



Skills for Employment Investment Program (SEIP)

**COMPETENCY-BASED LEARNING
MATERIAL
(STUDENT GUIDE)**

FOR

WEB DESIGN

(IT SECTOR)

**Finance Division, Ministry of Finance
Government of the People's Republic of Bangladesh**

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Copyright

The Competency-based Learning Material (Student Guide) for Web Design, aligned to its applicable competency standard, for providing training consistent with the requirements of industry in order for individuals who graduated through the established standard via competency-based assessment to be suitably qualified for a relevant job.

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How to Use this Competency-based Learning Material

Welcome to the competency-based learning material for Web Design to use in IT. These modules contain training materials and learning activities for you to complete in order to become competent and qualified as a skilled worker.

There are eight (8) modules that make up this course which comprises the skills, knowledge and attitudes required to become a skilled worker including:

1. Recognising the Web
2. Setting up development environment
3. Working with HTML
4. Working with Cascading Style Sheets (CSS)
5. Performing graphic design aesthetic
6. Developing with JavaScript and jQuery
7. Applying web design tools
8. Working with bootstrap framework

As a learner, you will be required to complete a series of activities in order to achieve each learning outcome of the module. These activities may be completed as part of structured classroom activities or simulated workplace demonstrations.

These activities will also require you to complete associated learning and practice activities in order to gain the skills and knowledge needed to achieve the learning outcomes. You should refer to **Learning Activity** pages of each module to know the sequence of learning tasks and the appropriate resources to use for each task.

This page will serve as the road map towards the achievement of competence. If you read the **Information Sheets**, these will give you an understanding of the work, and why things are done the way they are. Once you have finished reading the Information Sheets, you will then be required to complete the **Self-Check Quizzes**.

The self-check quizzes follow the Information Sheets in this learning guide. Completing the self-check quizzes will help you know how you are progressing. To check your knowledge after completion of the Self-Check Quizzes, you can review the **Answer Key** at the end of each module.

You are required to complete all activities as directed in the **Learning Activity and Information Sheet**. This is where you will apply your newly acquired knowledge while developing new skills. When working, high emphasis should be laid on safety requirements. You will be encouraged to raise relevant queries or ask the facilitator for assistance as required.

When you have completed all the tasks required in this learning guide, formal assessment will be scheduled to officially evaluate if you have achieved competency of the specified learning outcomes and are ready for the next task.

List of Icons

| Icon Name | Icon |
|----------------------|--|
| Module content |  |
| Learning outcomes |  |
| Performance criteria |  |
| Contents |  |
| Assessment criteria |  |
| Resources required |  |
| Information sheet |  |
| Self-check Quiz |  |
| Answer key |  |
| Activity |  |
| Video reference |  |
| Learner job sheet |  |
| Assessment plan |  |
| Review of competency |  |

Module 1: Recognising the Web



MODULE CONTENT

Module Descriptor:

This module covers the skills, knowledge and attitudes to recognize the web, which includes the tasks of identifying client server architecture/structure, identifying the browser, using web design tools, explaining role of web server & database server and also explaining the role of data base server

Nominal Duration:

12 hours

**Learning Outcomes:**

Upon completion of the module, the trainee should be able to:

- 1.1 Identify client server architecture
- 1.2 Identify the browser
- 1.3 Use web design tools
- 1.4 Explain role of web server
- 1.5 Explain role of database server

**Performance Criteria:**

1. Client server architecture/structure is identified.
2. Different types of network and their functionality is identified.
3. Different types of websites are categorized.
4. Web browser is identified
5. Different types of web browser are introduced.
6. Installation and usage of different web browsers is demonstrated.
7. Working with a web browser is explained.
8. Features/options of different web browsers are recognized.
9. Cross browser compatibility of websites is practiced.
10. Web design language is understood.
11. Web design platform is used.
12. Web design software is used.
13. Web server is identified.
14. Local web server is defined.
15. Role of web server is explained.
16. Database server is defined.
17. Roles of database server are identified.
18. Role of database server is explained.



Learning Outcome 1.1 - Identify Client Server Architecture



Contents:

- Identify client server architecture
- Identify types of network and their functionality
- Categorize different types of websites



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & application)
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 1.1.1

| Learning Activity | Resources/Special Instructions/References |
|---|---|
| Identify client server architecture/structure | <ul style="list-style-type: none">▪ Information Sheet: 1.1.1▪ Self-Check Quiz: 1.1.1▪ Answer Key: 1.1.1▪ https://stackoverflow.com/questions/18508964/difference-between-server-and-client▪ https://en.wikipedia.org/wiki/Client%20server_model |



Information Sheet 1.1.1

Learning Objective: to identify, client server architecture.

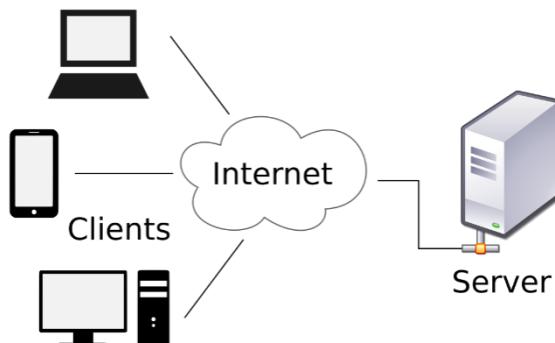
▪ **Client server architecture/ structure:**

Server:

A server is a program, or machine, that waits for incoming requests.

Client:

A client is a program, or machine, that sends requests to servers.

Client-Server architecture:

- In simplest form, a server is a connection point for several clients, that will handle their requests.
- A client is software that (usually) connects to the server to perform actions. The client provides a user interface that allows users to carry out actions. It forwards these requests to the server, which carries out the action and returns a response.
- The server is where the central data repository is held, and client is what you use to access the said repository.

Individual Activity:

- Watch a video lesson on client server architecture.
- Video Link1: <https://www.youtube.com/watch?v=RsQ1tFLwldY>
- Video Link2: <https://www.youtube.com/watch?v=Zfmk0GtANNs>
- Note the important issues.
- Discuss and plan a client server architecture for the network established in your class.
- Present it to your class for feedback.
- Your trainer will facilitate this session.

**Self-Check Quiz 1.1.1**

Write the correct answer for the following questions by filling-in the blanks.

1. In simplest form, a server is a _____ point for several _____, that will handle their _____.
2. A client is _____ that (usually) connects to the server to perform _____.

**Learning Activity 1.1.2**

| Learning Activity | Resources/Special Instructions/References |
|---|--|
| Identify types of network and their functionality | <ul style="list-style-type: none"> ▪ Information Sheet: 1.1.2 ▪ Self-Check Quiz: 1.1.2 ▪ Answer Key: 1.1.2 ▪ https://www.lifewire.com/lans-wans-and-other-area-networks-817376 |



Information Sheet 1.1.2

Learning objective: to identify types of network and their functionality.

▪ Types of network and their functionality:

One way to categorize the different types of computer network designs is by their scope or scale. For historical reasons, the networking industry refers to nearly every type of design as some kind of *area network*. Common types of area networks are:

- LAN - Local Area Network
- WAN - Wide Area Network
- WLAN - Wireless Local Area Network
- MAN - Metropolitan Area Network
- SAN - Storage Area Network, System Area Network, Server Area Network, or sometimes Small Area Network
- CAN - Campus Area Network, Controller Area Network, or sometimes Cluster Area Network
- PAN - Personal Area Network

LAN and WAN are the two primary and best-known categories of area networks, while the others have emerged with technological advances.

▪ LAN: Local Area Network

A LAN connects network devices over a relatively short distance. A networked office building, school, or home usually contains a single LAN, though sometimes one building will contain a few small LANs (perhaps one per room), and occasionally a LAN will span a group of nearby buildings. In TCP/IP networking, a LAN is often but not always implemented as a single IP subnet.

▪ WAN: Wide Area Network

As the term implies, a WAN spans a large physical distance. The Internet is the largest WAN, spanning the Earth.

A WAN is a geographically-dispersed collection of LANs. A network device called a router connects LANs to a WAN. In IP networking, the router maintains both a LAN address and a WAN address.

▪ LAN, WAN, and Home Networking

Residences typically employ one LAN and connect to the Internet WAN via an Internet Service Provider (ISP) using a broadband modem. The ISP provides a WAN IP address to the modem, and all of the computers on the home network use LAN IP addresses. All computers on the home LAN can communicate directly with each other but must go through a central network gateway, typically a broadband router, to reach the ISP.

▪ Other Types of Area Networks

While LAN and WAN are by far the most popular network types mentioned, you may also commonly see references to these others:

- **Wireless Local Area Network** - A LAN based on Wi-Fi wireless network technology
- **Metropolitan Area Network** - A network spanning a physical area larger than a LAN but smaller than a WAN, such as a city. A MAN is typically owned and operated by a single entity such as a government body or large corporation.
- **Campus Area Network** - A network spanning multiple LANs but smaller than a MAN, such as on a university or local business campus.
- **Storage Area Network** - Connects servers to data storage devices through a technology like Fibre Channel.
- **System Area Network** (also known as Cluster Area Network) - Links high-performance computers with high-speed connections in a cluster configuration.

Individual Activity:

- Your trainer will show a PowerPoint presentation on network types and their functionality.
- You will identify and note the types of network and their functionality.
- The session will be participatory.

**Self-Check Quiz 1.1.2**

Read the following statement carefully and state whether it is 'True' or 'False'.

1. In TCP/IP networking, a LAN is often implemented as a single IP subnet.
2. A WAN spans a large physical distance. The Internet is the largest WAN, spanning the Earth.
3. In IP networking, a device other than the router maintains both a LAN address and a WAN address.
4. A storage area network connects servers to data storage devices through a technology like Fibre Channel.
5. Some server area network links high-performance computers with high-speed connections in a cluster configuration.

**Learning Activity 1.1.3**

| Learning Activity | Resources/Special Instructions/References |
|--|---|
| Categorise different types of websites | <ul style="list-style-type: none">▪ Information Sheet: 1.1.3▪ Self-Check Quiz: 1.1.3▪ Answer Key: 1.1.3▪ http://www.alinscribe.com/articles/344/list-of-website-categories-250-categories-exclusively-available-over-the-internet.html |

**Information Sheet 1.1.3**

Learning objective: to categorise different types of websites.

▪ Website Category:

If someone was to look for a particular kind of website, then they won't find a single list of website categories that can give the answer to such queries. This means that if you do not know the exact address of the website then it would become very difficult to search for a website. Search engines will also not be able to provide you with results based on categories. The whole algorithm of search engines is such that it will try and show you only those results which are popular and trending in market close to your geographic location.

There are more than 250 different categories of website over the internet. Here 34 broad categories are listed for your understandings.

List of web category:

| | | |
|------------|-----------------|------------------------|
| | Finance | Information Technology |
| Arts | Fitness | News and Media |
| Automobile | Food & Beverage | People and Society |

| | | |
|---------------|---------------|--------------------|
| Blogs | Gambling | Pets and Animals |
| Books | Games | Reference |
| Business | Government | Science |
| Career | Hardware | Shopping |
| Celebrities | Health | Sports |
| Computer | Hobbies | Telecommunications |
| Education | Home & Family | Travel |
| Electronics | Industry | Adult |
| Entertainment | Literature | |

Individual Activity:

- Fill the following table with necessary information with website category and examples. Include as many as possible websites for your future reference. You may visit the referenced site or search in search engines.

| Website category | Example (name of websites) |
|------------------|----------------------------|
| | |
| | |
| | |
| | |
| | |



Self-Check Quiz 1.1.3

Answering the following questions:

- How does a search engine show the results of your query?
- Write 5 names of website categories.



Learning Outcome 1.2 - Identify the Browser



Contents:

- Identify web browser
- Introduce different web browsers
- Demonstrate installation and usage of different web browsers
- Explain working with a web browser
- Recognize features/options of different web browsers
- Practice cross browser compatibility of websites



Assessment criteria:

1. Web browser is identified.
2. Different types of web browser are introduced.
3. Installation and usage of different web browsers is demonstrated.
4. Working with a web browser is explained.
5. Features/options of different web browsers are recognised.
6. Cross browser compatibility of websites is practiced.



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- Internet
- Pens
- Papers
- Instruction sheet/manual



Learning Activity 1.2.1

| Learning Activity | Resources/Special Instructions/References |
|----------------------|---|
| Identify web browser | <ul style="list-style-type: none">▪ Information Sheet: 1.2.1▪ Self-Check Quiz: 1.2.1▪ Answer Key: 1.2.1▪ https://resbook.zendesk.com/hc/en-us/articles/217297707-What-is-a-Web-Browser-And-How-To-Identify-It- |



Information Sheet 1.2.1

Learning Objective: to identify web browser.

▪ **Web browser:**

A Web Browser is an application that we use on computers to access the internet. There will always be a Web Browser installed on your computer when you turn it on for the first time. However, you have the ability to install other browsers from the internet if you prefer.

A web browser allows a user to locate, access, and display web pages. In common usage, a web browser is usually shortened to "browser". Browsers are used primarily for displaying and accessing websites on the internet, as well as other content created using languages such as Hypertext Mark-up Language (HTML) and Extensible Mark-up Language (XML).

There are several browsers available however, and we will outline the main ones in the table below:

| Name of Browser | Logo | Compatible Operating Systems |
|-------------------|------|--|
| Internet Explorer | | Microsoft Windows |
| Safari | | Apple Mac OS X Microsoft Windows (Not available from Apple Website) |
| Google Chrome | | Apple Mac OS X Microsoft Windows |
| Mozilla Firefox | | Apple Mac OS X Microsoft Windows |
| Microsoft Edge | | Microsoft Windows 10 |

There are multiple other browsers available to be used including Opera for example, however these are the most common browsers available.

To easily identify your browser, refer to the logo's above. If the browser you're using is not listed here, then just simply go to your start menu, and find the browser in your programs list

Individual Activity:

- Identify browsers on your computer.
- Search on internet for browsers and list them for future reference.
- Share your work in class.



Self-Check Quiz 1.2.1

Answer the following questions by filling-in the blank cells of the following table with proper information:

| Logo | Name of Browser | Compatible Operating Systems |
|------------------------|-----------------|------------------------------|
| e | | |
| Firefox logo | | |
| Internet Explorer logo | | |
| Chrome logo | | |
| Safari logo | | |



Learning Activity 1.2.2

| Learning Activity | Resources/Special Instructions/References |
|----------------------------------|---|
| Introduce different web browsers | <ul style="list-style-type: none">▪ Information Sheet: 1.2.2▪ Self-Check Quiz: 1.2.2▪ Answer Key: 1.2.2▪ https://www.tutorialspoint.com/web_developers_guide/web_browser_types.htm |



Information Sheet 1.2.2

Learning Objective: to introduce different web browsers.

- There are four leading web browsers – Explorer, Firefox, Netscape, and Safari, but there are many other browsers available. You might be interested in knowing Complete Browser Statistics. Now we will see these browsers in bit more detail.
- While developing a website, you should try to make it compatible to as many browsers as possible. Especially sites should be compatible to major browsers like Explorer, Firefox, Chrome, Netscape, Opera, and Safari.
- Following table contains introduction of some popular web browsers.

| Web Browser | Related information |
|-------------------|--|
| Internet Explorer | Internet Explorer (IE) is a product from software giant Microsoft. This is the most commonly used browser in the universe. This was introduced in 1995 along with Windows 95 launch and it passed Netscape popularity in 1998. |
| Google Chrome | This web browser is developed by Google and its beta version was first released on September 2, 2008 for Microsoft Windows. Today, Chrome is known to be one of the most popular web browsers with its global share of more than 50%. |
| Mozilla Firefox | Firefox is a new browser derived from Mozilla. It was released in 2004 and has grown to be the second most popular browser on the Internet. |
| Safari | Safari is a web browser developed by Apple Inc. and included in Mac OS X. It was first released as a public beta in January 2003. Safari has very good support for latest technologies like XHTML, CSS2 etc. |
| Opera | Opera is smaller and faster than most other browsers, yet it is full- featured. Fast, user-friendly, with keyboard interface, multiple windows, zoom functions, and more. Java and non-Java-enabled versions available. Ideal for newcomers to the Internet, school children, handicap and as a front-end for CD-ROM and kiosks. |
| Konqueror | Konqueror is an Open Source web browser with HTML 4.01 compliance, supporting Java applets, JavaScript, CSS 1, CSS 2.1, as well as Netscape plugins. This works as a file manager as well as it supports basic file management on local UNIX filesystems, from simple cut/copy and paste operations to advanced remote and local network file browsing |
| Lynx | Lynx is a fully-featured World Wide Web browser for users on Unix, VMS, and other platforms running cursor-addressable, character-cell terminals or emulators. |

Individual Activity:

- Search internet for popular browsers.
- Collect information and list in the following format.

| Web Browser | Related information |
|-------------|---------------------|
| | |
| | |

- Share your work in class.



Self-Check Quiz 1.2.2

Write Short note on following web browsers:

1. Safari
2. Chrome
3. Opera
4. Internet Explorer



Learning Activity 1.2.3

| Learning Activity | Resources/Special Instructions/References |
|--|---|
| Demonstrate installation and usage of different web browsers | <ul style="list-style-type: none">▪ Information Sheet: 1.2.3▪ Self-Check Quiz: 1.2.3▪ Answer Key: 1.2.3▪ https://www.hellotech.com/blog/install-new-web-browser/▪ https://www.wikihow.com/Install-a-New-Browser |



Information Sheet 1.2.3

Learning Objective: to demonstrate installation and usage of different web browsers.

- Installation of Browsers:
- You will need the installation package for a browser you want to install.
 - You will find installation package on the internet. Googling is a good option for this.
 - You need to download the package and run the installation package.



