CHAPTER 04: Getting started with CSS3

1. What is CSS?

- CSS stands for Cascading Style Sheet.
- Cascading Style Sheets (CSS) is a style sheet language used for describing the look and formatting of a document written in a markup language.
- Cascading style sheets provide a means to apply a presentation to an HTML structure by defining how HTML elements are displayed
- Its goals in a website are:
- → to create a consistent look across many webpages
- → to separate structure from presentation so you can manage look easily and provide different style sheets for printing, browsing, or other scenarios.

2. What is CSS3?

- CSS3 is the latest standard of Cascading Style Sheet.
- CSS3 allows to bring adaptive look and structure in web pages so that they can be viewed in all types of browsers and devices.

3. What is a style rule in CSS?

- A style is a rule that describes how to format a specific part of an HTML document.
- A style rule written as selector { style declaration }
- Example
  p { color: red; }
  header h1 { font-size: 167.5%;}

4. What is a selector in CSS?

- A selector is used to locate and select elements based on tag name, class name, ID, and more.

5. What is inline style?

- The style rules that are applied on the elements using style attribute.

  <div style="padding: 5px; border: solid 1px black;">Div content</div>

6. What is embedded style?

- Embedded styles are written inside <style> element in HTML documents.

7. What are external style sheet?

- External style sheets are written in separate documts and applied to an HTML document using <link> tag. ▪ Example
  <!DOCTYPE html>
  <html xmlns='http://www.w3.org/1999/xhtml'>
  <head>
  <title></title>
  <link rel='stylesheet' type='text/css' href='Content/default.css' />
  </head>
  <body>
  </body> </html>

8. Why do use media attribute in <link> element?

- The media attribute that can specify the target device.
- By using the media attribute, you can create a CSS file for each device type and link all the CSS files into your HTML documents.
- When the HTML document is rendered, the browser determines the media type and uses the appropriate CSS file. ▪ Example

```
<!DOCTYPE html>
<html xmlns='http://www.w3.org/1999/xhtml'>
<head>
<title></title>
<link rel='stylesheet' type='text/css' href='Content/screen.css' media='screen' />
<link rel='stylesheet' type='text/css' href='Content/printer.css' media='print' /> </head>
<body>
</body>
</html>
```

9.   What is @import rule?

- @import rule enables you to import a CSS file to the current style sheet.
- You can specify as many @import rules as you need, but the @import rules must be at the top of your style sheet, before any other content except the @charset rule.
- Example
  @import url('Content/head.css'); body
  { margin: 0 auto;}

10.   How do use sepecific font that users might not have on their computer?

- To solve this problem, you can provide a link to the font so it can be downloaded and used in your style sheet. ▪   @font-face rule is used to import fonts ▪   Example:
  @font-face { font-family:
  myFont; src:
  url('Fancy_Light.ttf'),
  url('Fancy_Light.eot'); /* IE9
  */}
  body { font-family: myFont;}
-

CHAPTER 05: More HTML5

1. What is layout container element in HTML5?

- A layout container lays out its children in a way that is flexible and reusable.

2. Name the common sematic tags for layout in HTML5?

- The following are common elements by which to create an HTML5 layout container:
- →   <header>
- →   <footer>
- →   <nav>
- →   <section>
- →   <article>
- →   <aside>

3. What is the purpose of <aside> semantic tag?

- Aside elements contain content which is very loosely or unrelated to the main theme of the element in which they occur.
- For example, within a blog aside elements may contain the side bar links to various other blog posts. ▪   A style rule written as

```
<body>
<header>
        <h1>Blogging for fun</h1>
</header>
<article>
        <h1>Blog of the day</h1>
        <p>This is today's blog post. La, la, la, la, la,
la, la, la, la, la, la</p>
<aside>
        <h1>What's this all about?</h1>
        <p>This article talks about la, la...</p>
</aside>
</article>
<aside>
        <h2>Blog Advertising</h2>
        <p>You too can have your own blog...</p>
</aside>
</body>
```

