

ANNOUNCEMENTS

- ❖ You must implement programming projects by yourself.

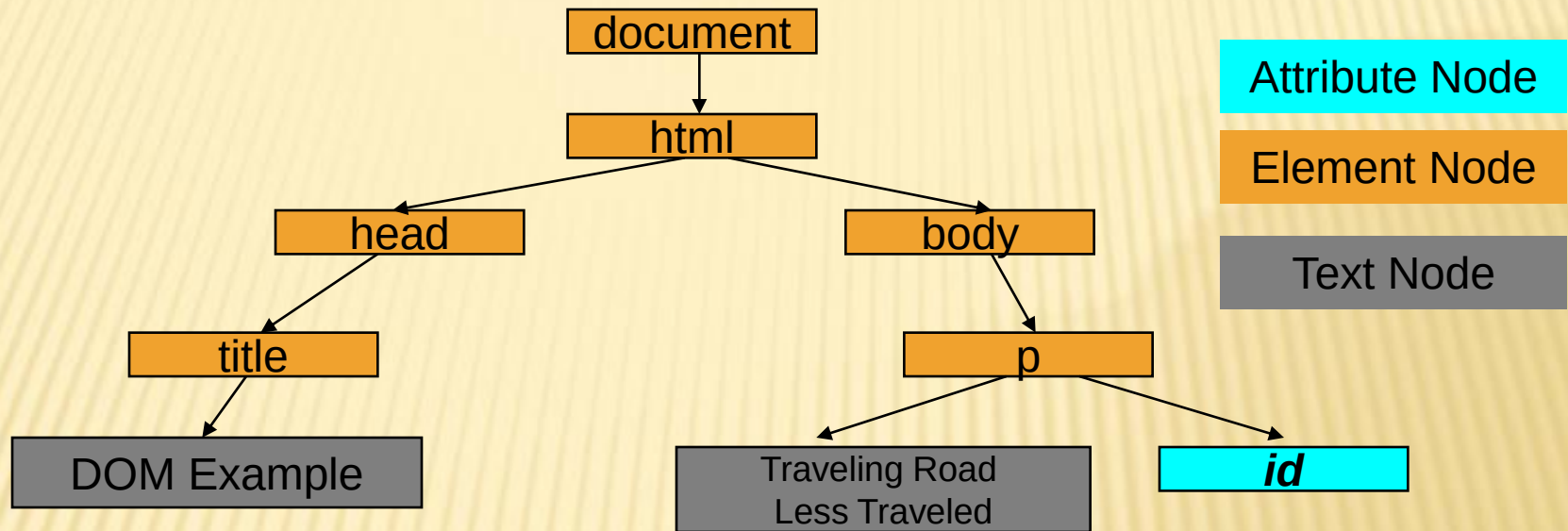
DOM (DOCUMENT OBJECT MODEL)

- ❖ **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.

EXAMPLE DOM FOR HTML FILE



```
<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

- ❖ **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 are additional handlers that are specific to certain tags. We will address those later on.