Job Sheet 1.2.3A

| | |
|--------------|---|
| Job Title | Installing “Google Chrome” Browser |
| Instructions | <ul style="list-style-type: none">▪ Open google on a browser▪ Search for the installation pack of google chrome browser.▪ Download (free or purchased) the installation pack from internet▪ Run the installer▪ Follow the instruction appeared▪ Finish and restart computer before using it. |
| Outcome | A shortcut icon for google chrome will be in the start menu or on the desktop. The browser can be run by double -clicking the icon. |



Job Sheet 1.2.3B

| | |
|--------------|---|
| Job Title | Using web browser |
| Instructions | <p>Apply following instructions while using browser for surfing internet.</p> <ol style="list-style-type: none">1. Key words<ul style="list-style-type: none">- List keywords that define your topic - these will become your search terms.- Be as specific as possible e.g. Labrador rather than Dogs<p>Example: What percentage of Australia's electricity comes from wind power? Key words might be: wind, power, Australia, electricity</p>2. Use quotation marks for exact phrases<p>e.g. "wind power" will result in web pages where that phrase appears. There will be fewer sites than if we searched for wind and power separately.</p>3. Boolean searching: Use + and – to narrow your search<ul style="list-style-type: none">▪ "wind power" +Australia → "wind power" AND Australia▪ Use + or AND to include all words.▪ "wind power" + Australia -jobs → "wind power" AND Australia NOT jobs▪ Use – or NOT to exclude words you do not want.▪ IMPORTANT: do not use a space between the + and – signs and the search term e.g. -jobs not - jobs4. Advanced search option in Google Click the Advanced Search button at bottom of Google start or results page to refine your search by date, country, amount, language, or other criteria.5. Browser History Handy to find webpages you may have used previously or dismissed.6. Searching the webpage – use Ctrl+F Once you've found a webpage that looks useful, use the Search window on the webpage, or press CTRL+F to open the FIND box. Type the word or phrase you are looking for and then press ENTER. Click the Highlight All Matches button to show or hide all matches on the page. To filter the matches, press Options, and then click one or both of the following:<ul style="list-style-type: none">▪ Match Whole Word Only.▪ Match Case. Click Next or Previous to move from one matched word or phrase to another7. Set a time limit then change tactics/use different search engines www.yahoo.com; www.ask.com; www.boolify.org; www.duckduckgo.com; www.bing.com. |
| Outcome | You will be able to evaluate websites with answers of the following questions. <ul style="list-style-type: none">▪ What can the URL tell you? gov.edu; org au▪ Who is the author? Is he/she a qualified authority on the subject? You should be able to contact them through an 'About us' or 'Contact' section.▪ Why was the website created? Is there bias?▪ Is it current?▪ Does the page have overall integrity and reliability as a source? |



Self-Check Quiz 1.2.3

Write correct answer for the following questions:

1. From where will you get the installation pack for web browsers?
2. What are the common steps for installation of a web browser?



Learning Activity 1.2.4

| Learning Activity | Resources/Special Instructions/References |
|------------------------------------|---|
| Explain working with a web browser | <ul style="list-style-type: none">▪ Information Sheet: 1.2.4▪ Self-Check Quiz: 1.2.4▪ Answer Key: 1.2.4▪ https://thebestvpn.com/safe-internet-browsing/▪ https://www.slideshare.net/msz/web-browser-basics-tips-tricks-draft-20-revised-51871 |



Information Sheet 1.2.4

Learning Objective: to explain working with a web browser.

- Some issues those need to care during using web browsers are discussed here –

1. Use/Install Most Secure Internet Browser
2. Best Internet Browsers for Safe Browsing
 - Microsoft Edge (2017 version)
 - Google Chrome
 - Mozilla Firefox
3. Customize Your Security Settings
4. Use Password Manager (not “AutoFill” options)
Here are 3 Most Popular Password Managers in 2017
 - 1PassWord (\$2.99/month)
 - KeePass (FREE)
 - LastPass (FREE)
5. Use Creativity When You Create Your Passwords
6. Hide Your IP with a VPN:

Best Picks for VPN:

- Express VPN
- Nord VPN
- Vypr VPN
- Pure VPN

7. Confirming Site's Security (https vs. http)
8. Phishing Emails and Tips to Avoid Them

Tips for Recognising Phishing

- Spelling or grammar mistakes. Real companies hire copy editors to check their emails before they go out.
- It doesn't use your name.
- It's from someone you don't know, or it refers to a transaction that is unfamiliar to you.
- It asks for your personal information.

- It seems too good to be true. Or too bad to be true.
 - The tone is urgent or even threatening.
 - The return address of the email or the URL of the link doesn't look right. For example, instead of taking you to MyBank.com, it goes to MyBank-this-is-real-we-swear.com.
 - It asks you for money or a donation.
 - It's as vague as it can be, and it wants you to click on a link or download a file to find out more.
9. Download Software from Trusted Sources
 10. Avoid File-sharing Sites and Torrenting
 11. Turn on Two-Factor Authentication Whenever Possible
 12. Change Your Passwords After a Breach
 13. Consider Using Credit Monitoring
 14. Consider Using Extra Anti-Virus Protection & Lock Your Screen
 15. Be Prompt about Updating Your Operating System and Software
 16. Use Reputable Shopping Sites
 17. Don't Use Unsecured Wi Fi
 18. Back Up Your Data

Individual Activity:

- Practice using browsers.
- Follow issues discussed on the information sheet for efficient browsing.



Self-Check Quiz 1.2.4

Choose the correct answer for the following questions:

1. Which is the best Internet Browser for safe browsing?
 - a. Microsoft Edge (2017 version)
 - b. Google Chrome
 - c. Mozilla Firefox
 - d. All of them
2. Example of Password manager is?
 - a. KeePass
 - b. LastPass
 - c. Both a and b
 - d. None of them
3. Example of VPN to use for hiding password is?
 - a. Vypr VPN
 - b. Pure VPN
 - c. Both a and b
 - d. None of them
4. Which of the following is not a phishing email?
 - a. It doesn't use your name.
 - b. It contains message from your supervisor.
 - c. It asks you for money or a donation.
 - d. It seems too good to be true. Or too bad to be true.



Learning Activity 1.2.5

| Learning Activity | Resources/Special Instructions/References |
|--|---|
| Recognise features/options of different web browsers | <ul style="list-style-type: none">▪ Information Sheet: 1.2.5▪ Self-Check Quiz: 1.2.5▪ Answer Key: 1.2.5▪ http://www.trustedreviews.com/guide/best-web-browser |



Information Sheet 1.2.5

Learning Objective: to recognise features/options of different web browsers.

- Features/options of different web browsers:

The web browser is one of, if not the, most-used applications on your computer. Where once Internet Explorer was synonymous with the web, now many people just fire up Chrome without a second thought.

| Browser | Features/Options |
|----------------|--|
| Google Chrome | <ul style="list-style-type: none">▪ Since its launch in 2008, Chrome has grown to the point where nearly 60% of desktop users surf using Google's browser. Key features are:<ul style="list-style-type: none">▪ Deeply integrated with Google services▪ Decent performance▪ Easy-to-manage site privacy controls▪ Loads of add-ons▪ Excellent sync▪ Slightly confusing interface |
| Vivaldi | <p>Vivaldi was created by former employees of Opera software and, similar to the Opera browser, is designed with customisation in mind. You can tweak this browser to work in a way that suits you, and it's brimming with innovative features. Key features are:</p> <ul style="list-style-type: none">▪ Incredibly customisable▪ Tab stacking and tiling▪ Based on Chromium▪ Best for power users▪ A little slow |
| Opera | <p>Opera has always been a niche player in the browser market, but loyal users have appreciated its commitment to innovation. It was the first major web browser with tabs. Key features are:</p> <ul style="list-style-type: none">▪ Built-in free VPN▪ Modest extension library▪ Good performance▪ Sync service |
| Microsoft Edge | <p>The days when Microsoft's browsers ruled the roost are long gone. Despite Windows 10 now being installed on nearly a quarter of computers worldwide, only 5% of users prefer Edge – the default Windows 10 browser. Key features are:</p> <ul style="list-style-type: none">▪ Low power consumption▪ Cortana integration▪ Web notes▪ Good performance▪ Sync is half-baked |

| | |
|-----------------|---|
| Mozilla Firefox | Ten years ago, Firefox was the browser to beat, dwarfing Google's upstart Chrome. Now the picture is rather different: Chrome is dominant, and Firefox is slipping towards a mere 10% market share. Key features are: <ul style="list-style-type: none"> ▪ Detailed privacy settings ▪ Customisable ▪ A little slow ▪ Relatively high battery usage |
|-----------------|---|

Individual Activity:

- Browse and prepare list of web browser with their key features and options.
- Share your work in class.



Self-Check Quiz 1.2.5

Answer the following questions by filling-in the blanks:

1. Nearly ____ of desktop users surf using Google chrome.
2. Vivaldi is best for _____ users.
3. _____ has built-in free VPN
4. Microsoft edge has _____ integration.
5. Mozilla Firefox has detailed _____ settings.



Learning Activity 1.2.6

| Learning Activity | Resources/Special Instructions/References |
|--|--|
| Practice cross browser compatibility of websites | <ul style="list-style-type: none"> ▪ Information Sheet: 1.2.6 ▪ Self-Check Quiz: 1.2.6 ▪ Answer Key: 1.2.6 ▪ https://crossbrowsertesting.com/blog/development/cross-platform-website-development/ |



Information Sheet 1.2.6

Learning Objective: to practice cross browser compatibility of websites.

- Browser compatibility

Browser compatibility is the capability or flexibility of a website, web application, script or HTML design to function on different web browsers available in the market.

The benefit of creating a website with browser compatibility is that it improves a website's reach and cuts down on loss in performance. Browser compatibility also can be described as the potential of a web browser to efficiently display the HTML code and carry out the scripts on web pages.

- Cross browser compatibility

Cross-browser refers to the ability for a website, web application, HTML construct or client-side script to support all the web browsers. The term cross-browser is often confused with multi-browser. Multi-browser

means something works with several web browsers. Cross-browser means something works with all versions of all browsers to have existed since the web began.

- **Make your website cross browser compatible:**

When you have everything in place for your website and are preparing to go live, there are several things that need to be checked first. One of those is Cross-Browser Compatibility.

Make sure that you follow the following tips for cross browser compatibility.

- **Define Valid Doctype**

The Doctype tells the browser the type of rules you use in your code. If not specified, the browser will start the guessing game which will not end well for your website. Different browsers will make different guesses.

- **CSS Reset**

All browsers behave according to their default CSS rules. In order to have the same behaviour on all browsers, you need to define consistent CSS rules. CSS resets force browsers to reset their default rules to null, are quite readily available on the internet and you can easily find one online.

- **Conditional Comments**

Conditional comments are used to help overcome display issues with early versions of Internet Explorer. Internet Explorer has long been the bane of website developers, with its inconsistent display model. It is a recommended practice to use conditional comments to take care of this. Through these conditional comments, you will be able to link different style sheets with different browsers.

- **CSS Frameworks**

CSS Frameworks are style sheets which offer easier and convenient methods of web designing, as they are mostly cross-browser compatible. Additionally, they will generally contain a grid to allow for responsive design.

- **Validate**

Utilize the W3C Validation Service to make sure that your versions of XHTML and HTML are error free. Debugging errors shown in the validator will address many common display issues so that you can work to have a perfect website.

- **Testing**

Now, when you have assured browser compatibility, it is time for testing. Test your website in different browsers to see that it works on all of them.



Job Sheet 1.2.6

| Job Title | Checking cross browser compatibility of a website |
|--------------|---|
| Instructions | <ul style="list-style-type: none">▪ Select a web site (i.e. seip-fd.gov.bd)▪ Test the site on different browsers (IE, Microsoft Edge, Chrome, Firefox, opera etc.)▪ Monitor its performance on the browsers.▪ Note if any difference is noted.▪ Conclude if the website is cross browser compatible or not.▪ Share your work in class. |
| Outcome | You will be able to decide if the website is cross-browser compatible or not. |



Self-Check Quiz 1.2.6

Answer the following questions by stating whether “True” or “False”.

1. The Doctype tells the browser the type of rules you use in your code.
2. CSS resets force browsers to reset their default rules to null.
3. Conditional comments are used to help overcome display issues with Internet Explorer.
4. Utilise the W3C validation service to ensure your versions of XHTML and HTML are error free.



Learning Outcome 1.3 – Use Web Design Tools



Contents:



Assessment criteria:

1. Web design language is understood.
2. Web design platform is used.
3. Web design software is used.



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- Internet
- Pens
- Papers



Learning Activity 1.3.1

| Learning Activity | Resources/Special Instructions/References |
|--------------------------------|--|
| Understand web design language | <ul style="list-style-type: none"> ▪ Information Sheet: 1.3.1 ▪ Self-Check Quiz: 1.3.1 ▪ Answer Key: 1.3.1 ▪ https://www.webakruti.com/list-web-designing-web-development-programming-languages/ |



Information Sheet 1.3.1

Learning Objective: to understand web design language.

▪ **Web design language.**

Building a website or developing any online product, it's important to remember that there is no single best language who can able to achieve desired results. While developing any project you must have to understand and analyse the project requirement, based on the specific functionality and features you want.

▪ **Basic Web Development Languages**

HTML and CSS are the two most basic web development languages, and are used to build nearly all webpages on the Internet.

| Web design language | In brief |
|---|---|
| HTML / HTML 5  | Experts say that HTML is the past, present, and future of the web and mobile applications. The HTML stands for Hypertext Mark-up Language was firstly introduced in 1991 by Tim Berners-Lee and after that many updates are done in HTML. HTML was specially written for websites, and which is understood by web browsers like Firefox, Opera, Chrome, Safari, and Internet Explorer. With the help of HTML5 and CSS3, you can build any kind of website you want. |
| CSS / CSS3  | CSS stands for the cascading style sheet. CSS manages the presentation of web pages, the way it looks. It always works with HTML. The word "cascading" because we can have multiple style sheets, with one style sheet inheriting properties from others. CSS was first proposed by Hakon Wium Lie in 1994 and was recommended by W3C in 1996 for using it worldwide with HTML. With CSS we are able to create rules and can apply that rules to many elements within our website. We can say that HTML5 with CSS3 have changed the whole scenario of today's website designing and made it more passionate for developers. |
| Client-side scripting JavaScript  | Actually, when JavaScript was invented at Netscape, its name was LiveScript. In May 1995 JavaScript was written in only 10 days by Brendan Eich who was working at Netscape. In December 1995 after receiving trademark license from Sun Microsystems (home of Java), the name JavaScript was adopted. We use JavaScript with HTML and CSS at the front end for validating a form and animating the HTML document. JavaScript makes a web page more interactive. JavaScript is a fascinating language and has its wide end use. JavaScript is world's most popular and most widely used language. |
| jQuery  | jQuery is not a language but a well-written JavaScript code. It is nothing but a small, mostly used (near about 65%) JavaScript library. jQuery was originally released in January 2006 by John Resig. It is now maintained by a developer team led by Timmy Willison. By the 2015 jQuery becomes the most widely used JavaScript library on the web. As jQuery is very light weighted, it decreases the loading time of web pages. Because of this, most |

| | |
|---|---|
| | web browsers like Google and Bing uses jQuery. Those who have knowledge of HTML, CSS, and JavaScript can easily use jQuery. |
| Server-side scripting  | PHP was the world's fastest web scripting language until now. PHP stands for PHP Hypertext Pre-processor; the first letter of PHP stands for its acronym PHP. PHP was created by Rasmus Lerdorf in 1994. PHP goes in rapid changes and launched its new versions as PHP3 in 1998, PHP4 in 2000 and PHP5 in 2004. Later PHP6 and PHP7 were also launched with other new and enhanced features. |
|  | Database systems include MySQL, PostgreSQL, MongoDB, Microsoft SQL Server, Oracle, Sybase, SAP HANA and many others. The database system is generally portable for different DBMS systems as well as incorporated with others system using SQL standard. MySQL system is open for every soft-technology user who wants to work with a flexible and strong database on websites. |

Individual Activity:

- Select the web design language you want to work with (i.e. HTML, CSS etc.).
- Open the language environment.
- Note the features of working environment of the languages.



Self-Check Quiz 1.3.1

Write the correct answer for the following:

1. What are the most basic web design languages?
2. Name two client-side scripting language.
3. Write name of two server-side scripting languages.



Learning Activity 1.3.2

| Learning Activity | Resources/Special Instructions/References |
|-------------------------|--|
| Use web design platform | <ul style="list-style-type: none"> ▪ Information Sheet: 1.3.2 ▪ Self-Check Quiz: 1.3.2 ▪ Answer Key: 1.3.2 ▪ https://www.webdesignrankings.com/the-best-web-design-platforms/ |



Information Sheet 1.3.2

Learning Objective: to use web design platform.