4. What is the role attribute?
- The role attribute is used to provide specific meaning to screen readers for accessibility purposes.
- The role attribute is Web Accessible Initiative (WAI)
- The role attribute is the part of Accessible Rich Internet Applications (ARIA) suite

5. What is <abbr> attribute?
- The <abbr> element to indicate an abbreviation or acronym ▪ The title attribute in it is used to provide the full text.
- Example
- <p>
- The <abbr title='radio detection and ranging'>RADAR</abbr> technology is used for air traficing</p>

CHAPTER 06: Essential JavaScript and jQuery

1. What is jQuery?
- jQuery is a fast, small, and feature-rich JavaScript library.
- It makes easy to access and manipulate HTML DOM elements and, event handling, animation, and Ajax much simpler with an easy-to-use API that works across a most of the browsers.

2. What is a previledged method?
- A method that is public but has access to private data is called a privileged method.
- Example
    ```
    function Box(l, w) {
            var length=l,
            var width=w,
            this.area = function { return length*width; }
    }
    var b = new Box(4, 5); b.area();
    //retuens 20
    ```
- In Box, area is public but acesses private length and width, so area is previledged.

3. What is a constructor function?
- A function that is used as a class is a constructor function.
- JavaScript has no class keyword, function is used to simulate class
- Example
    ```
    function Product(name, price) {
    this.name = name; this.price =
    price;
    }
    var p = new Product('HDD', 5600.00);
    ```
- Here Product function is a constructor function.

-

4. What is prototype property in JavaScript?
- In JavaScript, everything, including the function, is an Object type, which has a prototype property.
- The prototype itself is an object containing properties and methods.
- This prototype is typically specified externally to the constructor function
- Example
  function Box (l, w) { this.length = l,
  this.width = w
  }
  Box.protype.getArea() { return this.length*this.width;}
- getArea() is added to all instances of Box

5. What is AJAX?
- AJAX stands for Asynchronous JavaScript and XML.
- It is a group of iter-realted techniques used create web-pages asynchronous
- AJAX allows to call methods on the server asynchonously, fetch the result in variuos format and update part of the dynamically without refreshing the whole page.
-

CHAPTER 07: Working with forms

1. What is a HTML Form?
- A form is responsible for collecting data and sending that data is sent back to the server for processing.

2. What is the role of the web server in web applications?
- A Web server hosts web pages and resources of a web applications.
- Web servers originally were responsible for only receiving and handling requests from the browsers through HTTP.
- The web environment was considered to be stateless because no data was held at the web server between web browser requests, and the connection was closed after the response.
- But now Web servers deliver services that go far beyond the original web servers.
- Now web servers also handle requests for pages that contain code that will execute at the server and respond with the results of code execution.

3. What is the roles of a web browser?
- The web browser provides a platform-independent means of displaying webpages that were written with HTML.
- Although the web browser's role is just to present data and collect data, new client-side technologies are emerging every day that enable web browsers to be more robust.

4. What is HTTP?
- HTTP stands for Hypertext Transfer Protocol.
- The Hypertext Transfer Protocol - provides a standard for Web browsers and servers to communicate.
- HTTP protocol is a text-based protocol, so text commands are sent to the server.

5. What is MIME type?
- MIME stands for Multi-purpose Internet Mail Extensions.
- MIME types form a standard way of indicating file types on the Internet.
- Internet programs such as Web servers and browsers all have a list of MIME types, so that they can transfer files of the same type in the same way, no matter what operating system they are working in.
- A MIME type has two parts: a type and a subtype. They are separated by a slash (/).
- For example, the MIME type for Microsoft Word files is application and the subtype is msword. Together, the complete MIME type is application/msword.

6. What is HTTP Status code?
- HTTP status codes are standard response codes given by web site servers on the Internet.
- Status codes helps to identify success or failure of the request of the web browser, also help identify the cause of the problem when a web page or other resource does not load properly.

7. What is HTTP method (verb)?

- An http method specifies the operation that the client has requested to server.

