css file">**. Then how can we introduce JavaScript into an HTML document?
* Internal reference
  + Load JavaScript codes in the **script** tag in the HTML document. For example:
  + <script type="text/javascript">
  + **document.write("Hello World!");**
  + </script>
  + Introduce JavaScript codes from the **script** tag in current web page in this way.
* External reference
  + It also involves **script** tag of HTML document except that **src** attribute of the **script** tag is to be used to indicate the path of an external JavaScript document. For example:
  + <script src="./main.js" />
  + Since HTML document parsed page elements from top to bottom, all **<script>** elements in an HTML document will be parsed by sequence of appearance in a page. Only when codes in preceding **<script>** element is parsed, codes in the subsequent **<script>** element can be parsed by default. So in order to prevent slow loading of page, we can place non-critical JavaScript at the last part of the page, in other words, behind the main content and in front of the element **</body>**.For example:
  + **// other code ...**
  + <script type="text/javascript" src="./main.js"></script>
  + </body>
  + </html>
* Although there is no problem to embed JavaScript codes into the HTML with internal reference method, the best practice commonly recognized is to use an external document containing JavaScript codes. However, it is not a hard and fast rule to use an external document. People supporting use of an external document will highlight the following advantages:
  + Maintainable: JavaScript in different HTML pages will lead to problem of maintenance. If we put all JavaScript document in one folder, the maintenance will be much easier. And developers can concentrate on editing of JavaScript codes without accessing to HTML tags.
  + Cacheable: The browser can cache all external JavaScript documents linked based on specific setting. In other words, if two pages use the same document, it is necessary to download the document once only. Hence, it is able to speed up loading of pages finally.
  + Adapt to the future: It is able to define JavaScript codes uniformly so that check will be easier and codes will be safer. A JavaScript document can be either compressed or encrypted.

**Recommended Resources**

* [JavaScript | MDN](https://developer.mozilla.org/en-US/docs/Web/JavaScript)