▪ **Web design platform.**

Web design platforms help you to make your designed website with appropriate infrastructure, layout, goals, and appearance. Here are some most popular web design platforms listed for your reference.

| Web design Platform | In brief |
|---|--|
| WordPress  | WordPress is now arguably the most popular web design platform in the world. It's easy to use, it's intuitive, and it has a huge range of different options so that even people who aren't designers can create good-looking sites. WordPress also comes with a lot of additional features, including: <ul style="list-style-type: none"> ▪ Free and paid options ▪ Active plug-in marketplace ▪ Simplistic content management system (CMS) ▪ Lots of customization options ▪ Ecommerce capabilities |
| Joomla  | Joomla is another web design platform that gives you the chance to quickly and easily make changes to your site. It also has a huge user base, like WordPress, and it's constantly updated with new patches and features to keep it running strong. <ul style="list-style-type: none"> ▪ Some of Joomla's most important features include: ▪ Simple CMS ▪ Lots of customization options ▪ Multimedia management ▪ Built-in website search ▪ Automatically responsive for mobile users Overall, Joomla is a reliable and affordable platform that's used by millions. |
| Magento  | Magento is a popular web design platform for use with ecommerce, especially. It's designed to help websites sell products over the Internet as seamlessly as possible. In addition, it's open-source, which means you can code unique features into your site without any problem or using standardised plug-ins. Magento's most notable features include: <ul style="list-style-type: none"> ▪ Free and paid options ▪ Open-source customization ▪ Ecommerce specialization ▪ Huge support community ▪ Direct customer support for users When you use Magento, you get a lot of perks - even if you're using it for free. |
| Wix  | Wix is one of the most simplistic web design platforms on the market. It's almost overly-simplistic, and it comes with a convenient, what-you-see-is-what-you-get (WYSIWIG) layout. You can basically customize individual pages by clicking and dragging, and there's minimal coding involved. Some of Wix's key advantages are: <ul style="list-style-type: none"> ▪ WYSIWIG interface ▪ Low learning curve ▪ Free and extremely affordable paid options ▪ Intuitive "Help" options ▪ Extensive template selection The people who use Wix are generally not coders - they're visually-oriented people who want simple and fast results. |



Job Sheet 1.3.2

| Job Title | Checking cross browser compatibility of a website |
|--------------|---|
| Instructions | <ul style="list-style-type: none"> ▪ Select a web site (i.e. seip-fd.gov.bd) ▪ Test the site on different browsers (IE, Microsoft Edge, Chrome, Firefox, opera etc.) ▪ Monitor its performance on the browsers. ▪ Note if any difference is noted. ▪ Conclude if the website is cross browser compatible or not. |

| | |
|---------|---|
| | <ul style="list-style-type: none"> ▪ Share your work in class. |
| Outcome | You will be able to decide if the website is cross-browser compatible or not. |



Self-Check Quiz 1.3.2

Write short note on the following:

1. Joomla
2. WordPress
3. Wix



Learning Activity 1.3.3

| Learning Activity | Resources/Special Instructions/References |
|-------------------------|--|
| Use web design software | <ul style="list-style-type: none"> ▪ Information Sheet: 1.3.3 ▪ Self-Check Quiz: 1.3.3 ▪ Answer Key: 1.3.3 ▪ https://websitesetup.org/web-design-software/ ; https://www.techradar.com/news/best-web-design-software |



Information Sheet 1.3.3

Learning Objective: to use web design platform.

▪ **Web design software.**

As a beginner you should keep in mind the following list of web design software and where to select one. Following table will give you a snapshot on the issue.

| Do you find yourself thinking | Choose one from this list |
|--|---|
| I just want to build a simple website: | WordPress |
| I want to communicate with the person building my site better: | Balsamiq Lightshot Coggle |
| I want to experiment with web design, but have a small budget: | WordPress GIMP Adobe Colour WAMP Chrome DevTools Sublime Text 2 |
| I want the best web design software on the market: | WordPress Adobe Photoshop Sketch Balsamiq Chrome DevTools Sublime Text 2 |

Individual Activity:

- Watch the following video clips:
 - <https://www.youtube.com/watch?v=EgOcq1Dvohk>
 - <https://www.youtube.com/watch?v=M4HC4lg0TRw>
- Note the important issues to follow during practice.

**Self-Check Quiz 1.3.3**

Write the correct answer for the following:

1. What is the design software used to experiment with web design, but you only have a small budget?
2. Name the software required to build a simple website.
3. What is the software suggested to communicate with the person building the website better?



Learning Outcome 1.4 - Explain Role of Web Server



Contents:

- Identify web server
- Define local web server
- Explain role of web server



Assessment criteria:

1. Web server is identified.
2. Local web server is defined.
3. Role of web server is explained.



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals, software (system and application)
- Internet
- Pens, papers
- Instruction sheet/manual



Learning Activity 1.4.1

| Learning Activity | Resources/Special Instructions/References |
|---------------------|---|
| Identify web server | <ul style="list-style-type: none">▪ Information Sheet: 1.4.1▪ Self-Check Quiz: 1.4.1▪ Answer Key: 1.4.1▪ https://www.cyberciti.biz/faq/find-out-remote-webserver-name/ |



Information Sheet 1.4.1

Learning Objective: to identify web server.

Webserver

- A web server is a system that delivers content or services to end users over the internet. A web server consists of a physical server, server operating system (OS) and software used to facilitate HTTP communication.
- The primary function of web server is to store, process and deliver web pages to clients. The communication between client and server takes place using the Hypertext Transfer Protocol (HTTP).
- A web server is also known as an internet server.
- All computers that host **Websites** must have **Web server** programs. Leading **Web servers** include Apache (the most widely-installed **Web server**), Microsoft's Internet Information Server (IIS) and nginx (pronounced engine X) from NGNIX.

Identify webserver

To identify webserver, you can use standard utilities like telnet or curl command. Syntax is:

- \$ telnet www.vivekgite.com www
- \$ curl -I http://www.remote-server.com/
- You can use websites like www.netcraft.com to find the server information of a website. Just go to http://news.netcraft.com/ and type in the site name in the upper left input field that says, "What's that site running?"

You will find the server information on the next screen appeared.

Individual Activity:

- Apply techniques to find web server of a website.
- Practice it several times for different websites.
- Note your experience and share to your class.



Self-Check Quiz 1.4.1

Write the missing words for the following:

1. A web server consists of a _____ server, server _____ and _____ used to facilitate HTTP communication.
2. The primary function of a web server is to _____, and _____ web pages to clients.
3. A web server is also known as a _____ server.



Learning Activity 1.4.2

| Learning Activity | Resources/Special Instructions/References |
|-------------------------|---|
| Define local web server | <ul style="list-style-type: none">▪ Information Sheet: 1.4.2▪ Self-Check Quiz: 1.4.2▪ Answer Key: 1.4.2▪ https://en.wikipedia.org/wiki/Web_server |



Information Sheet 1.4.2

Learning Objective: to define local web server.

- **Local web server**

- When you want web server facilities on your computer or LAN, local web server is a solution. Generally, it requires for web developers to test their website before going live on internet.
- When developing a website, a web designer needs to be able to see his webpages the same way the end user would. Sometimes simply clicking on and viewing your HTML files in the web browser is enough, but if you want to test dynamic content, you will need to set up a local web server.

- **Statistics of web server usage**

Below are the latest statistics of the *market share of all sites* of the top web servers on the Internet by W3Techs (https://w3techs.com/technologies/overview/web_server/all).

| Product | Vendor | Percent |
|----------------------|------------------------|---------|
| Apache | Apache | 45.9% |
| nginx | NGINX, Inc. | 39.0% |
| IIS | Microsoft | 9.5% |
| LiteSpeed Web Server | LiteSpeed Technologies | 3.4% |
| GWS | Google | 1.0% |

Individual Activity:

- Search information for Apache, nginx, IIS, LightSpeed and GWS web servers.
- Make a list with their necessary information like – OS, root directory, installation, use etc.
- Share your findings with your class.



Self-Check Quiz 1.4.2

Write true or false for the following statements:

1. Local web servers provide facilities of web servers on a computer or LAN environment.
2. It is not possible to run dynamic websites on a local web server.
3. The market share of using apache server is about 46%.



Learning Activity 1.4.3

| Learning Activity | Resources/Special Instructions/References |
|----------------------------|---|
| Explain role of web server | <ul style="list-style-type: none">▪ Information Sheet: 1.4.3▪ Self-Check Quiz: 1.4.3▪ Answer Key: 1.4.3▪ http://kb.bodhost.com/functions-of-a-web-server/ |



Information Sheet 1.4.3

Learning Objective: to explain role of web server.

▪ **Role of web server**

Major roles of a web server are listed below:

- The primary role of a web server is to store, process and deliver web pages to clients.
- Support the Hypertext Transfer Protocol (HTTP).
- Comply use of multiple web servers for a high traffic website
- Respond to communication requests from a user agent, commonly a web browser or web crawler, and generates an error message if request is failed.
- While the primary function is to serve content, a full implementation of HTTP also includes ways of receiving content from clients. This feature is used for submitting web forms, including uploading of files.
- Many generic web servers also support server-side scripting using Active Server Pages (ASP), PHP, or other scripting languages.
- Web servers are used for serving the World Wide Web.
- Web servers provide support to use devices such as printers, routers, webcams and serving only a local network.
- The web server may be used as a part of a system for monitoring or administering the device in question.

Individual Activity:

- Browse and list the functions of a web server.
- Share your findings with class.
- Update your list from the feedback of your co-learners.



Self-Check Quiz 1.4.3

Write three (3) tasks those can be performed by a web server.



Learning Outcome 1.5 - Explain Role of Database Server



Contents:

- Define database server
- Identify roles of database server
- Explain role of database server



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals, software (system and application)
- Internet
- Pens, paper
- Instruction sheet/manual



Learning Activity 1.5.1

| Learning Activity | Resources/Special Instructions/References |
|------------------------|---|
| Define database server | <ul style="list-style-type: none">▪ Information Sheet: 1.5.1▪ Self-Check Quiz: 1.5.1▪ Answer Key: 1.5.1▪ https://www.computerhope.com/jargon/d/database-server.htm |



Information Sheet 1.5.1

Learning Objective: to define database server.

▪ **Database server:**

A database server is a computer system that provides other computers with services related to accessing and retrieving data from a database.

Access to the database server may occur via a "front end" running locally on a user's machine (e.g., phpMyAdmin), or "back end" running on the database server itself, accessed by remote shell.

After the information within the database is retrieved it is outputted to the user requesting the data.

The database server is independent of the database architecture. Relational databases, flat files, non-relational databases: all these architectures can be accommodated on database servers.

Example: Microsoft SQL Server or MySQL

Individual Activity:

- Browse and list the functions of a database server.
- Run a database server and note the features of working environment.
- Share your findings with class.
- Update your list from the feedback of your co-learners.



Self-Check Quiz 1.5.1

Write the correct answer for the following:

1. What is a database server?
2. How does access to a database occur?
3. Give example of database server.



Learning Activity 1.5.2

| Learning Activity | Resources/Special Instructions/References |
|-----------------------------------|---|
| Identify roles of database server | <ul style="list-style-type: none">▪ Information Sheet: 1.5.2▪ Self-Check Quiz: 1.5.2▪ Answer Key: 1.5.2▪ https://www.computerhope.com/jargon/d/database-server.htm |



Information Sheet 1.5.2

Learning Objective: to define database server.

▪ **Role of Database server:**

Major roles of database server are:

- Check authorization.
- Accepts and processes database requests from clients.
- Ensures integrity constraints not violated.
- Perform query/update processing and transmits response to client.
- Provides concurrent database access, transaction management, and recovery control.

Individual Activity:

- Browse and list the role of a database server
- Share your findings with class.
- Update your list from the feedback of your co-learners.



Self-Check Quiz 1.5.2

Write four (4) roles of a database server.



Learning Activity 1.5.3

| Learning Activity | Resources/Special Instructions/References |
|---------------------------------|---|
| Explain role of database server | <ul style="list-style-type: none">▪ Information Sheet: 1.5.3▪ Self-Check Quiz: 1.5.3▪ Answer Key: 1.5.3▪ https://www.computerhope.com/jargon/d/database-server.htm |



Information Sheet 1.5.3

Learning Objective: to define database server.

- **Database server roles:**
 - Databases have pre-defined roles that allow role members to perform a certain set of activities within the database.
 - Built-in database roles exist in every database and cannot be dropped.
 - At the database level security is managed by members of the db_owner and db_securityadmin roles.
 - Db_securityadmin can add users to all other roles except db_owner.
 - Built-in database roles include the following:

| Role Name | Description | Recommended For |
|-------------------|---|---|
| Db_owner | Database owner. Members of this role can create, alter or drop the database and perform any other action (read/write/modify objects) within the database. Just as members of SYSADMIN can perform any operation within the server members of db_owner can perform any operation within the database. | In development/test environment all developers should be database owners. In production environment, only database administrators. |
| Public | Built-in role that all logins belong to automatically when they are granted permission to connect to the database. Note that you cannot remove a user from public role. Take special care therefore, to limit permissions granted to the public role to bare minimum. | All users are automatically granted membership in public role. |
| Db_securityadmin | Security administrators within the database. Members of this role can execute GRANT, REVOKE, DENY statements, add and remove users to roles; add new roles and drop existing roles; change object ownership. | Database administrators in charge of granting object and statement permissions. |
| Db_accessadmin | Database access administrators can add and remove users from the database, grant and revoke database access from existing users. | Database administrators in charge of granting object and statement permissions. |
| Db_backupoperator | Members of this role can perform database backups, transaction log backups and can execute CHECKPOINT statement. However, they're not allowed to restore database. | Physical database administrators. These are folks that only wish to backup and restore databases and want to take no part (or cannot be trusted for) in rest of the administrative functions. |
| Db_datareader | Members of this role can read data from any table in the database. | Users that only need to read data. These can't make any changes to data unless explicitly granted the permission to do so. |
| Db_datawriter | Data writers can INSERT, UPDATE and DELETE data from any table in the database. | Users that need to make changes to data, but should not change database schema or settings. |
| Db_ddladmin | DDL (data definition language) administrators can create, alter or drop database objects. Members of this role can set table options, change object ownership, truncate table data, examine index statistics and fragmentation; implement full-text search and reclaim space from a table that was truncated. | Database administrators in charge of developing database objects and administering indexes and full-text search. |
| Db_denydatareader | Members of this role cannot read data from any table in the database. | Combination of db_denydatareader and dbdenydatawriter effectively prevents user from doing anything within the |

| | | |
|----------------|--|---|
| | | database. This is a great way of limiting a particular member of Windows group to bare ability to connect to the database without revoking any permissions to the group itself. |
| denydatawriter | Members of this role cannot INSERT / UPDATE / DELETE records in any table in the database. | See db_denydatareader above. |

Individual Activity:

- Practice the role of a database server
- Share your findings with class.
- Your trainer will guide you to work with database server.



Self-Check Quiz 1.5.3

Fill in the blanks of the following statements:

1. Databases have _____ roles that allow role of members to perform a certain set of activities within the database.
2. Database roles exist in every database _____ and cannot be dropped.
3. At the database level security is managed by members of the _____ and _____ roles.
4. _____ and _____ can add users to all other roles except.



REVIEW OF COMPETENCY

Final Checklist

(for the performance criteria of the module Performing Distempering)

| Performance Criteria | Yes | No |
|--|--------------------------|--------------------------|
| 1. Client server architecture/structure is identified. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Different types of network and their functionality is identified. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Different types of website are categorised. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Web browser is identified | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Different types of web browser are introduced. | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Installation and usage of different web browsers is demonstrated. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Working with a web browser is explained. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Features/options of different web browsers are recognized. | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Cross browser compatibility of websites is practiced. | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Web design language is understood. | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Web design platform is used. | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Web design software is used. | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. Web server is identified. | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. Local web server is defined. | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. Role of web server is explained. | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. Database server is defined. | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. Roles of database server are identified. | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. Role of database server is explained | <input type="checkbox"/> | <input type="checkbox"/> |

Now I feel ready to undertake my formal competency assessment.

Signed: _____

Date: _____



ANSWER KEYS

ANSWER KEY 1.1.1

1. In simplest form, a server is a connection point for several clients, that will handle their requests.
2. A client is software that (usually) connects to the server to perform actions.

ANSWER KEY 1.1.2

1. True
2. True
3. False
4. True
5. True

ANSWER KEY 1.1.3

1. The algorithm of search engines is such that it will try and show you only those results which are popular and trending in market close to your geographic location.
2. Blogs, Fitness, Government, News and Media, People and society

ANSWER KEY 1.2.1

1. Hard hat/safety helmet
2. Goggles/safety glasses/eye protector
3. Dust mask
4. Working cloth/apron
5. Belt/body harness
6. Hand gloves
7. Safety shoes/footwear/boots

ANSWER KEY 1.2.2

1. Safari is a web browser developed by Apple Inc. and included in Mac OS X. It was first released as a public beta in January 2003. Safari has very good support for latest technologies like XHTML, CSS2 etc.
2. This web browser is developed by Google and its beta version was first released on September 2, 2008 for Microsoft Windows. Today, chrome is known to be one of the most popular web browsers with its global share of more than 50%.
3. Opera is smaller and faster than most other browsers, yet it is full- featured. Fast, user-friendly, with keyboard interface, multiple windows, zoom functions, and more. Java and non-Java-enabled versions available. Ideal for newcomers to the Internet, school children, handicap and as a front-end for CD-ROM and kiosks.
4. Internet Explorer (IE) is a product from software giant Microsoft. This is the most commonly used browser in the universe. This was introduced in 1995 along with Windows 95 launch and it has passed Netscape popularity in 1998.

ANSWER KEY 1.2.3

1. Most of the web browsers are free to download. We will find by browsing on the internet.
2. The general steps of installing web browsers are:
 - Select the browser
 - Search in the internet for the installation pack
 - Download (free or purchased) the installation pack from internet
 - Run the installer

- Follow the instruction appeared
- Finish and restart computer before using it.

ANSWER KEY 1.2.4

1. D
2. C
3. C
4. B

ANSWER KEY 1.2.5

1. 60%
2. Power
3. Opera
4. Cortana
5. Privacy

ANSWER KEY 1.2.6

1. True
2. True
3. False
4. True

ANSWER KEY 1.3.1

1. HTML5, CSS3.
2. JavaScript, jQuery
3. PHP, MySQL

ANSWER KEY 1.3.2

1. Joomla is a web design platform that gives you the chance to quickly and easily make changes to your site. It has a huge user base and it's constantly updated with new patches and features to keep it running strong. It has an extensions system that works similarly to WordPress's plug-ins, meaning it can be download extra features to customize site. Joomla is a reliable and affordable platform.
2. WordPress is the most popular web design platform in the world. It's easy to use, it's intuitive, and it has a huge range of different options so that even people who aren't designers can create good-looking sites. This platform is excellent for first-timers who want to take a hands-on approach to their website's design and content.
3. Wix is one of the most simplistic web design platforms on the market. It's almost overly-simply, and it comes with a convenient, what-you-see-is-what-you-get (WYSIWIG) layout. One can basically customise individual pages by clicking and dragging, and there's minimal coding involved. Wix is great for companies that want a professional site that they can change with minimal input.

