COURSE UNIT

Bachelor of Technical-Vocational Teacher Education
MAJOR IN COMPUTER PROGRAMMING:
WEB DEVELOPMENT 1

COURSE MODULE	COURSE UNIT	WEEK
1	7	9
JavaScript (Document Object Model)		

CHECKLIST

- ✓ Read course and unit objectives
- ✓ Read study guide prior to class attendance
- ✓ Read required learning resources; refer to unit terminologies for jargons
- ✓ Proactively participate in classroom discussions
- ✓ Participate in weekly discussion
- ✓ Answer and submit course unit tasks

UNIT EXPECTED OUTCOMES (UEOs)

At the end of this unit, the students are expected to:

Cognitive:

1. Discuss JavaScript Document Object Model.
2. Examine previously given programs to develop DOM.
3. Generate DOM based on enhanced about me pages.

Affective:

1. Listen attentively during class discussions
2. Demonstrate tact and respect when challenging other people's opinions and ideas
3. Accept comments and reactions of classmates on one's opinions openly and graciously.

Psychomotor:

1. Participate actively during class discussions and group activities
2. Express opinion and thoughts in front of the class

REQUIRED READINGS

JavaScript Tutorial. (n.d.). https://www.w3schools.com/js/default.asp

STUDY GUIDE

Document Object Model

- DOM
- a W3C (World Wide Web Consortium) standard

"The W3C Document Object Model (DOM) is a platform and language-neutral interface that allows programs and scripts to dynamically access and update the content, structure, and style of a document."

- a platform and language independent model to represent the HTML or XML documents.

The W3C DOM standard is separated into 3 different parts:

- Core DOM - standard model for all document types
- XML DOM - standard model for XML documents
- HTML DOM - standard model for HTML documents

- It defines the logical structure of the documents and the way in which they can be accessed and manipulated by an application program.
- all parts of the document, such as elements, attributes, text, etc. are organized in a hierarchical tree-like structure.
- individual parts of the document are known as nodes.

Why DOM is required?

HTML is used to *structure* the web pages and *JavaScript* is used to add *behavior* to our web pages. When an HTML file is loaded into the browser, the JavaScript cannot understand the HTML document directly. So, a corresponding document is created(DOM). DOM is basically the representation of the same HTML document but in a different format with the use of objects.

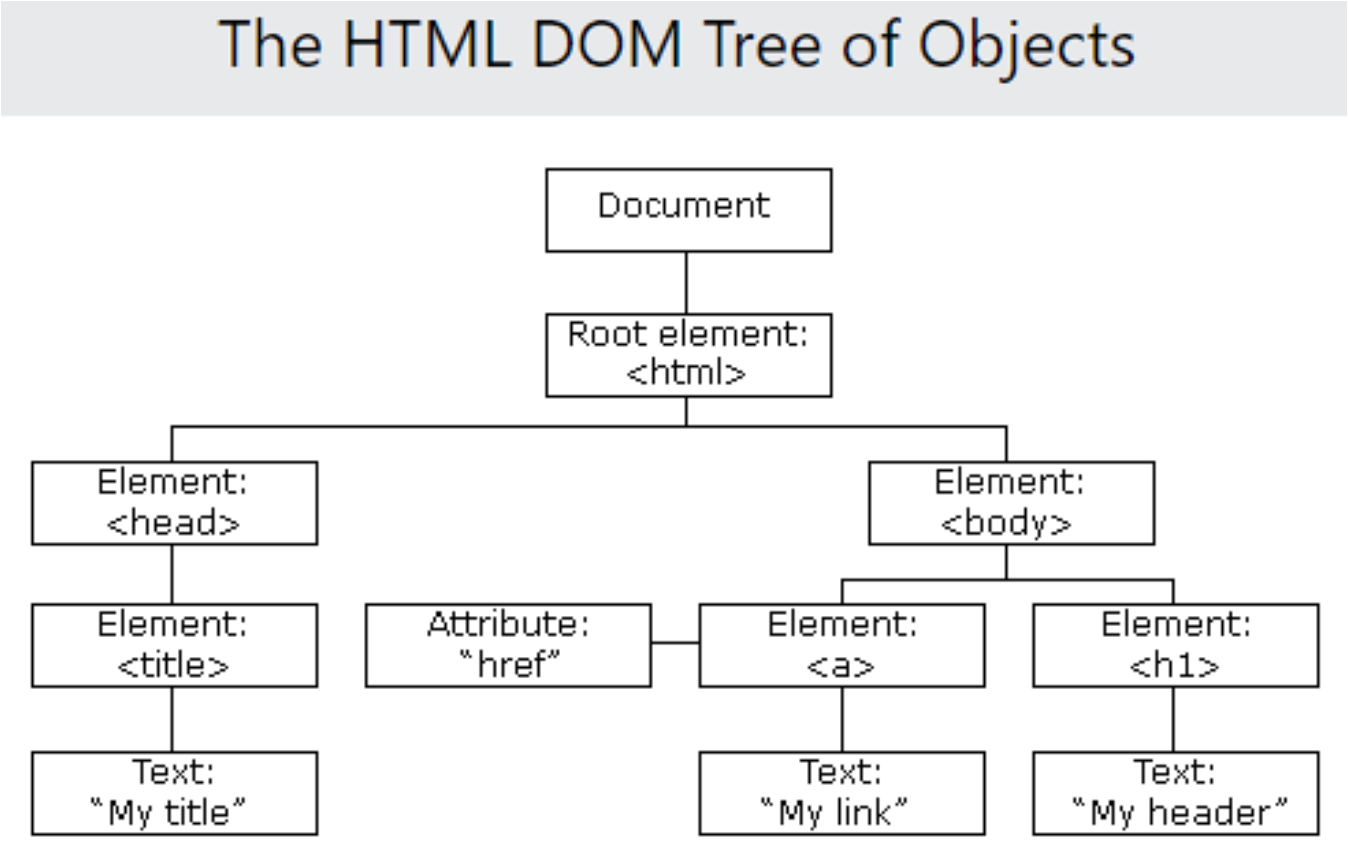
DOM is a way to represent the webpage in a structured hierarchical way so that it will become easier for programmers and users to glide through the document. With DOM, we can easily access and manipulate tags, IDs, classes, Attributes, or Elements using commands or methods provided by the Document object.