8. What are form submission elements?

- Not all elements can send data when the Submit button is clicked. The elements that can send data upon submission will be referred to as form submission elements

9. How can you allow users to enter numeric values with a range?

- <input type='range'> A control for entering a numeric values within range specified.
- On newer browsers, this renders as a slider control and is commonly referred to as a slider control.
- This control has a value attribute, which is the current slider value. The min attribute is the minimum settable value (default is 0).
- The maxattribute is the maximum settable value (default is 100).
- The step attribute defines the amount of change the value will have as the slider moves (default is 1).

10. What is <label> element?

- The <label> element can be used to help the user identify the form submission element.
- A <label> can be associated with a form element using id, When the user clicks the label text, the associated element gets the focus.
- Example
  <label for="Id">Enter Customer ID:</label>
  <input type="text" name="Id" />

11. How can you trigger form submission?

- To trigger the submission of a form, you can use submit or image button elements
- The following elements will trigger form submission
  <button type='submit' name='submitButton' >Submit</button>
  <input type='submit' name='submitButton' value='Submit' />
  <input type='image' src='/images/submit.gif' alt='Submit' />
- In adding you can submit form using javascript, including jQuery, by calling submit method on form object.
- For example document.getElementById('form-id').submit()
- Or using jQuery
  $('#form-id').submit();

12. Why do you use jQuery serialize method?

- This method converts the form data to a URI-encoded list of name value pairs ready to send to send to server.

13. How can you decode the URI-encoded data using JavaScript?

- You can use either the decodeURI function to decode a complete URI or the decodeURIComponent function to decode a QueryString.

14. What is QueryString?

- The QueryString is a collection of URI-encoded key=value statements, separated by ampersand (&) characters, which can be passed to the web server by appending the end of the URL after a question mark sign (?)
- Example http://www.contoso.com/getProduct.aspx?productId=123&color=blue

15. What is the difference between GET and POST method form submission?

- In GET method, data is sent to server as a part of URL, data is appended as querystring at the URL after a ? sign.
- In POST method, the data is placed in the message body.
- In GET method, data is visible in the browser's address bar, but not in POST method.
- In GET data is limited in size, but in POST method no limitations.

16. What is the disadvantage of client-side form data validation?

- The disadvantage client-side validation is that browser validation is easy for an attacker to bypass.

17. What is the advantage of client-side form data validation?

- The advantage client-side validation is that it minimizes the time users must wait to find out that there is an input error.

CHAPTER 08: Websites and services

18. What is Node.js Platform?
- The Node.js platform is built on the Google Chrome JavaScript runtime for easily building fast, scalable network applications.
- The platform implements an event-driven, non-blocking I/O model and is lightweight and efficient.
- Using Node.js, you can write JavaScript that executes on the back-end server.

19. What can you do with Node.js?
- This platform is perfect for data-intensive, real-time applications that run across distributed devices.
- Using Node.js, you can write JavaScript that executes on the back-end server.

20. What is Node.js Module?
- A Node module is just an ordinary JavaScript file, which can be called from other code.
- To create a module, We wrap code inside a function and then assign the function to exportsobject's property. ▪ Example
  - Say we write Math.js function add(a, b) {return a+b;}
    exports.add = add;
  - To use the module
    var math = require('./Math.js');
    var result = math.add(4,6);

21. What is Node.js package?
- A Node.js package, also known as an application, is a collection of modules with a manifest that describes the package and its dependencies and can be publicly and privately published for you and others to use.
- After you publish your package, you can use the node package manager (npm) to install a package.
- The package can be installed in a single application you're creating or globally for use with many applications.

22. What is a markdown file?
- A Markdown file is a simple way of providing formatting on a text document so it can be displayed nicely as text or in a browser.

23. What is the purpose of the package.json file in Node.js packaage?
- The package.json file is the manifest for your package. This file contains the metadata that describes your package.
- It is stored in root pacakage directory.
- You can create this file manually, but an easier way to create the file is to type the following command.
  - npm init

24. What is express in relation to Node.js?
- The express web application framework for node.js is available at http://expressjs.com/.
- The express framework provides a thin layer of features over Node.js, makes it easy to create web, web services or RESTful services.