ANSWER KEY 1.3.3

1. WordPress, GIMP, Adobe Color, WAMP, Chrome DevTools, Sublime Text 2
2. WordPress
3. Balsamiq, Lightshot, Coggle

ANSWER KEY 1.4.1

1. Physical, operating system (OS), software
2. Store, process, deliver
3. Internet

ANSWER KEY 1.4.2

1. True

2. False
3. True

ANSWER KEY 1.4.3

1. The primary role of a web server is to store, process and deliver web pages to clients.
2. Support the Hypertext Transfer Protocol (HTTP).
3. Respond to communication requests from a user agent, commonly a web browser or web crawler, and generates an error message if request is failed.

ANSWER KEY 1.5.1

1. A database server is a computer system that provides other computers with services related to accessing and retrieving data from a database. The database server is independent of the database architecture. Relational databases, flat files, non-relational databases: all these architectures can be accommodated on database servers.
2. Access to the database server may occur via a "front end" running locally a user's machine (e.g., phpMyAdmin), or "back end" running on the database server itself, accessed by remote shell. After the information within the database is retrieved it is outputted to the user requesting the data.
3. Microsoft SQL Server, MySQL.

ANSWER KEY 1.5.2

1. Check authorisation.
2. Accepts and processes database requests from clients.
3. Ensures integrity constraints not violated.
4. Perform query/update processing and transmits response to client.

ANSWER KEY 1.5.3

1. Pre-defined
2. Built-in
3. db_owner, db_securityadmin
4. Db_securityadmin, db_owner

Module 2: Setting up development environment



MODULE CONTENT

Module Descriptor:

This module contains information and activities to set up development environment. It specifically includes the tasks of installing local web server, working with the tools of web server and installing FTP clients.

Nominal Duration:

10 hours



Learning Outcomes:

Upon completion of the module, the trainee should be able to:

- 2.1 Install local web server
- 2.2 Work with the tools of web server
- 2.3 Install FTP clients



Performance Criteria:

- 1. Tools and OS platform needed to install for local web server is identified.
- 2. Local web server is installed.
- 3. Local web server is recognised.
- 4. Local web server to test website performance is started.
- 5. Debugger is defined.
- 6. IDE (Integrated Development Environment), debugger, source control, source code is explained.
- 7. FTP (File Transfer Protocol) client is installed.
- 8. FTP client is recognised.
- 9. FTP clients are used to upload or move files to web server.



Learning Outcome 2.1 - Install Local Web Server



Contents:

- Identify tools and OS platform needed to install for local web server
- Install local web server
- Recognize local web server
- Start local web server to test website performance



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 2.1.1

| Learning Activity | Resources/Special Instructions/References |
|---|--|
| Identify tools and OS platform needed to install for local web server | <ul style="list-style-type: none"> ▪ Information Sheet: 2.1.1 ▪ Self-Check Quiz: 2.1.1 ▪ Answer Key: 2.1.1 ▪ https://stackoverflow.com/questions/8664901/what-is-the-difference-between-xampp-or-wamp-server-iis/35099015 |



Information Sheet 2.1.1

Learning Objective: to identify tools and OS platform needed to install for local web server.

▪ **Identify tools and OS Platform needed to install for Local web server:**

You will need at least one computer for stand-alone local web server. You may apply it to a LAN environment. But as an individual web designer, it might be costly to maintain a LAN for designing websites

▪ **Operating systems (OS):**

Most commonly used operating systems on computers and laptops are:

- Windows (7, 8, 10)
- Windows server
- MacOS
- Unix
- Linux

▪ **Server tools:**

There are many tools are available for web servers. Here some most popular tools are listed for your reference.

| Tools | Features |
|-------------|---|
| LAMP SERVER | <ol style="list-style-type: none"> 1. Full form of LAMP is Linux, Apache, MySQL and PHP. 2. This is an open source platform. 3. LAMP Server is work on Linux Operating System only. 4. LAMP is a combine package of Linux, Apache, MySQL and PHP. 5. Apache is the web server 6. Mysql is the relational database management system. 7. PHP is the object-oriented scripting language. |
| WAMP SERVER | <ol style="list-style-type: none"> 1. Full form of WAMP is Windows, Apache, MySQL and PHP. 2. This is an open source platform. 3. WAMP Server is work on Windows Operating System only. 4. LAMP is a combine package of Windows, Apache, MySQL and PHP. 5. Apache is the web server 6. Mysql is the relational database management system. 7. PHP is the object-oriented scripting language. |
| MAMP SERVER | <ol style="list-style-type: none"> 1. Full form of MAMP is MAC, Apache, MySQL and PHP. 2. This is an open source platform. 3. MAMP Server is work on MAC Operating System only. 4. LAMP is a combine package of MAC, Apache, MySQL and PHP. 5. Apache is the web server 6. Mysql is the relational database management system. |

| | |
|--|---|
| | 7. PHP is the object-oriented scripting language. |
| XAMPP SERVER | 1.xampp stands for x-os, apache, mysql, php,perl. 2. This is an open source platform. 3. X-OS means it can be used for any operating system. 4. XAMPP for major operating system including windows, mac, Linux. 5. XAMPP come with additional features including support of perl, filezilla, mercury mail and some scripts. |
| IIS | 1. IIS is a web-server application just like Apache is, except it's made by Microsoft and is Windows only. 2. IIS is more geared towards using ASP.NET and "SQL Server", it can use PHP and MySQL too. 3. IIS (Internet Information Server) is one of the most powerful web servers from Microsoft that is used to host your Web application. 4. IIS has its own Process Engine to handle the request. So, when a request comes from client to server, IIS takes that request and process it and send response back to clients. |
| LARAGON https://laragon.org/ | 1. It is High performance local development environment. 2. Laragon is easy to install, easy to use, easy to extend & easy to operate. 3. Work with your " app " using this nice, short, beautiful url: http://app.test instead of http://localhost/app 4. Laragon is isolated & portable. It is well-known in the PHP Community but also is used for MEAN, Ruby on Rails, Django, Flask, Java, Go. 5. Laragon works out of the box with not only MySQL/MariaDB but also PostgreSQL & MongoDB . With Laragon, they are portable and reliable, so you can focus on what matters. |
| Local by flywheel Local.getflywheel.com | 1. A fuss-free way to install WordPress locally. 2. Flywheel is fast and functional, so we brought those features to the slickest local WordPress development application in the world. 3. Show off your latest work! Create shareable URLs to demo your local WordPress sites to clients, collaborators, friends, or adoring fans. 4. Local by Flywheel offers simple root SSH access to individual sites, so you can tinker around if your heart desires. 5. Any site created via Local by Flywheel will automatically have a self-signed certificate created. Green padlock achieved! 6. Hot-swap between NGINX or Apache 2.4, or switch between PHP versions. Everything will stay up and running. |

Individual Activity:

- Identify OS on your computer.
- Browse internet and choose appropriate tool for web server on your computer.
- Your trainer will guide you to choose the tool.



Self-Check Quiz 2.1.1

Write the correct answer for the following:

1. Write name of three (3) operating systems.
2. Write name of three (3) tools for web servers of three (3) different operating systems.



Learning Activity 2.1.2

| Learning Activity | Resources/Special Instructions/References |
|--------------------------|---|
| Install local Web server | <ul style="list-style-type: none">▪ Information Sheet: 2.1.2▪ Self-Check Quiz: 2.1.2▪ Answer Key: 2.1.2▪ https://www.maketecheasier.com/setup-local-web-server-all-platforms/ |



Information Sheet 2.1.2

Learning Objective: to install web server.

▪ **Installing local web server on Linux, Mac and Windows:**

When developing a website, a web designer needs to be able to see his webpages the same way the end user would. Sometimes simply clicking on and viewing your HTML files in the web browser is enough, but if you want to test dynamic content, you will need to set up a local web server. Doing this is quite simple and can easily be accomplished on Windows, Mac, and Linux. There are many types of web servers available, but we will be using Apache as it is the most common server around, very easy to set up, and compatible with all major operating systems.



Job Sheet 2.1.2

| | |
|--------------|---|
| Job Title | Install webserver |
| Instructions | <p>For Windows:</p> <p>There are several install wizards that bundle things like Apache, MySQL, and PHP together. One of them is XAMPP. XAMPP is available for Linux and Mac OS X too.</p> <ul style="list-style-type: none">▪ Download the Windows version of XAMPP and begin installation. Execute the installer when prompted. You can select only Apache if all you need is a web server. However, if you are planning on using a database, you may want to select MySQL as well.▪ Continue through the installation and click “Finish” when complete. By default, the XAMPP control panel will be launched.▪ Click “Start” for Apache and MySQL if needed. <p>If you navigate to “127.0.0.1” or “localhost” in your web browser, you should see the XAMPP configuration page.</p> <p>Linux:</p> <ul style="list-style-type: none">▪ Apache was designed for Unix-like operating systems. Linux falls under this category, and installation and configuration of Apache webserver can be done in one step.▪ Most popular distributions allow you to install Apache without compiling it from source using one simple command.▪ For Debian, Ubuntu, and Ubuntu-based distro: <code>sudoapt-get install apache2</code>▪ For Red Hat and CentOS <code>sudoyuminstallhttpd</code> |

| | |
|---------|---|
| | <ul style="list-style-type: none"> Once installed, in your web browser, navigate to either “127.0.0.1” or “localhost.” If it displays “It Works!” that means your Apache installation is successful. <p>Mac OS X</p> <p>The good thing about Mac OS X is that Apache is installed by default. All you need to do is turn it on.</p> <ul style="list-style-type: none"> In Finder, go to “Applications -> Utilities”. Then double click on Terminal to open it. <p>To turn on your already pre-installed Apache web server, run the following command:</p> <pre>sudoapachectl start</pre> <p>To test that our web server is running, navigate to “127.0.0.1” or “localhost” in your web browser.</p> |
| Outcome | You will be able to install webserver. |



Self-Check Quiz 2.1.2

Write the correct answer for the following:

- What is the syntax of installing apache server to Ubuntu?
- Write the syntax to install apache server on RedHat?
- How will you test if the web server is installed correctly or not?



Learning Activity 2.1.3

| Learning Activity | Resources/Special Instructions/References |
|----------------------------|--|
| Recognize local web server | <ul style="list-style-type: none"> Information Sheet: 2.1.3 Self-Check Quiz: 2.1.3 Answer Key: 2.1.3 https://www.maketecheasier.com/setup-local-web-server-all-platforms/ |



Information Sheet 2.1.3

Learning Objective: to recognize local web server.

- Recognize local web server:**

After installation of local web server:

Once installed, in your web browser, navigate to either “127.0.0.1” or “localhost.” If it displays “It Works!” that means your local web server - Apache installation is successful.



Any time:

You can check this any time to be sure that the local serve is installed and active.

In case of windows:

If you navigate to "127.0.0.1" or "localhost" in your web browser, you should see the XAMPP configuration page.

Individual Activity:

- Check if your computer has the web server installed.
- Share your experience to class.



Self-Check Quiz 2.1.3

How will you check for the web server on your operating system?



Learning Activity 2.1.4

| Learning Activity | Resources/Special Instructions/References |
|--|---|
| Start local web server to test website performance | <ul style="list-style-type: none"> ▪ Information Sheet: 2.1.4 ▪ Self-Check Quiz: 2.1.4 ▪ Answer Key: 2.1.4 ▪ https://make.wordpress.org/core/handbook/tutorials/installing-a-local-server/xampp/ ▪ https://mrcoles.com/how-start-local-web-server-view-html-files/ |



Information Sheet 2.1.4

Learning Objective: to start local web server to test website performance.

- **Start local web server to test website performance:**

Once installed, generally webservers are started, by default, with your OS. If not, you need to start the service.



Job Sheet 2.1.4

| | |
|--------------|--|
| Job Title | Starting webserver (XAMPP) |
| Instructions | <ul style="list-style-type: none">▪ Runxampp application from installed folder or desktop shortcut icon. Thexampp control panel will appear.▪ The XAMPP Control Panel allows you to manually start and stop Apache andMySQL, or install them as services.▪ To start Apache or MySQL manually, click the Start button under Actions next to thatmodule. |
| Outcome | You will be able to start webserver. |



Self-Check Quiz 2.1.4

How will you start web server manually in windows operating system?



Learning Outcome 2.2 - Work with the Tools of Web Server



Contents:

- Define debugger
- Explain IDE (Integrated Development Environment), debugger, source control, source code



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 2.2.1

| Learning Activity | Resources/Special Instructions/References |
|-------------------|---|
| Define debugger | <ul style="list-style-type: none">▪ Information Sheet: 2.2.1▪ Self-Check Quiz: 2.2.1▪ Answer Key: 2.2.1▪ https://www.templatemonster.com/blog/web-debugging-tools-and-resources/ |



Information Sheet 2.2.1

Learning Objective: to identify tools and OS platform needed to install for local web server.

- **Bug, Debugging:**

Bug: In computer technology, a bug is a coding error in a computer program (here we consider a program to also include the *microcode* that is manufactured into a microprocessor). The process of finding bugs before program users do is called debugging.

Debugging is the routine process of locating and removing computer program bugs, errors or abnormalities, which is methodically handled by software programmers via **debugging** tools. Debugging checks, detects and corrects errors or bugs to allow proper program operation according to set specifications.

- **Debugger:**

A debugger or debugging tool is a computer program that is used to test and debug other programs (the "target" program). The code to be examined might alternatively be running on an instruction set simulator (ISS), a technique that allows great power in its ability to halt when specific conditions are encountered.

- **Tools for Code Validation**

Some debugging tools are listed here:

Debug Tool Window (<https://www.jetbrains.com/help/idea/debug-tool-window.html>)

- W3C's HTML Validator(<https://addons.opera.com/en/extensions/details/validator/>)
- W3C's Markup Validation Service (<http://validator.w3.org/>)
- W3C's CSS Validation Service (<http://jigsaw.w3.org/css-validator/>)
- Validity
(<https://chrome.google.com/webstore/detail/validity/bbicmjjbohdfglopkidebfccilipgeif?hl=en-GB>)

Individual Activity:

- Open and check debugging tools.
- Study the working environment of debuggers and note key issues.
- Your trainer will guide you to choose the tool.



Self-Check Quiz 2.2.1

Write short note on the following:

1. Bug
2. Debugging
3. Debugger



Learning Activity 2.2.2

| Learning Activity | Resources/Special Instructions/References |
|---|---|
| Explain IDE (Integrated Development Environment), debugger, source control, source code | <ul style="list-style-type: none">▪ Information Sheet: 2.2.2▪ Self-Check Quiz: 2.2.2▪ Answer Key: 2.2.2▪ https://stackify.com/top-integrated-developer-environments-ides/▪ https://www.templatemonster.com/blog/web-debugging-tools-and-resources/ |



Information Sheet 2.2.2

Learning Objective: to identify tools and OS platform needed to install for local web server.

- **IDE (integrated development environment):**
 - An integrated development environment (IDE) is a software suite that consolidates the basic tools developers need to write and test software. Typically, an IDE contains a code editor, a compiler or interpreter and a debugger that the developer accesses through a single graphical user interface (GUI). An IDE may be a standalone application, or it may be included as part of one or more existing and compatible applications.
 - Popular IDE tools include NetBeans, Eclipse, IntelliJ, Visual Studio and Windows PowerShell.
- **Debugger:**
 - A debugger or debugging tool is a computer program that is used to test and debug other programs (the "target" program). The code to be examined might alternatively be running on an instruction set simulator (ISS), a technique that allows great power in its ability to halt when specific conditions are encountered, but which will typically be somewhat slower than executing the code directly on the appropriate (or the same) processor. Some debuggers offer two modes of operation - full or partial simulation - to limit this impact.
 - Typically, debuggers offer a query processor, a symbol resolver, an expression interpreter, and a debug support interface at its top level.
 - Some debuggers have the ability to modify program state while it is running. It may also be possible to continue execution at a different location in the program to bypass a crash or logical error.

- The same functionality which makes a debugger useful for eliminating bugs allows it to be used as a software cracking tool to evade copy protection, digital rights management, and other software protection features.

- **Source control**

A component of software configuration management, source control, also known as revision control or version control, is the management of changes to documents, computer programs, large web sites, and other collections of information. Changes are usually identified by a number or letter code, termed the "revision number", "revision level", or simply "revision". For example, an initial set of files is "revision 1". When the first change is made, the resulting set is "revision 2", and so on. Each revision is associated with a timestamp and the person making the change. Revisions can be compared, restored, and with some types of files, merged.

- **Source code:**

Source code is the fundamental component of a computer program that is created by a programmer. It can be read and easily understood by a human being. For example, when a programmer types a sequence of C language statements into Windows Notepad and saves the sequence as a text file, the text file is said to contain the source code.

Many different programs exist to create source code. Here is an example of the source code for a Hello World program in C language:

```
/* Hello World program */
#include<stdio.h>
main()
{printf("Hello World");}
```

Even a person with no background in programming can read the C programming source code above and understand that the goal of the program is to print the words "Hello World." In order to carry out the instructions, however, this source code must first be translated into a machine language that the computer's processor can understand; that is the job of a special interpreter program called a compiler - in this case, a C compiler.

Following is an example of an HTML Code:

```
<!DOCTYPE html>
<html>
<head>
<title>This is document title</title>
</head>
<body>
<h1>This is heading 1</h1>
<h2>This is heading 2</h2>
<h3>This is heading 3</h3>

<p>This is a paragraph.</p>
<p>This is another paragraph.</p>

</body>
</html>
```

Individual Activity:

- Browse and list different IDE software and their characteristics.
- Browse and study source codes for different web sites/pages.
- Find the applied source control codes.