What DOM is not?

- The Document Object Model is not a **binary description** where it does not define any binary source code in its interfaces.
- The Document Object Model is not used to describe **objects in XML or HTML** whereas the DOM describes XML and HTML documents as objects.
- The Document Object Model is not represented by a **set of data structures**; it is an interface that specifies object representation.
- The Document Object Model does not show the **criticality of objects** in documents i.e it doesn't have information about which object in the document is appropriate to the context and which is not.

Structure of DOM

DOM can be thought of as a Tree or Forest (more than one tree). The term structure model is sometimes used to describe the tree-like representation of a document.

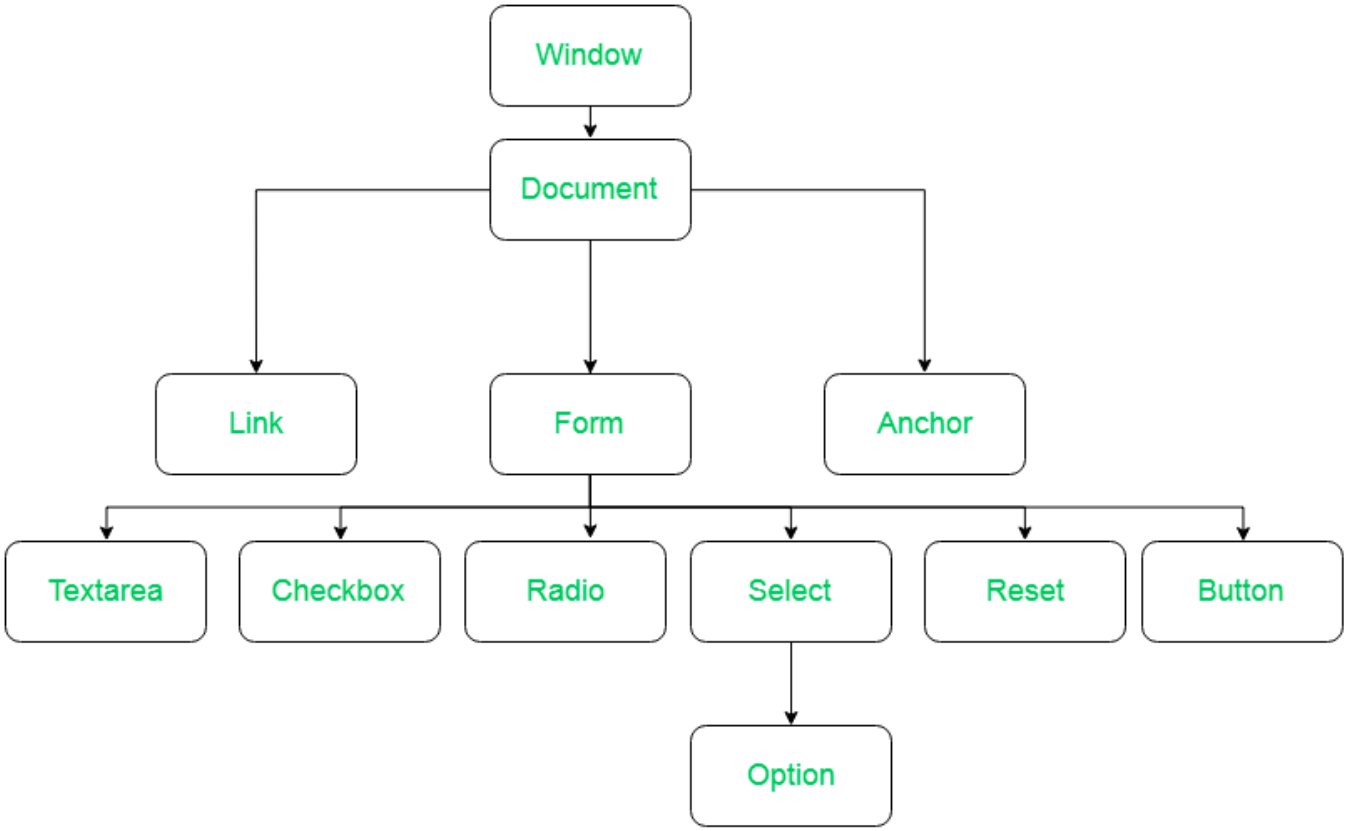


With the object model, JavaScript gets all the power it needs to create dynamic HTML:

- JavaScript can change all the HTML elements in the page
- JavaScript can change all the HTML attributes in the page
- JavaScript can change all the CSS styles in the page
- JavaScript can remove existing HTML elements and attributes
- JavaScript can add new HTML elements and attributes

- JavaScript can react to all existing HTML events in the page
- JavaScript can create new HTML events in the page

Properties of DOM



- Window Object: Window Object is always at top and outmost element of the hierarchy.
- Document object: When an HTML document is loaded into a window, it becomes a document object.
- Form Object: It is represented by form tags.
- Link Object: It is represented by link tags.
- Anchor Object: It is represented by a href tags.
- Form Control Elements: Form can have many control elements such as text fields, buttons, radio buttons, and checkboxes, etc.

Methods of Document Object

- write("string"): Writes the given string on the document.
- getElementById(): returns the element having the given id value.
- getElementsByName(): returns all the elements having the given name value.
- getElementsByTagName(): returns all the elements having the given tag name.
- getElementsByClassName(): returns all the elements having the given class name.

DOM Architecture

The DOM Architecture is divided into various modules. Each module addresses a particular domain. Domains covered by the current DOM API are XML, HTML, Cascading Style Sheets (CSS), and tree events. Future domains can be the rendered content (that is, the content displayed on the screen which might differ from the input document), user agent function, etc.

- DOM Core
- DOM XML
- DOM HTML
- DOM Events
- DOM CSS
- DOM Load and Save
- DOM Validation
- DOM XPath

Levels of DOM:

- Level 0: Provides a low-level set of interfaces.
- Level 1: DOM level 1 can be described in two parts: CORE and HTML.
- Level 2: consists of six specifications: CORE2, VIEWS, EVENTS, STYLE, TRAVERSAL, and RANGE.
- Level 3: consists of five different specifications: CORE3, LOAD and SAVE, VALIDATION, EVENTS, and XPATH.

DOM Nodes

According to the W3C HTML DOM standard, everything in an HTML document is a node:

- The entire document is a document node
- Every HTML element is an element node
- The text inside HTML elements are text nodes
- Every HTML attribute is an attribute node (deprecated)
- All comments are comment nodes

Node Relationships

The nodes in the node tree have a hierarchical relationship to each other.
The terms parent, child, and sibling are used to describe the relationships.

- In a node tree, the top node is called the root (or root node)
- Every node has exactly one parent, except the root (which has no parent)
- A node can have a number of children
- Siblings (brothers or sisters) are nodes with the same parent

TERMINOLOGIES

BROWSER - a computer program with a graphical user interface for displaying and navigating between web pages.

CLIENT - a program, person or things that are capable of obtaining services provided by another program.
CODING - sometimes called computer programming, is how we communicate with computers.

DOMAIN NAME - refers to your website address. This is what users type in a browser's search bar to directly access your website.

FRAMEWORK - a layered structure indicating what kind of programs can or should be built and how they would interrelate.

FRONT-END - refers to the user interface / client-side, everything with which the user interacts.

HYPERTEXT - a word, phrase or chunk of text that can be linked to another document or text.

HYPERTEXT TRANSFER PROTOCOL (HTTP) - The communications protocol used to connect to Web servers on the Internet or on a local network (intranet).

INTERNET PROTOCOL - a set of rules governing the format of data sent over the internet or other network.

IP ADDRESS (INTERNET PROTOCOL ADDRESS) - a series of numbers that identifies any device on a network.

SEARCH ENGINE - a program that searches for and identifies items in a database that correspond to keywords or characters specified by the user, used especially for finding particular sites on the World Wide Web.

SERVER - a computer or system that provides resources, data, services, or programs to other computers, known as clients, over a network.

WEB PAGES - a hypertext document on the World Wide Web.

WEBSITE - a set of related web pages located under a single domain name, typically produced by a single person or organization.

WIREFRAME - a simplified visual guide that represents the skeletal framework of a website.

WORLD WIDE WEB - an information system on the internet which allows documents to be connected to other documents by hypertext links, enabling the user to search for information by moving from one document to another.

FURTHER READINGS

JavaScript Tutorial. (n.d.). https://www.w3schools.com/js/default.asp

UNIT TASK

- Proactively participate in classroom discussions
- Answer and submit course unit tasks

REFERENCES

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