25. What is a web service?
- A web service is an application that is hosted on web server, any client application can access over internet and invoke an operation and get the result of the operation.
- A web service and a client commuicate using HTTP and XML known as SOAP protocol.

26. What is REST service?
- REST satands for Representational State Transfer (REST)
- The primary purpose of the REST service is to manipulate web resources by using a uniform set of stateless operations.

27. What is XSS attack?
- Cross-site scripting (XSS) is a type of computer security issue typically found in Web applications.

- XSS attack mainly is injection of malicious client-side script into Web pages viewed by other users.

28. Which is CROS?
- CROS stands for cross-origin resource sharing
- CORS is a browser specification that defines ways for a web server to allow its resources to be accessed by a webpage from a different domain

CHAPTER 09: Asynchronous operations
29. What is the advantage of executing long-running code asynchronously?
- Synchronous code has one sequential execution path, and when the long-running code is executing, nothing else can be accomplished.
- Asynchronous operations create another execution path so that the long-running code can execute on one execution path while the user interface is responsive on another execution path

30. What is an asynchronous operation?
- An asynchronous operation is executed on a thread that is different from the main thread.
- Asynchronous operations create another execution path so that the long-running code can execute on one execution path while the user interface is responsive on another execution path.

31. What is a thread?
- A thread is a separate execution path.
- A thread is a portion of code that may be executed independently of the main program.
- When a process is started, a main thread executes, but we can create more thread to do different jobs.

32. What is a promise object in JavaScript?
- The promise (also known as a future or deferred) object provides a mechanism to schedule work to be done on a value that might not yet be computed.

33. What is the advantage of using promise object?
- The benefit is that it enables you to write non-blocking logic that executes asynchronously without having to write a lot of code.

34. What is a web worker?
- Web Workers provide a simple means running JavaScript in the background, without affecting the performance of the page.
- When executing scripts in an HTML page, the page becomes unresponsive until the script is finished. But a web worker is a JavaScript that runs in the backg

CHAPTER 10: WebSocket communications
35. What is WebSocket?
- The WebSocket protocol is a web technology that provides full-duplex communications over a single TCP connection. ▪ The WebSocket enables a persistent connection between the client (browser) and the server.
- Using WebSocket a two-way (bidirectional), ongoing conversation can take place between a browser and the server, when both parties can send data to each other at any time.

CHAPTER 11: HTML5 supports multimedia
36. What are the HTML5 supported video formats?
- Ogg/Theora (.ogv extension)
- WebM/VP8 (.webm extension)

- MPEG-4/H.264 (.mp4 extension)

37. How can you provide multiple videos of different formats so that the browser can choose the most appropriate video codec?

- You include more than one <source> element to provide many sources. ▪ Example

```
<video controls="controls" height="480">
        <source src="eagle.webm" type='video/webm' />
        <source src="eagle.ogv" type='video/ogg' />
         <source src="eagle.mp4" type='video/mp4' />
</video>
```

38. What is WebVTT?

- WebVTT stands for Web Video Text Tracks.
- WebVTT provides the ability to display captions on the video.

CHAPTER 12: Drawing with HTML5

1. What is svg?

- SVG is a language to define two-dimensional graphics in XML, and the XML can be rendered by the browser by using the <svg> element

2. What is canvas?

- Canvas is new HTML5 element which provides a drawing surface where you can draw shape, text or image within browser ▪ Canvas along with a JavaScript API allows you draw dynamically within browser.

3. What is context object of canvas?

- The context object that is returned from the getContext method is used to draw on the canvas.
- The context object is the reference of graphics container of canvas element.
- The context object has methods to draw on the canvas surface.

4. Write example code to draw a rectangle on canvas?

```
var canvas = document.getElementById("<canvas-id>");
var context = canvas.getContext('2d');
context.fillStyle='red';
context.fillRect(10, 20, 100, 100);
```

5. Write the rectangle methods of canvas context.

- clearRect(x, y, w, h) Clear the specified rectangular area.
- fillRect(x, y, w, h) Draw a filled rectangular area.
- strokeRect(x, y, w, h) Draw an unfilled rectangular area.
-