Self-Check Quiz 2.2.2

Fill-in the blanks with the appropriate words:

1. An IDE contains a _____, _____ or _____ and a _____.
2. Popular IDE tools include _____, Eclipse, _____, Visual Studio and _____.
3. Debuggers offer a query processor, a _____, an expression interpreter, and an _____ interface at its level.
4. Source control, also known as _____ control or _____ control.
5. _____ is the fundamental component of a computer program that is created by a programmer.



Learning Outcome 2.3 - Install FTP Clients



Contents:

- Install FTP (File Transfer Protocol) client
- Recognize FTP client
- Use FTP clients to upload or move files to web server



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 2.3.1

| Learning Activity | Resources/Special Instructions/References |
|---|---|
| Install FTP (File Transfer Protocol) client | <ul style="list-style-type: none">▪ Information Sheet: 2.3.1▪ Self-Check Quiz: 2.3.1▪ Answer Key: 2.3.1▪ https://www.uvic.ca/systems/support/web/personalwebhosting/ftp.php▪ https://www.siteground.com/tutorials/ftp/client/ |



Information Sheet 2.3.1

Learning Objective: to install FTP (File Transfer Protocol) client.

- **FTP:**

FTP is an acronym for File Transfer Protocol. As the name suggests, **FTP** is used to transfer files between computers on a network. You can **use FTP** to exchange files between computer accounts, transfer files between an account and a desktop computer, or access online software archives. Generally, you will use FTP to transfer your developed website to the hosting space of your registered domain name.

- **FTP Client Software:**

An FTP Client is a software designed to transfer files back-and-forth between a computer and a server over the Internet. It needs to be installed on your computer and can only be used with a live connection to the Internet. Example of FTP client software: FileZilla, Cyberduck, Transmit etc.



Job Sheet 2.3.1

| | |
|--------------|---|
| Job Title | Installing FTP client |
| Instructions | <ul style="list-style-type: none">▪ Select FTP client software (like FileZilla, Cyberduck, or Transmit etc.)▪ Search for the installation pack on internet and download it.▪ Run the installation pack.▪ Follow the instructions appeared on the screen.▪ Finish when installation is completed.▪ Restart your computer for better performance of the installed application. |
| Outcome | You will be able to install FTP client. |



Self-Check Quiz 2.3.1

Write short note on followings:

1. FTP
2. FTP client



Learning Activity 2.3.2

| Learning Activity | Resources/Special Instructions/References |
|----------------------|---|
| Recognize FTP client | <ul style="list-style-type: none">▪ Information Sheet: 2.3.2▪ Self-Check Quiz: 2.3.2▪ Answer Key: 2.3.2▪ https://sg.godaddy.com/help/how-do-i-test-my-ftp-connection-via-the-command-line-in-windows-or-macosx-1786 |



Information Sheet 2.3.2

Learning Objective: to recognize FTP client.

▪ **Recognize FTP client:**

To test your FTP connection using the command line, follow these steps.

- Open a command line interface:
 - In Windows, click **Start**, then **Run**. In the Run dialog box type cmd and click **OK**.
 - In Mac OSX open a Terminal window.
- On the command line:
 - In Windows, type dir> file.txt and hit the Enter key.
 - In Mac OSX, type ls > file.txt and hit the Enter key.
This creates a file to test transferring data to your account.
- At the command prompt type ftp your hosting IP address and hit Enter. If you are unsure of what your hosting account IP address is, you can find it listed under the Account Summary section of your Hosting Control Panel. You should now see a prompt for your login or user name.
- Login with your hosting account username and password. This should result in a User OK/Logged in response.
 - Test uploading and downloading a file:
To upload a file, type put file.txt and hit the Enter key. This should result in a Transfer Complete response.
 - To download a file, type get file.txt and hit the Enter key. This should also result in the Transfer Complete response.
- To close the connection, type quit and hit the Enter key. Then close the window.

If this process was successful, but your FTP program is still not working properly, the most common reason it does not work include:

- Connectivity, including Firewall settings
- Conflicting software, virus, adware, spyware, etc.
- Corrupted Software
- Usability issues/improper settings. Verify the proper use of the given FTP program via its 'help' menu or contacting the software vendor's customer support.

Individual Activity:

- Set up/collect FTP account.
- Check and use FTP client.
- Your trainer will guide you to carry on this activity.



Self-Check Quiz 2.3.2

Write the three (3) most common reasons why FTP does not work.



Learning Activity 2.3.3

| Learning Activity | Resources/Special Instructions/References |
|---|---|
| Use FTP clients to upload or move files to web server | <ul style="list-style-type: none">▪ Information Sheet: 2.3.3▪ Self-Check Quiz: 2.3.3▪ Answer Key: 2.3.3▪ https://www.youtube.com/watch?v=vQhypzKAVCU▪ https://www.youtube.com/watch?v=aRoi4qRWSNg▪ https://www.youtube.com/watch?v=XUmfXTnFMuw |



Information Sheet 2.3.3

Learning Objective: to use FTP clients to upload or move files to web server.

▪ **Use of FTP Client:**

Once you have the details required, as well as an FTP client, you can use it to transfer, modify or delete files on your WordPress site. This gives you more power since you will also be able to access files such as wp-config.php which are inaccessible from the WordPress dashboard.

The default directory is generally /public_html/<sitename>. All WordPress files can be accessed from this directory.

▪ **Transfer files using FileZilla**

1. Run FileZilla.
2. Enter the host name (e.g. ftp.blogvault.org).
3. Enter the username (e.g. test2@blogvault.org) and its corresponding password.
4. Click QuickConnect.
5. Drag the required files from the left-hand panel to the one on the right.

To remove files from your site using FileZilla, follow steps 1-4, and then select the files to be deleted from your site and press the 'Delete' on your keyboard.

If you'd like **to modify or edit files** on your site, you will have to do it offline, and then transfer the files using steps 1-4.

FTP is the most secure way of transferring sensitive information.



Job Sheet 2.3.3

| | |
|--------------|---|
| Job Title | Upload a File using the File Manager |
| Instructions | <ul style="list-style-type: none">▪ Login to cPanel.▪ Under Files, click File Manager.▪ Select Web Root and Show Hidden Files, then click Go. |

| | |
|---------|---|
| | <ul style="list-style-type: none"> ▪ Click to open the folder to which you'd like to upload files. ▪ Click Upload from the top toolbar. ▪ Click Browse (some web browsers will have Choose File instead). ▪ Select the file on your computer that you wish to upload. ▪ Once the file has been selected, it will automatically upload. You may select additional files while uploads are in progress. |
| Outcome | You will be able to upload a file to your website using file manager. |



Self-Check Quiz 2.3.3

Write the three (3) steps of transferring files using FileZilla.



REVIEW OF COMPETENCY

Final Checklist

(for the performance criteria of the module Performing Distempering)

| Performance Criteria | Yes | No |
|--|--------------------------|--------------------------|
| 1. Tools and OS platform needed to install for local web server is identified. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Local web server is installed. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Local Web server is recognized. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Local web server to test website performance is started. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Debugger is defined. | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. IDE (Integrated Development Environment), debugger, source control, source code is explained. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. FTP (File Transfer Protocol) client is installed. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. FTP client is recognized. | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. FTP clients are used to upload or move files to web server | <input type="checkbox"/> | <input type="checkbox"/> |

Now I feel ready to undertake my formal competency assessment.

Signed: _____

Date: _____



ANSWER KEYS

ANSWER KEY 2.1.1

1. Windows 10, MacOS, Linux.
2. WAMP for windows, LAMP for Linux and XAMPP for x-OS.

ANSWER KEY 2.1.2

1. Navigate in your web browser to either “127.0.0.1” or “localhost”. If it displays “It Works!” that means local web server is working on your computer (Apache).
2. True
3. False
4. True
5. True

ANSWER KEY 2.1.3

1. Open a web browser. Navigate to either “127.0.0.1” or “localhost”. If there is an apache server installed, it displays “It Works!”.

ANSWER KEY 2.1.4

1. To start web server on windows, first run xampp application from installed folder or desktop shortcut icon. The xampp control panel will appear. The server can be start manually from this control panel.

ANSWER KEY 2.2.1

1. In computer technology, a bug is a coding error in a computer program (here we consider a program to also include the *microcode* that is manufactured into a microprocessor). The process of finding bugs before program users do is called debugging.
2. Is the routine process of locating and removing computer program bugs, errors or abnormalities, which is methodically handled by software programmers via debugging tools.
3. A debugger or debugging tool is a computer program that is used to test and debug other programs (the "target" program). The code to be examined might alternatively be running on an instruction set simulator (ISS), a technique that allows great power in its ability to halt when specific conditions are encountered.

ANSWER KEY 2.2.2

1. Code editor, a compiler, interpreter, debugger.
2. NetBeans, IntelliJ, Windows PowerShell.
3. Symbol resolver, debug support, top.
4. Revision, version.
5. Source code.

ANSWER KEY 2.3.1

1. **FTP** is an acronym for File Transfer Protocol. As the name suggests, **FTP** is used to transfer files between computers on a network. You can **use FTP** to exchange files between computer accounts, transfer files between an account and a desktop computer, or access online software archives.
2. An **FTP Client** is a software designed to transfer files back-and-forth between a computer and a server over the Internet. It needs to be installed on your computer and can only be used with a live connection to the Internet. Example of **FTP client software**: FileZilla, Cyberduck, Transmit etc.

ANSWER KEY 2.3.2

- Connectivity, including firewall settings
- Conflicting software, virus, adware, spyware, etc.
- Corrupted software

ANSWER KEY 2.3.3

- Run FileZilla.
- Enter the host name (e.g. ftp.blogvault.org).
- Enter the username (e.g. test2@blogvault.org) and its corresponding password.
- Click QuickConnect.
- Drag the required files from the left-hand panel to the one on the right.

Module 3: Work with HTML



MODULE CONTENT

Module Descriptor: This module contains information and activities to work with HTML. It specifically guides with the tasks of understanding HTML, working with HTML and applying the fundamentals of typography.

Nominal Duration: 42 hours



Learning Outcomes:

Upon completion of the module, the trainee should be able to:

- 3.1 Recognise HTML
- 3.2 Work with HTML
- 3.3 Apply the fundamentals of typography



Performance Criteria:

1. Entities & attributes of HTML (Hypertext Mark-up Language) is explained.
2. HTML of a website is written.
3. HTML concepts is implemented.
4. HTML is implemented in software.
5. HTML forms are identified.
6. HTML form elements are used.
7. HTML input types are used.
8. HTML input attributes are used.
9. HTML Graphics are used.
10. HTML Media is used.
11. Typography is defined.
12. Different lettering styles are described.
13. Guidelines for print typography is described and applied.
14. The role of typography on the web is described.
15. Guidelines for web typography is described and applied.



Learning Outcome 3.1 - Recognise HTML



Contents:

- Explain entities and attributes of HTML (Hypertext Mark-up Language)
- Write HTML of a website
- Implement HTML concepts
- Implement HTML in software



Assessment criteria:

1. Entities & attributes of HTML (Hypertext Mark-up Language) is explained.
2. HTML of a website is written.
3. HTML concepts is implemented.
4. HTML is implemented in software.



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- HTML Editor
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 3.1.1

| Learning Activity | Resources/Special Instructions/References |
|--|---|
| Explain entities and attributes of HTML (Hypertext Mark-up Language) | <ul style="list-style-type: none">▪ Information Sheet: 3.1.1▪ Self-Check Quiz: 3.1.1▪ Answer Key: 3.1.1▪ https://www.w3schools.com/html/html_attributes.asp |



Information Sheet 3.1.1

Learning Objective: to explain entities and attributes of HTML (Hypertext Mark-up Language).

▪ **HTML:**

- HTML stands for Hypertext Mark-up Language, and it is the most widely used language to write web pages.
- Hypertext refers to the way in which Web pages (HTML documents) are linked together. Thus, the link available on a webpage is called Hypertext.
- As its name suggests, HTML is a Mark-up Language which means you use HTML to simply "mark-up" a text document with tags that tell a Web browser how to structure it to display.
- Originally, HTML was developed with the intent of defining the structure of documents like headings, paragraphs, lists, and so forth to facilitate the sharing of scientific information between researchers.
- Now, HTML is being widely used to format web pages with the help of different tags available in HTML language.

▪ **HTML Editors**

To write HTML code for a website or web pages, you will need an editor. Here is some example of HTML editors you can work with:

| | |
|--|--|
| <ul style="list-style-type: none">▪ Aptana Studio 3▪ Arachnophilia▪ Bluefish▪ CoffeeCup▪ Eclipse▪ Komodo IDE▪ Microsoft Visual Studio Community▪ NetBeans | <ul style="list-style-type: none">▪ Notepad++▪ NoteTab Light▪ PSPad▪ BlueGriffon▪ NetObjects Fusion Essentials▪ SeaMonkey▪ https://html-online.com/editor/ |
|--|--|

▪ **Web Browsers:**

To watch your created HTML document, you will need to open that document on a web browser. You already know about web browsers. You can use any web browser like google chrome, internet explorer, Microsoft edge, opera, Firefox etc.

▪ **Basic HTML document:**

In its simplest form, following is an example of an HTML document:

| | |
|--|--|
| <pre><!DOCTYPE html> <html> <head> <title>This is document title</title> </head> <body> <h1>This is heading 1</h1> <h2>This is heading 2</h2> <h3>This is heading 3</h3> <p>This is a paragraph.</p> <p>This is another paragraph.</p> </body> </html></pre> | <p>Save it in an HTML file test.htm using your favourite text editor. Finally open it using a web browser like Internet Explorer or Google Chrome, or Firefox etc. It must show the following output:</p>  |
|--|--|

- **HTML TAGs:**

As told earlier, HTML is a mark-up language and makes use of various tags to format the content. These tags are enclosed within angle braces <Tag Name>. Except few tags, most of the tags have their corresponding closing tags. For example, <html> has its closing tag</html> and <body> tag has its closing tag </body> tag etc.

In the above example, HTML document uses the following tags:

| TAG | Description |
|--------------------|--|
| <!DOCTYPE...> | This tag defines the document type and HTML version. |
| <html>.....</html> | This tag encloses the complete HTML document and mainly comprises of document header which is represented by <head>...</head> and document body which is represented by <body>...</body> tags. |
| <head>...</head> | This tag represents the document's header which can keep other HTML tags like <title>, <link> etc. |
| <title> | The <title> tag is used inside the <head> tag to mention the document title. |
| <body>...</body> | This tag represents the document's body which keeps other HTML tags like <h1>, <div>, <p> etc. |
| <h1> | This tag represents the heading. |
| <p> | This tag represents a paragraph. |

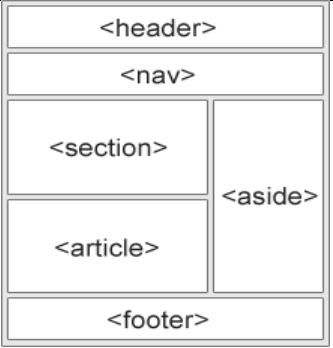
- **Commonly used TAGs in HTML:**

| Elements | Description | Example |
|---------------|---|--|
| Heading Tags | Any document starts with a heading. You can use different sizes for your headings. HTML also has six levels of headings, which use the elements <h1>, <h2>, <h3>, <h4>, <h5>, and <h6>. While displaying any heading, browser adds one line before and one line after that heading. | <pre><!DOCTYPE html> <html> <head> <title>Heading Example</title> </head> <body> <h1>This is heading 1</h1> <h2>This is heading 2</h2> <h3>This is heading 3</h3> <h4>This is heading 4</h4> <h5>This is heading 5</h5> <h6>This is heading 6</h6> </body> </html></pre> |
| Paragraph Tag | The <p> tag offers a way to structure your text into different paragraphs. Each paragraph of text should go in between an | <pre><body> <p>Here is a first paragraph of text.</p> <p>Here is a second paragraph of text.</p> <p>Here is a third paragraph of text.</p></pre> |

| | | |
|-------------------|--|---|
| | opening <code><p></code> and a closing <code></p></code> tag as shown in the example. | <code></body></code> |
| Line Break Tag | Whenever you use the <code> </code> element, anything following it starts from the next line. This tag is an example of an empty element, where you do not need opening and closing tags, as there is nothing to go in between them. | <code><body></code> <code><p>Hello </code> You delivered your assignment on time. <code> </code> <code><p>Mahnaz</p></code> <code></body></code> |
| Centering Content | You can use <code><centre></code> tag to put any content in the centre of the page or any table cell. | <code><body></code> <code><p>This text is not in the centre.</p></code> <code><centre></code> <code><p>This text is in the centre.</p></code> <code></centre></code> <code></body></code> |
| Horizontal Lines | Horizontal lines are used to visually break-up sections of a document. The <code><hr></code> tag creates a line from the current position in the document to the right margin and breaks the line accordingly. <code><hr /></code> tag is an example of the empty element, where you do not need opening and closing tags, as there is nothing to go in between them. | <code><body></code> <code><p>This is paragraph one and should be on top</p></code> <code><hr /></code> <code><p>This is paragraph two and should be at bottom</p></code> <code></body></code> |
| HTML Links | HTML links are defined with the <code><a></code> tag. The link's destination is specified in the <code>href</code> attribute. Attributes are used to provide additional information about HTML elements. | <code>This is a link</code> |
| HTML Images | HTML images are defined with the <code></code> tag. The source file (<code>src</code>), alternative text (<code>alt</code>), <code>width</code> , and <code>height</code> are provided as attributes. | <code></code> |
| HTML Buttons | HTML buttons are defined with the <code><button></code> tag | <code><button>Click me</button></code> |
| HTML Lists | HTML lists are defined with the <code></code> (unordered/bullet list) or the <code></code> (ordered/numbered list) tag, followed by <code></code> tags (list items) | <code></code> <code>Coffee</code> <code>Tea</code> <code>Milk</code> <code></code> |
| HTML Styles | Setting the style of an HTML element, can be done with the <code>style</code> attribute. <ul style="list-style-type: none"> • Use the <code>style</code> attribute for styling HTML elements • Use <code>background-colour</code> for background color • Use <code>color</code> for text colours • Use <code>font-family</code> for text fonts • Use <code>font-size</code> for text sizes • Use <code>text-align</code> for text alignment For background colour: | <code><tagname style="property:value;"></code> <code><body style="background-color:powderblue;"></code> <code><h1>This is a heading</h1></code> <code><p>This is a paragraph.</p></code> <code></body></code> |

| | | |
|--------------------------|---|---|
| | HTML Text colour | <code><h1 style="colour:blue;">This is a heading</h1><p style="colour:red;">This is a paragraph.</p></code> |
| | HTML Fonts | <code><h1 style="font-family:verdana;">This is a heading</h1><p style="font-family:courier;">This is a paragraph.</p></code> |
| | HTML Text Size | <code><h1 style="font-size:300%;">This is a heading</h1><p style="font-size:160%;">This is a paragraph.</p></code> |
| | HTML Text Alignment | <code><h1 style="text-align:center;">Centered Heading</h1><p style="text-align:center;">Centered paragraph.</p></code> |
| HTML Formatting Elements | <p>Formatting elements were designed to display special types of text:</p> <ul style="list-style-type: none"> • <code></code> - Bold text • <code></code> - Important text • <code><i></code> - Italic text • <code></code> - Emphasized text • <code><mark></code> - Marked text • <code><small></code> - Small text • <code></code> - Deleted text • <code><ins></code> - Inserted text • <code><sub></code> - Subscript text • <code><sup></code> - Superscript text | <code>This text is bold</code> <code>This text is strong</code> <code><i>This text is italic</i></code> <code>This text is emphasized</code> <code><h2>HTML <small>Small</small> Formatting</h2></code> <code><h2>HTML <mark>Marked</mark> Formatting</h2></code> <code><p>My favorite colour is blue red.</p></code> <code><p>My favourite<ins>color</ins> is red.</p></code> <code><p>This is <sub>subscripted</sub> text. </p></code> <code><p>This is <sup>superscripted</sup> text. </p></code> |
| Quotation | <p>The HTML <code><q></code> element defines a short quotation.</p> <p>Browsers usually insert quotation marks around the <code><q></code> element.</p> <p>Practice with following tags: <code><abbr></code> <code><address></code> <code><bdo></code> <code><blockquote></code> <code><cite></code> <code><q></code></p> | <code><p>WWF's goal is to: <q>Build a future where people live in harmony with nature.</q></p></code> |
| Comments | <p>Comment tags are used to insert comments in the HTML source code.</p> <p>Syntax is <code><!-- Write your comments here --></code></p> | <code><!-- This is a comment --></code> <code><p>This is a paragraph.</p></code> <code><!-- Remember to add more information here --></code> |
| Colours | <p>HTML colours are specified using predefined color names, or RGB, HEX, HSL, RGBA, HSLA values. In HTML, a color can be specified by using a color name: <code>Tomato</code>, <code>Orange</code>, <code>DodgerBlue</code>, <code>MediumSeaGreen</code>, <code>Grey</code>, <code>SlateBlue</code>, <code>Violet</code>, <code>LightGray</code></p> | <code><h1 style="background-color:DodgerBlue;">Hello World</h1></code> <code><p style="background-color:Tomato;">Lorem ipsum...</p></code> <code><h1 style="color:Tomato;">Hello World</h1></code> <code><p style="color:DodgerBlue;">Lorem ipsum...</p></code> <code><p style="color:MediumSeaGreen;">Ut wisienim...</p></code> |
| CSS | <p>CSS stands for Cascading Style Sheets.</p> <p>CSS can be added to HTML elements in 3 ways:</p> <ul style="list-style-type: none"> • Inline - by using the <code>style</code> attribute in HTML elements | <code><h1 style="colour:blue;">This is a Blue Heading</h1></code> <hr/> <code><!DOCTYPE html></code> <code><html></code> <code><head></code> <code><style></code> |

| | | |
|---------|--|--|
| | <ul style="list-style-type: none"> Internal - by using a <code><style></code> element in the <code><head></code> section External - by using an external CSS file | <pre>body {background-colour: powderblue;} h1 {colour: blue;} p {colour: red;} </style> </head> <body> <h1>This is a heading</h1> <p>This is a paragraph.</p> </body> </html></pre> |
| Tables | <p>An HTML table is defined with the <code><table></code> tag.</p> <p>Each table row is defined with the <code><tr></code> tag.</p> <p>A table header is defined with the <code><th></code> tag.</p> <p>By default, table headings are bold and centered. A table data/cell is defined with the <code><td></code> tag.</p> | <pre><table style="width:100%"> <tr> <th>Firstname</th> <th>Lastname</th> <th>Age</th> </tr> <tr> <td>Jill</td> <td>Smith</td> <td>50</td> </tr> <tr> <td>Eve</td> <td>Jackson</td> <td>94</td> </tr> </table></pre> |
| Blocks | <p>A block-level element always starts on a new line and takes up the full width available (stretches out to the left and right as far as it can).</p> <p>The <code><div></code> element is a block-level element.</p> | <pre><div>Hello</div> <div>World</div></pre> <p>Block level elements in HTML:</p> <pre><address>, <article>, <aside>, <blockquote>, <canvas>, <dd>, <div>, <dl>, <dt>, <fieldset>, <figcaption>, <figure>, <footer>, <form>, <h1>- <h6>, <header>, <hr>, , <main>, <nav>, <noscript>, , <output>, <p>, <pre>, <section>, <table>, <tfoot>, , <video></pre> |
| Classes | <p>The <code>class</code> attribute specifies one or more class names for an HTML element.</p> <p>The class name can be used by CSS and JavaScript to perform certain tasks for elements with the specified class name.</p> <p>In CSS, to select elements with a specific class, write a period (.) character, followed by the name of the class</p> | <pre><style> .city {background- color:tomato;color: white;padding: 10px;} </style> <h2 class="city">London</h2> <p>London is the capital of England.</p> <h2 class="city">Paris</h2> <p>Paris is the capital of France.</p> <h2 class="city">Tokyo</h2> <p>Tokyo is the capital of Japan.</p></pre> |

| | | |
|--------------|--|---|
| Layout | <p>Websites often display content in multiple columns (like a magazine or newspaper).</p> <p>HTML5 offers new semantic elements that define the different parts of a web page.</p> <p>There are four different ways to create multicolumn layouts. Each way has its pros and cons:</p> <ul style="list-style-type: none"> • HTML tables (not recommended) • CSS float property • CSS flexbox • CSS framework |  <ul style="list-style-type: none"> - <header> - Defines a header for a document or a section - <nav> - Defines a container for navigation links - <section> - Defines a section in a document - <article> - Defines an independent self-contained article - <aside> - Defines content aside from the content (like a sidebar) - <footer> - Defines a footer for a document or a section - <details> - Defines additional details - <summary> - Defines a heading for the <details> element |
| Iframes | <p>An iframe is used to display a web page within a web page.</p> <p>An HTML iframe is defined with the <iframe> tag.</p> | <pre style="color: red;"><iframe src="demo_iframe.htm" style="height:200px; width:300px;"></iframe></pre> |
| Head | <p>The <head> element is a container for metadata (data about data) and is placed between the <html> tag and the <body> tag.</p> <p>HTML metadata is data about the HTML document. Metadata is not displayed.</p> <p>Metadata typically define the document title, character set, styles, links, scripts, and other meta information.</p> | <p>The following tags describe metadata: <title>, <style>, <meta>, <link>, <script>, and <base></p> |
| Entities | <p>Some characters are reserved in HTML. If you use the less than (<) or greater than (>) signs in your text, the browser might mix them with tags.</p> <p>Character entities are used to display reserved characters in HTML.</p> <p>A character entity looks like this: <code>&entity_name;</code> OR <code>&#entity_number;</code></p> | <p>Apply entities from Entity List (**)</p> |
| HTML Symbols | <p>Many mathematical, technical, and currency symbols, are not present on a normal keyboard.</p> <p>To add such symbols to an HTML page, you can use an HTML entity name.</p> <p>If no entity name exists, you can use an entity number, a decimal, or hexadecimal reference.</p> | <pre style="color: red;"><p>I will display &euro;</p></p><p>I will display &#8364;</p></p><p>I will display &#x20AC;</p></p></pre> |

| | | |
|------------|---|---|
| URL Encode | <p>A URL is another word for a web address. A URL can be composed of words (separated by dots) or an Internet Protocol (IP) address (114.130.54.243). Most people enter the name when surfing, because names are easier to remember than numbers.</p> | <p>Web browsers request pages from web servers by using a URL. A Uniform Resource Locator (URL) is used to address a document (or other data) on the web. A web address like https://www.microsoft.com/de-de/store/ follows these syntax rules:</p> <p>scheme://prefix.domain:port/path/filename</p> <p>Explanation:</p> <ul style="list-style-type: none"> • scheme - defines the type of Internet service (most common is http or https) • prefix - defines a domain prefix (default for http is www) • domain - defines the Internet domain name (like w3schools.com) • port - defines the port number at the host (default for http is 80) • path - defines a path at the server (If omitted: the root directory of the site) • filename - defines the name of a document or resource |
|------------|---|---|

▪ Entity List:

| Result | Description | Entity Name | Entity Number |
|---------|------------------------------------|-------------|---------------|
| | non-breaking space | &nbsp | |
| < | less than | < | < |
| > | greater than | > | > |
| & | ampersand | & | & |
| '" | double quotation mark | " | " |
| ' | single quotation mark (apostrophe) | ' | ' |
| ¢ | cent | ¢ | ¢ |
| £ | pound | £ | £ |
| ¥ | yen | ¥ | ¥ |
| € | euro | € | € |
| © | copyright | © | © |
| ® | registered trademark | ® | ® |

▪ HTML – ELEMENTS

An HTML element is defined by a starting tag. If the element contains other content, it ends with a closing tag, where the element name is preceded by a forward slash as shown below with few tags:

| | | |
|-----------|---------|---------|
| Start Tag | Content | End Tag |
|-----------|---------|---------|

```

<p>      This is paragraph content.      </p>
<h1>      This is heading content.      </h1>
<div>      This is division content.      </div>
<br />

```

HTML elements with no content are called empty elements. Empty elements do not have an end tag, such as the `
` element (which indicates a line break).

- **Nested HTML Elements**

- It is very much allowed to keep one HTML element inside another HTML element:

```

<!DOCTYPE html>
<html>
<head>
<title>Nested Elements Example</title>
</head>
<body>
<h1>This is <i>italic</i> heading</h1>
<p>This is <u>underlined</u> paragraph</p>
</body>
</html>

```



Job Sheet 3.1.1

| | |
|--------------|--|
| Job Title | Create the home page for your portal using HTML codes, elements and attributes. |
| Instructions | <ul style="list-style-type: none"> ▪ Open Notepad/Notepad++. ▪ Create an HTML document as home page of your portal. ▪ Apply TAGs to decorate and present information on the home page. ▪ Use HTML entity and elements where necessary. ▪ Save your work on webserver. ▪ Open the page on a browser and check how it appears. |
| Outcome | You will be able to apply HTML codes for creating home page. |



Self-Check Quiz 3.1.1

Elaborate following abbreviations:

1. HTML
2. CSS
3. URL

Mark whether the following is “True” or “False”:

4. Heading tags are used only in header section.
5. To create HTML links “src” attribute is used with `<a>` tag.
6. `<!-- -->` TAG is used to insert comments in HTML source code.
7. CSS can be used in classes.

Match the TAGs on left column with the statements on right column:

| No | TAG/attribute | Statement | # |
|----|---------------|--|-----|
| 1 | Color | Block level element | i |
| 2 | Frame | Verdana, courier, Tahoma | ii |
| 3 | <p> | Tomato, Orange, DodgerBlue, MediumSeaGreen, Gray, SlateBlue, Violet, LightGray | iii |
| 4 | Font-family | 1. Web design 2. Graphics design 3. CAD | iv |
| 5 | | Page layout | v |



Learning Activity 3.1.2

| Learning Activity | Resources/Special Instructions/References |
|-------------------------|---|
| Write HTML of a website | <ul style="list-style-type: none">▪ Information Sheet: 3.1.2▪ Self-Check Quiz: 3.1.2▪ Answer Key: 3.1.2▪ http://www.jneuhau.com/write.html |



Information Sheet 3.1.2

Learning Objective: to write HTML of a website.

▪ **HTML:**

- A website is written to showcase of an entity to others. It requires a well-planned display of information so that the readers like it. You already learned about the HTML elements that can be used in websites.
- Web pages are text files, written with a text editor such as SimpleText (Mac), Notepad (Windows) or vi (Unix). The formatting of the page is described with HTML tags. A web browser (Netscape or Internet Explorer) uses the tags to format the text on the page for display.
- All web pages have at least these two pairs of tags:

```
<HTML>
<BODY>
.
</BODY>
</HTML>
```

- The name of the tag (HTML, for example) is enclosed by a less-than symbol (<) and a greater-than symbol (>). Most tags are used in pairs and the closing tag contains a slash (/) before the name.
- Create a folder on your computer for your web pages. Call it something like "web_site". Open your text editor (Notepad, for example) and copy the following text into a new document:

```
<HTML>
<BODY>
```

My Web Page

This is the text of my web page.

Please look at my second web page.

This page was written by *Your Name, your_email@your-ispl.com*

August 21, 2018

```
</BODY>
</HTML>
```

- Save the document in your web_site folder as "index.htm".
- The file names of web pages must not have spaces and should end with the extension ".html" or ".htm".

"web_page" is not a valid file name
"web_page.html" is a valid file name

- Use your web browser (Netscape or Internet Explorer) to open the file you just saved (pull down the File menu to Open or Open Page..., navigate to the file and click Open).
- When viewed in the web browser, the text runs together, like this:

My Web Page This is the text of my web page. Please look at my second web page. This page was written by *Your Name, your_email@your-isp.com* August 21, 2000

- Go back to the text editor and add the tags (highlighted below in green) to format the text when it is displayed by a web browser:

```
<HTML>
<BODY>
```

```
<H1>My Web Page</H1>
```

This is the text of my web page

```
<P>
```

Please look at my second web page.

```
<HR>
```

```
This page was written by Your Name, your_email@your-isp.com<BR>
August 21, 2000
```

```
</BODY>
```

```
</HTML>
```

- Save the text editor document and go back to the web browser. Click Reload or Refresh. The tags you just added will produce this in your web browser:

My Web Page

This is the text of my web page.

Please look at my second web page.

```
This page was written by Your Name, your_email@your-isp.com
August 21, 2000
```

- **Links**

Before creating a link on our page, we need another page to use as the target of the link. In your text editor, open a new file. Paste some text on the page, perhaps a copy of the text in `index.htm`, and save it in the `web_site` folder as "page2.htm".

Use the text editor to open `index.htm` and add a link:

```
<HTML>
<BODY>
```

```
<H1>My Web Page</H1>
```

This is the text of my web page.

```
<P>
```

Please look at my second web page.

<HR>

This page was written by Your Name, your_email@your-ispl.com

August 21, 2000

</BODY>

</HTML>

Go to the web browser and press **Reload** or **Refresh**. The browser will show a clickable link:

My Web Page

This is the text of my web page.

Please look at [my second web page](#).

This page was written by Your Name, your_email@your-ispl.com

August 21, 2000

Individual Activity:

- Write HTML codes for new web pages.
- Test it on local web server.
- Debug, edit to improve the look of the web pages.
- Share your work in class.
- Your trainer will guide you to carry on this activity.



Self-Check Quiz 3.1.2

Mark whether the following statements are “True” or “False”:

1. A website is written to showcase of an entity to others.
2. Web pages are text files, written with a text editor.
3. A web browser uses the tags to format the text on the page for display.
4. All web pages have at least two pairs of tags, <HTML> and <BODY>.
5. To make a link, you need to create a page on the same folder of the main page.



Learning Activity 3.1.3

| Learning Activity | Resources/Special Instructions/References |
|-------------------------|---|
| Implement HTML concepts | <ul style="list-style-type: none">▪ Information Sheet: 3.1.3▪ Self-Check Quiz: 3.1.3▪ Answer Key: 3.1.3▪ http://www.jneuhau.com/write.html |



Information Sheet 3.1.3

Learning Objective: to implement HTML concepts.

▪ **Implement HTML concept:**

You are now ready to implement the concepts of HTML learned on previous sections. Along with the elements you may add followings on your own website:

- Form
- Media
- Object
- Audio
- Video

| | |
|---|--|
| To show a video in HTML, use the <code><video></code> element | <pre><video width="320" height="240" controls> <source src="movie.mp4" type="video/mp4"> <source src="movie.ogg" type="video/ogg"> Your browser does not support the video tag. </video></pre> |
| Before HTML5, audio files could only be played in a browser with a plug-in (like flash). The HTML5 <code><audio></code> element specifies a standard way to embed audio in a web page. | <pre><audio controls> <source src="horse.ogg" type="audio/ogg"> <source src="horse.mp3" type="audio/mpeg"> Your browser does not support the audio element. </audio></pre> |
| The HTML <code><canvas></code> element is used to draw graphics on a web page. | <pre><canvas id="myCanvas" width="200" height="100"></canvas></pre> |
| The HTML <code><svg></code> element is a container for SVG graphics. | <pre><body> <svg width="100" height="100"> <circle cx="50" cy="50" r="40" stroke="green" stroke-width="4" fill="yellow" /> </svg> </body></pre> |

Individual Activity:

- Apply HTML concept on your portfolio.
- Make it attractive with media and animations discussed in this section.
- Debug, edit to improve the look of the web pages.
- Share your work in class.
- Your trainer will guide you to carry on this activity.



Self-Check Quiz 3.1.3

Write the correct answer for the following questions:

1. How will you add a video to your web page?
2. Write the code to include an mp3 file to your web page.
3. How will you include SVG graphics to your web page?



Learning Activity 3.1.4

| Learning Activity | Resources/Special Instructions/References |
|----------------------------|--|
| Implement HTML in software | <ul style="list-style-type: none"> ▪ Information Sheet: 3.1.4 ▪ Self-Check Quiz: 3.1.4 ▪ Answer Key: 3.1.4 ▪ http://www.jneuhaus.com/write.html |



Information Sheet 3.1.4

Learning Objective: to implement HTML in software.

▪ **Web design software:**

You will find many web design software. Some of these even have a visual interface, allowing you to drag and drop links, text and images. Some are geared towards programmers, acting as advanced text editors, and allowing for building a website line-by-line. However, most web design tools exist somewhere between these two extremes. Following tools are included for you considering on ease of use, supported web languages, cost, and how easy the tools make it to upload the finished project once you are done.

We will discuss following popular web design software/ tools of recent times:

1. Adobe Dreamweaver CC (<https://adobe.ly/2LRAiebF>)
2. Bluefish (<http://bluefish.openoffice.nl/download.html>)
3. Atom Text Editor (<https://atom.io/>)
4. Google Web Designer (<https://www.google.com/webdesigner/>)
5. Webflow (<https://webflow.com/pricing>)
6. Visual studio code (Source: <https://code.visualstudio.com/>)
7. Sublime (<https://www.sublimetext.com>)

| Software/ Tool and cost | Brief description |
|---|---|
| Abode Dreamweaver CC \$28.80 / €24.59/ £21.60 per month <ul style="list-style-type: none"> ▪ Very popular web design tool. ▪ Suitable for all levels of expertise. ▪ Visual interface. | <ul style="list-style-type: none"> ▪ Dreamweaver is one of the best-known web design tools on the market and has been around in various forms since the turn of the century. The latest iteration of Dreamweaver is available as part of Adobe's Creative Cloud suite for a fixed monthly fee. You can choose 'beginner', 'intermediate' and 'advanced' skill levels during first launch. ▪ It has refreshingly designed and powerful interface. ▪ Dreamweaver supports virtually any type of web code like basic HTML to CSS, PHP and JavaScript and more. ▪ It supports WordPress and Drupal templates. ▪ It includes a 'live view' for previewing websites. ▪ Dreamweaver is amazingly flexible web design tool. |
| Bluefish Free <ul style="list-style-type: none"> ▪ Lightweight and quick. ▪ Use advanced code via wizards. ▪ No visual interface. | <ul style="list-style-type: none"> ▪ Bluefish is amongst the smallest web design tools available today. The tiny installer weighs in at just under 53MB and setup takes only a few moments. ▪ Bluefish supports a huge range of other languages including PHP, Java, JavaScript, SQL, XML and CSS. Unlike visual WYSIWYG web design tools, the text interface makes for much cleaner code. ▪ Bluefish has an excellent search function, allowing you to find text across multiple projects. ▪ The tool is available free of charge |
| Atom Text Editor Free | <ul style="list-style-type: none"> ▪ Described by its developer as a "hackable text editor for the 21st Century", the free and open source Atom comes to us from the team at GitHub. |

| | |
|--|---|
| <ul style="list-style-type: none"> ▪ Support for multiple web languages ▪ Extendable features via free packages ▪ No visual interface. | <ul style="list-style-type: none"> ▪ Atom is a dedicated desktop app and supports a variety of programming languages such as HTML, JavaScript, Java, PHP, CSS and XML. ▪ The text editor automatically recognizes the language you are using and will color-code and arrange it accordingly. ▪ Atom also has a useful autocomplete feature for writing code. It is a "hackable text editor for the 21st Century", the free and open source Atom comes to us from the team at GitHub. ▪ Atom is truly cross-platform as it is available for Windows, Linux and macOS. |
| <p>Google Web Designer Free</p> <ul style="list-style-type: none"> ▪ Simple WYSIWYG interface. ▪ Support for YouTube and Google Maps. ▪ Primarily designed for creating ads. | <ul style="list-style-type: none"> ▪ Google Web Designer is primarily for creating interactive content in HTML5, JavaScript and CSS to build ads. ▪ It is extremely simple to use GUI which incorporates point-and-click design tools covering text, basic shapes, 3D animations and much more. ▪ It incorporates a handy library of extra components such as images, videos and other advertising tools. ▪ It has both default 'design' view and 'code' view. ▪ It includes a handy web preview option which will open your current project in your default browser. ▪ You can also automatically publish content. ▪ It is free of charge for Windows, macOS and Linux. |
| <p>Visual studio code Free</p> | <ul style="list-style-type: none"> ▪ It is Free. Open source. Runs everywhere. ▪ Visual Studio Code is a lightweight but powerful source code editor which runs on your desktop and is available for Windows, macOS and Linux. ▪ It comes with built-in support for JavaScript, TypeScript and Node.js and has a rich ecosystem of extensions for other languages (such as C++, C#, Java, Python, PHP, Go) and runtimes (such as .NET and Unity). ▪ Source: https://code.visualstudio.com/ |
| <p>Sublime Free</p> | <ul style="list-style-type: none"> ▪ A sophisticated text editor for code, mark-up and prose ▪ Source: https://www.sublimetext.com |

Individual Activity:

- Explore web design software and choose one for you.
- Download and install it.
- Use the software and create a page of your portfolio with it.
- Share your work in class.
- Your trainer will guide you to carry on this activity.



Self-Check Quiz 3.1.4

Fill-in the gaps in the following statements with the appropriate word(s).

1. Dreamweaver supports virtually _____ type of web code.
2. Bluefish is the _____ web design tools available today.
3. _____ is the hackable text editor for the 21st Century.
4. _____ is a truly cross-platform web design software.
5. _____ is primarily applied to build ads.
6. Google Web Designer has both default _____ view and _____ view.



Learning Outcome 3.2 - Work with HTML



Contents:

- Identify HTML forms
- Use HTML form elements
- Use HTML input types
- Use HTML input attributes
- Use HTML Graphics
- Use HTML Media



Assessment criteria:

1. HTML forms are identified.
2. HTML form elements are used.
3. HTML input types are used.
4. HTML input attributes are used.
5. HTML Graphics are used.
6. HTML Media is used.



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- HTML Editor/software/tools
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 3.2.1

| Learning Activity | Resources/Special Instructions/References |
|---------------------|---|
| Identify HTML forms | <ul style="list-style-type: none">▪ Information Sheet: 3.2.1▪ Self-Check Quiz: 3.2.1▪ Answer Key: 3.2.1▪ https://www.w3.org/TR/html401/interact/forms.html |



Information Sheet 3.2.1

Learning Objective: to identify HTML forms.

▪ **HTML Forms:**

- An HTML form is a section of a document containing normal content, mark-up, special elements called *controls* (checkboxes, radio buttons, menus, etc.), and labels on those controls. Users generally "complete" a form by modifying its controls (entering text, selecting menu items, etc.), before submitting the form to an agent for processing (e.g., to a Web server, to a mail server, etc.)
- Here's a simple form that includes labels, radio buttons, and push buttons (reset the form or submit it):

```
<FORM action="http://somesite.com/prog/adduser" method="post">
<P>
<LABEL for="firstname">First name: </LABEL>
<INPUT type="text" id="firstname"><BR>
<LABEL for="lastname">Last name: </LABEL>
<INPUT type="text" id="lastname"><BR>
<LABEL for="email">email: </LABEL>
<INPUT type="text" id="email"><BR>
<INPUT type="radio" name="sex" value="Male"> Male<BR>
<INPUT type="radio" name="sex" value="Female"> Female<BR>
<INPUT type="submit" value="Send"><INPUT type="reset">
</P>
</FORM>
```

Individual Activity:

- Apply code for forms to design a page of your portfolio.
- Share your work in class.
- Your trainer will guide you to carry on this activity.



Self-Check Quiz 3.2.1

State whether the following statements are "True" or "False":

1. Forms can't carry normal content.
2. Controls like checkboxes, radio buttons, menus, etc. can be add to a form.
3. Forms are applied to submit user information to an agent or server.



Learning Activity 3.2.2

| Learning Activity | Resources/Special Instructions/References |
|------------------------|--|
| Use HTML form elements | <ul style="list-style-type: none"> ▪ Information Sheet: 3.2.2 ▪ Self-Check Quiz: 3.2.2 ▪ Answer Key: 3.2.2 ▪ https://www.w3.org/TR/html401/interact/forms.html |



Information Sheet 3.2.2

Learning Objective: to use HTML form elements.

▪ HTML Forms:

- Elements of a form are selected keeping the user's use in mind.
- Following table contains the elements of form.

| Tag | Description | Syntax |
|------------|---|---|
| <form> | Defines an HTML form for user input | <pre><form> First name: <input type="text" name="firstname"> Last name: <input type="text" name="lastname"> </form></pre> |
| <input> | Defines an input control | <input name="firstname" type="text"> |
| <textarea> | Defines a multiline input control (text area) | <pre><textarea name="message" rows="10" cols="30"> The cat was playing in the garden. </textarea></pre> |
| <label> | Defines a label for an <input> element | <pre><form action="/action_page.php"> <label for="male">Male</label> <input type="radio" name="gender" id="male" value="male"> <label for="female">Female</label> <input type="radio" name="gender" id="female" value="female"> <label for="other">Other</label> <input type="radio" name="gender" id="other" value="other"> <input type="submit" value="Submit"> </form></pre> |
| <fieldset> | Groups related elements in a form | <pre><form> <fieldset> <legend>Personalia:</legend> Name: <input type="text"> Email: <input type="text"> Date of birth: <input type="text"> </fieldset> </form></pre> |
| <legend> | Defines a caption for a <fieldset> element | <pre><form> <fieldset> <legend>Personalia:</legend> Name: <input type="text" size="30"> Email: <input type="text" size="30"> </fieldset> </form></pre> |

| | | |
|------------|--|--|
| | | Date of birth: <input type="text" size="10"> </fieldset> </form> |
| <select> | Defines a drop-down list | <select name="cars"> <option value="volvo">Volvo</option> <option value="saab">Saab</option> <option value="fiat">Fiat</option> <option value="audi">Audi</option> </select> |
| <optgroup> | Defines a group of related options in a drop-down list | <select> <optgroup label="Swedish Cars"> <option value="volvo">Volvo</option> <option value="saab">Saab</option> </optgroup> <optgroup label="German Cars"> <option value="mercedes">Mercedes</option> <option value="audi">Audi</option> </optgroup> </select> |
| <option> | Defines an option in a drop-down list | <option value="fiat" selected>Fiat</option> |
| <button> | Defines a clickable button | <button type="button" onclick="alert('Hello World!')">Click Me!</button> |
| <datalist> | Specifies a list of pre-defined options for input controls | <form action="/action_page.php"> <input list="browsers"> <datalist id="browsers"> <option value="Internet Explorer"> <option value="Firefox"> <option value="Chrome"> <option value="Opera"> <option value="Safari"> </datalist> </form> |
| <output> | Defines the result of a calculation | <form action="/action_page.php" oninput="x.value=parseInt(a.value)+parseInt(b.value)"> 0 <input type="range" id="a" name="a" value="50"> 100 + <input type="number" id="b" name="b" value="50"> = <output name="x" for="a b"></output> <input type="submit"> </form> |



Job Sheet 3.2.2

| | |
|--------------|--|
| Job Title | Apply HTML Form elements on a webpage. |
| Instructions | <ul style="list-style-type: none"> ▪ Open Notepad/Notepad++. ▪ Create an HTML document. ▪ Use HTML Form elements to display information on the page. ▪ Save your work on webserver and add to your portal. ▪ Open the page on a browser and check how it appears. |
| Outcome | You will be able use HTML Form elements on webpages. |



Self-Check Quiz 3.2.2

Write the correct answer for the following questions:

1. Write syntax for dropdown option list.
2. How will you use button on web page? Write syntax.
3. Write code to create a multiline text area on a web page.
4. Write syntax to input information on forms.



Learning Activity 3.2.3

| Learning Activity | Resources/Special Instructions/References |
|----------------------|---|
| Use HTML input types | <ul style="list-style-type: none">▪ Information Sheet: 3.2.3▪ Self-Check Quiz: 3.2.3▪ Answer Key: 3.2.3▪ https://www.w3schools.com/html/html_form_input_types.asp |



Information Sheet 3.2.3

Learning Objective: to use HTML input types.

▪ **HTML Input types:**

- <input> element has some specific types according to data to be handled on forms.
- Following table lists the HTML input types.

| Input Type | Definition | Example |
|------------|---|---|
| Text | <input type="text"> defines a one-line text input field | <form> First name: <input type="text" name="firstname"> Last name: <input type="text" name="lastname"></form> |
| password | <input type="password"> defines a password field | <form> User name: <input type="text" name="username"> User password: <input type="password" name="psw"></form> |
| Submit | <input type="submit"> defines a button for submitting form data to a form handler . | <form action="/action_page.php"> First name: <input type="text" name="firstname" value="Mickey"> Last name: <input type="text" name="lastname" value="Mouse"> <input type="submit" value="Submit"></form> |
| reset | <input type="reset"> defines a button for resetting form data. | <form action="/action_page.php"> First name: <input type="text" name="firstname" value="Mickey"> |

| | | |
|-------------------------------------|---|---|
| | defines a reset button that will reset all form values to their default values | Last name: <input type="text" name="lastname" value="Mouse"> <input type="submit" value="Submit"><input type="reset"></form> |
| radio | <input type="radio"> defines a radio button . | <form><input type="radio" name="gender" value="male" checked> Male <input type="radio" name="gender" value="female"> Female <input type="radio" name="gender" value="other"> Other</form> |
| Checkbox | <input type="checkbox"> defines a checkbox . | <form><input type="checkbox" name="vehicle1" value="Bike"> I have a bike <input type="checkbox" name="vehicle2" value="Car"> I have a car</form> |
| button | <input type="button"> defines a button | <input type="button" onclick="alert('Hello World!')" value="Click Me!"> |
| HTML5 added several new input types | | <ul style="list-style-type: none"> • color • date • datetime-local • email • month • number <ul style="list-style-type: none"> • range • search • tel • time • url • week |



Job Sheet 3.2.3

| | |
|--------------|---|
| Job Title | Use HTML input types on a webpage. |
| Instructions | <ul style="list-style-type: none"> ▪ Open Notepad/Notepad++. ▪ Create an HTML document. ▪ Use HTML input types to collect inputs with the page. ▪ Save your work on webserver and add to your portal. ▪ Open the page on a browser and check how it appears. |
| Outcome | You will be able apply HTML input types on webpages. |



Self-Check Quiz 3.2.3

Write the correct answer for the following questions:

1. Name the types of input used on forms.
2. Write five of the types for input added on HTML5.



Learning Activity 3.2.4

| Learning Activity | Resources/Special Instructions/References |
|---------------------------|--|
| Use HTML input attributes | <ul style="list-style-type: none"> ▪ Information Sheet: 3.2.4 ▪ Self-Check Quiz: 3.2.4 ▪ Answer Key: 3.2.4 ▪ https://www.w3schools.com/html/html_form_attributes.asp |



Information Sheet 3.2.4

Learning Objective: to use HTML input attributes.

▪ **HTML Input attributes:**

- Several attributes are applied to use input tag effectively.
- Following table lists the HTML input attributes.

| Attributes | Definition | Example |
|------------|---|---|
| value | The value attribute specifies the initial value for an input field | <pre><form action=""> First name: <input type="text" name="firstname" value="John"> </form></pre> |
| readonly | The readonly attribute specifies that the input field is read only (cannot be changed) | <pre><form action=""> First name: <input type="text" name="firstname" value="John" readonly> </form></pre> |
| disabled | The disabled attribute specifies that the input field is disabled. | <pre><form action=""> First name: <input type="text" name="firstname" value="John" disabled> </form></pre> |
| size | The size attribute specifies the size (in characters) for the input field | <pre><form action=""> First name: <input type="text" name="firstname" value="John" size="40"> </form></pre> |
| maxlength | The maxlength attribute specifies the maximum allowed length for the input field | <pre><form action=""> First name: <input type="text" name="firstname" maxlength="10"> </form></pre> |



Job Sheet 3.2.4

| | |
|--------------|---|
| Job Title | Use HTML input attributes on a webpage. |
| Instructions | <ul style="list-style-type: none"> ▪ Open Notepad/Notepad++. ▪ Open the page created on Job sheet 3.2.3. ▪ Apply HTML input attributes for input information. ▪ Save your work. ▪ Open the page on a browser and check how it works. |
| Outcome | You will be able to apply HTML input attributes on webpages. |



Self-Check Quiz 3.2.4

State whether the following statements are “True” or “False”:

1. The value attribute specifies the initial value for an input field.
2. The read only attribute specifies that the input field is read only.
3. The size attribute specifies the size for the input field.
4. The disabled attribute specifies that the input field is disabled.



Learning Activity 3.2.5

| Learning Activity | Resources/Special Instructions/References |
|-------------------|---|
| Use HTML Graphics | <ul style="list-style-type: none">▪ Information Sheet: 3.2.5▪ Self-Check Quiz: 3.2.5▪ Answer Key: 3.2.5▪ https://www.w3schools.com/html/html5_canvas.asp▪ https://www.w3schools.com/html/html5_svg.asp▪ https://www.w3schools.com/html/html_googlemaps.asp▪ https://www.w3schools.com/graphics/google_maps_basic.asp |



Information Sheet 3.2.5

Learning Objective: to use HTML Graphics.

- **HTML graphics:**
 - There are ways to use graphics in HTML. This is done in the following ways.
 - Applying Canvas, SVG and Google Maps.
- **Canvas:**
 - A canvas is a rectangular area on an HTML page. By default, a canvas has no border and no content.
 - The syntax is:
`<canvas id="myCanvas" width="200" height="100"></canvas>`
 - The process of drawing objects in the canvas is listed here:

| Object | Example |
|--------|---|
| Line | <code>var c = document.getElementById("myCanvas"); var ctx = c.getContext("2d"); ctx.moveTo(0, 0); ctx.lineTo(200, 100); ctx.stroke();</code> |
| Circle | <code>var c = document.getElementById("myCanvas"); var ctx = c.getContext("2d"); ctx.beginPath(); ctx.arc(95, 50, 40, 0, 2 * Math.PI); ctx.stroke();</code> |

| | |
|-------------------|--|
| Text | <pre>var c = document.getElementById("myCanvas"); var ctx = c.getContext("2d"); ctx.font = "30px Arial"; ctx.fillText("Hello World", 10, 50);</pre> |
| Stroke Text | <pre>var c = document.getElementById("myCanvas"); var ctx = c.getContext("2d"); ctx.font = "30px Arial"; ctx.strokeText("Hello World", 10, 50);</pre> |
| Linear Gradient | <pre>var c = document.getElementById("myCanvas"); var ctx = c.getContext("2d"); // Create gradient var grd = ctx.createLinearGradient(0, 0, 200, 0); grd.addColorStop(0, "red"); grd.addColorStop(1, "white"); // Fill with gradient ctx.fillStyle = grd; ctx.fillRect(10, 10, 150, 80);</pre> |
| Circular Gradient | <pre>var c = document.getElementById("myCanvas"); var ctx = c.getContext("2d"); // Create gradient var grd = ctx.createRadialGradient(75, 50, 5, 90, 60, 100); grd.addColorStop(0, "red"); grd.addColorStop(1, "white"); // Fill with gradient ctx.fillStyle = grd; ctx.fillRect(10, 10, 150, 80);</pre> |
| Image | <pre>var c = document.getElementById("myCanvas"); var ctx = c.getContext("2d"); var img = document.getElementById("scream"); ctx.drawImage(img, 10, 10);</pre> |

- **SVG**

- SVG stands for Scalable Vector Graphics.
- SVG is used to define graphics for the web.
- The HTML `<svg>` element is a container for SVG graphics.
- SVG has several methods for drawing paths, boxes, circles, text, and graphic images.
- Follow the codes on the following table to apply SVG graphics.

| SVG graphics | Code |
|---------------|--|
| SVG Circle | <pre><!DOCTYPE html> <html> <body> <svg width="100" height="100"> <circle cx="50" cy="50" r="40" stroke="green" stroke-width="4" fill="yellow" /> </svg> </body> </html></pre> |
| SVG Rectangle | <pre><svg width="400" height="100"> <rect width="400" height="100" style="fill:rgb(0,0,255);stroke-width:10;stroke:rgb(0,0,0)" /> </svg></pre> |

| | |
|-----------------------|---|
| SVG Rounded Rectangle | <pre><svg width="400" height="180"> <rect x="50" y="20" rx="20" ry="20" width="150" height="150" style="fill:red;stroke:black;stroke-width:5;opacity:0.5" /> </svg></pre> |
| SVG Star | <pre><svg width="300" height="200"> <polygon points="100,10 40,198 190,78 10,78 160,198" style="fill:lime;stroke:purple;stroke-width:5;fill-rule:evenodd;" /> </svg></pre> |
| SVG Logo | <pre><svg height="130" width="500"> <defs> <linearGradient id="grad1" x1="0%" y1="0%" x2="100%" y2="0%"> <stop offset="0%" style="stop-color:rgb(0,255,0);stop-opacity:1" /> <stop offset="100%" style="stop-color:rgb(255,0,0);stop-opacity:1" /> </linearGradient> </defs> <ellipse cx="100" cy="70" rx="85" ry="55" fill="url(#grad1)" /> <text fill="#ffffff" font-size="45" font- family="Verdana" x="50" y="86">SVG</text> Sorry, your browser does not support inline SEIP. </svg></pre> |

▪ Google Maps

- Google Maps allows you to display maps on your web page.
- Example:

```
<!DOCTYPE html>
<html>
<body>
<h1>My First Google Map</h1>
<div id="map" style="width:400px;height:400px;background:yellow"></div>
<script>
function myMap() {
var mapOptions = {
centre: new google.maps.LatLng(51.5, -0.12),
zoom: 10, mapTypeId: google.maps.MapTypeId.HYBRID}
var map = new google.maps.Map(document.getElementById("map"), mapOptions);}
</script>
<script src="https://maps.googleapis.com/maps/api/js?key=AIzaSyBu16DdpKAjTmJNlgn
S6HL_kDIKU0aU&callback=myMap"></script>
<!--To use this code on your website, get a free API key from Google.-->
</body>
</html>
```



Job Sheet 3.2.5

| Job Title | Use HTML Graphics on a webpage. |
|--------------|--|
| Instructions | <ul style="list-style-type: none"> ▪ Open Notepad/Notepad++. ▪ Create a new web page. ▪ Use HTML graphics objects on this page. ▪ Apply SVG graphics. ▪ Use google map for your location on the page. ▪ Save your work and add it to your portfolio. ▪ Open the page on a browser and check how it works. |

| | |
|---------|--|
| | <ul style="list-style-type: none"> ▪ Make necessary adjustments for make it attractive. |
| Outcome | You will be able to apply HTML graphics on webpages. |



Self-Check Quiz 3.2.5

State whether the following statements are “True” or “False”:

1. With HTML, graphics can't be used directly to your page.
2. A canvas is a circular shaped area on an HTML page.
3. SVG stands for Scalable Vector Graphics.
4. The HTML `<svg>` element is a container for SVG graphics.
5. To use google map on your web page you will need an API key from Google.



Learning Activity 3.2.6

| Learning Activity | Resources/Special Instructions/References |
|-------------------|--|
| Use HTML media | <ul style="list-style-type: none"> ▪ Information Sheet: 3.2.6 ▪ Self-Check Quiz: 3.2.6 ▪ Answer Key: 3.2.6 ▪ https://www.w3schools.com/html/html_media.asp |



Information Sheet 3.2.6

Learning Objective: to use HTML Media.

- **HTML media:**
 - You can use multimedia or simply media on your web page.
 - Multimedia on the web is sound, music, videos, movies, and animations.
 - Multimedia elements (like audio or video) are stored in media files.
 - The most common way to discover the type of a file, is to look at the file extension.
 - Multimedia files have formats and different extensions like: .swf, .wav, .mp3, .mp4, .mpg, .wmv, and .avi.

| HTML Media Element | HTML Code |
|--------------------|--|
| Video | <pre><video width="320" height="240" controls> <source src="movie.mp4" type="video/mp4"> <source src="movie.ogg" type="video/ogg"> Your browser does not support the video tag. </video></pre> |

| | |
|---------------------------|---|
| Audio | <pre><audio controls> <source src="horse.ogg" type="audio/ogg"> <source src="horse.mp3" type="audio/mpeg"> Your browser does not support the audio element. </audio></pre> |
| HTML Plug in: <Object> | <pre><object width="400" height="50" data="bookmark.swf"></object> <object width="100%" height="500px" data="snippet.html"></object> <object data="audi.jpeg"></object></pre> |
| HTML Plug in: <Embed> | <pre><embed width="400" height="50" src="bookmark.swf"> <embed width="100%" height="500px" src="snippet.html"> <embed src="audi.jpeg"></pre> |
| HTML YouTube Videos | <pre><iframe width="420" height="315" src="https://www.youtube.com/embed/tgbNymZ7vqY?autoplay=1"> </iframe></pre> |



Job Sheet 3.2.6

| | |
|--------------|---|
| Job Title | Use HTML media elements on a webpage. |
| Instructions | <ul style="list-style-type: none"> ▪ Open Notepad/Notepad++. ▪ Create a new web page. ▪ Include .mp4 media to the page. ▪ Include .mp3 media to the page. ▪ Include YouTube video to the page. ▪ Save your work and add it to your portfolio. ▪ Open the page on a browser and check how it works. ▪ Make necessary adjustments for make it attractive. |
| Outcome | You will be able to apply HTML media elements on webpages. |



Self-Check Quiz 3.2.6

Write the correct answer for the following questions:

1. Write the code to use audio files on web page.
2. What is the code for using a video file?
3. How will you use YouTube media?



Learning Outcome 3.3 - Apply the Fundamentals of Typography



Contents:

- Define typography
- Describe different lettering styles
- Describe and apply guidelines for print typography
- Describe the role of typography on the web
- Describe and apply guidelines for web typography



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- HTML Editor/software/tools
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 3.3.1

| Learning Activity | Resources/Special Instructions/References |
|-------------------|---|
| Define typography | <ul style="list-style-type: none">▪ Information Sheet: 3.3.1▪ Self-Check Quiz: 3.3.1▪ Answer Key: 3.3.1▪ https://creativemarket.com/blog/what-is-typography |



Information Sheet 3.3.1

Learning Objective: to define typography.

▪ **Typography:**

- Typography is the visual component of the written word.
- Typography is not another word for font. Fonts are part of typography, but typography goes beyond fonts.
- Good typography makes the act of reading effortless, while poor typography turns users off.
- Here is example of typography:



Individual Activity:

- Browse and collect samples of typography.
- Make a list with example.
- Share your work with class.



Self-Check Quiz 3.3.1

Fill-in the blanks on the following statements:

1. Typography is the _____ component of the written word.
2. Fonts are _____ of typography.
3. Good _____ makes the act of reading effortless.
4. Typography is not another _____ for font.



Learning Activity 3.3.2

| Learning Activity | Resources/Special Instructions/References |
|-------------------------------------|--|
| Describe different lettering styles | <ul style="list-style-type: none"> Information Sheet: 3.3.2 Self-Check Quiz: 3.3.2 Answer Key: 3.3.2 https://creativemarket.com/blog/what-is-typography |



Information Sheet 3.3.2

Learning Objective: to describe different lettering styles.

▪ **lettering styles:**

- The style of your lettering is just as important as its message. Different styles have different connotations to them. So, it's best to optimize your lettering by using the correct lettering style.
- There are an infinite number of ways you can draw letters, all contributing to a different final style. You can add details to the shape of letters, warp them, stretch them, add embellishments and patterns and shadows... the possibilities are truly endless.
- These three basic categories are an easy place to start when applying style to a word or letter.
- Serif:** The term serif refers to the "bar" that's sometimes attached to the ends of strokes on letterforms. This can sometimes create a more traditional or more serious tone across a word.
- Sans serif:** "Sans Serif" means there are no bars attached to the letterforms. This often creates a more modern and cleaner look across a word.
- Script:** Script refers to fluid style where the letters are typically connected. This style is often used to add a feminine and fluid feeling to a lettering piece, or it can be used to add an unexpected and creative edge.
- Here shown some different lettering styles

TRY PRACTICING YOUR LETTERING WITH DIFFERENT "STYLE WORD" PROMPTS

MONOPOLY

ART DECO

SPRiTz COLD

RUSTIC

FrenchFries

RETRO

**saved
by the bell**

MODERN

**Hot Air
Balloon**

ROMANTIC

LET IT GO

INDUSTRIAL

Individual Activity:

- Browse and collect samples of lettering styles compatible for web design.
- Apply them on web page and check appearance.
- Share your work with class.



Self-Check Quiz 3.3.2

State whether the following statements are “True” or “False”:

1. Different styles have different connotations to them.
2. There are an infinite number of ways you can draw letters.
3. Sheriff can sometimes create a more serious tone across a word.
4. Sans Sheriff often creates a more modern look across a word.
5. Script can be used to add an unexpected and creative edge.



Learning Activity 3.3.3

| Learning Activity | Resources/Special Instructions/References |
|--|---|
| Describe and apply guidelines for print typography | <ul style="list-style-type: none">▪ Information Sheet: 3.3.3▪ Self-Check Quiz: 3.3.3▪ Answer Key: 3.3.3▪ http://www.blurb.com/blog/choosing-a-font-for-print-6-things-you-should-know/ |



Information Sheet 3.3.3

Learning Objective: to describe and apply guidelines for print typography.

▪ **Choosing a font for print:**

- The style of your lettering is just as important as its message. Different styles have different connotations to them. So, it's best to optimize your lettering by using the correct lettering style.
- With hundreds of fonts available, choosing the right one for your book can feel daunting. It doesn't have to be. The key is to keep your approach simple and minimal. It doesn't take lots of font variety to make your book look fantastic.
- Today, sans-serif fonts like Helvetica, Arial, and Futura are used in design and digital work, while typefaces like Garamond, Times New Roman and Century have serifs that guide the eye along print pages. Serif typefaces are used for text-heavy print, as well as for an air of formality.

Serif

Sans Serif

- Which font to use has become a common dilemma.

- Once you find one that works for your genre, ask yourself 6 questions:

1. Does it match? Stick to one font family. Too many typefaces make your work chaotic and sometimes confusing. One or two different fonts are enough for a project. Consider one for body text and one for headlines.

Avoid Using
Too MANY
Different Fonts

Keep Things
Simple

- Is it the right size? Traditional printing uses 10-12pt font for large text blocks. The font size for headlines balances wanting large text with the convention of keeping headlines to one or two lines. Sub-headings should be about 10 points larger than body text.

Subhead
Body Copy

Subhead
Body Copy

- Is there space? Margin is everything. The more text you have, the more margin you need. Thinner columns are easier to read, especially when separated by plenty of white space.



- Is it too crowded? Your leading (vertical spacing between lines of text) should be ample, especially if your book has a lot of text. Don't hesitate to increase the space between lines of text to make your work more readable.

Cramped leading
can make your words
hard to read.

Vertical spacing
between lines of text
should be ample.

- Am I shouting? Avoid using Uppercase treatments as much as possible (all capital letters). Sentence case creates a calm flow for the reader. If you'd like to use fully uppercase phrases, consider using it for headlines only.

**WHAT IS YOUR
PROBLEM?**

Hello, how may
I help you?

- Can I see it? Black and grey text on white pages is the most legible. After that, it's white text on black pages. Rule of thumb: The greater the contrast between text and background, the clearer it is.

The typefaces you choose and how you choose to use them is entirely up to you! That's the exciting part. The tough part is consistently sticking to your system and style choices. A professional look comes from unity and uniformity. If there is variation, it's done purposefully and systematically.

Where are you?

Here I am!

However, there are no hard rules about fonts and uses. If you're more concerned with creativity and less concerned with legibility, you can play with your options. The important part is to find what you like and use the power of typeface to help you make your point.

Individual Activity:

- Create an attractive resume of yourself considering print typography.
- Share your work with class.

**Self-Check Quiz 3.3.3**

What are the six questions you should ask to choose correct font for print typography?

**Learning Activity 3.3.4**

| Learning Activity | Resources/Special Instructions/References |
|--|--|
| Describe the role of typography on the web | <ul style="list-style-type: none"> ▪ Information Sheet: 3.3.4 ▪ Self-Check Quiz: 3.3.4 ▪ Answer Key: 3.3.4 ▪ http://www.blurb.com/blog/choosing-a-font-for-print-6-things-you-should-know/ |

**Information Sheet 3.3.4**

Learning Objective: to describe the role of typography on the web.

- **Choosing a font for web:**
 - From a descriptive and simplistic point-of-view, typography is the art and technique of arranging type.
 - Most people never think about typography. They don't understand the psychological effect it has in relation to conveying a message.
 - If you have ever seen the movie, "The Holiday", then you know that Cameron Diaz's character, Amanda Woods is a movie-trailer maker. In one scene she asks her co-workers to make the type for the movie header she's working on, "twice as big, but try it in a red, like a happy red, not a Scorsese red". That's all part of the art that is typography.
 - Typography is 95% of design – it's a driving force in all forms of communication art. Can you imagine reading a magazine, checking out a website, playing with an app or watching TV without text?
- **Role of typography**
 - Main role of typography may be described as follows –
 1. **Conveys a “feeling”**
 The choice of typeface can affect how a piece is understood. Consider these two examples below. Which is more appropriate considering the title of the article?

IMPACT ON PRIVATE EQUITY

Iduci nullestium rehendias quuntia voluptem hillatusti quisclil moluptaspero beatur, ut ea volorrem dolupti busaper ibusam ipsunt pedis a pro que si veniam que venisnieri nobisitatem quam sanditaquam, erferch ilicatin consendem eum corem.

Insert Subtitle Here

Ficit que nonesti onsendant ut pliae evelquis ad etur alibus adi dolorpo repedit aturitas voluptin ped magniatut volore sent volut et receptor eptatur, nonsequo con consequiat invenihilia volore eventia veleste nostis eum am elia sum vel inverrovid et ut eumenim usante delit porem hitia velecat ulpa pos moloruptam que cum que non cum sum enihillorate consecea que nimusanter il ipitio.

Impact on Private Equity

Iduci nullestium rehendias quuntia voluptem hillatusti quisclil moluptaspero beatur, ut ea volorrem dolupti busaper ibusam ipsunt pedis a pro que si veniam que venisnieri nobisitatem quam sanditaquam, erferch ilicatin consendem.

Insert Subtitle Here

Ficit que nonesti onsendant ut pliae evelquis ad etur alibus adi dolorpo repedit aturitas voluptin ped magniatut volore sent volut et receptor eptatur, nonsequo con consequiat invenihilia volore eventia veleste nostis eum am elia sum vel inverrovid et ut eumenim usante delit porem hitia velecat ulpa pos moloruptam que cum que non cum sum enihillorate consecea que nimusanter il ipitio.

Most people would automatically choose the example on the left. The font size and type elicit a feeling of power, seriousness and importance; while the example on the right is fun, light and playful.

2. Keeps People Reading

Good typography is utilitarian in that it should allow the reader to focus on the content and not the formatting. Good typography often goes unnoticed because it just makes sense. Consider these two examples below. Which article is more legible and user-friendly? Which would you rather keep reading?

IMPACT ON PRIVATE EQUITY

Iduci nullestium rehendias quントia volupitem hillatusti quiscl moluptaspero beatur, ut ea volorrorem dolupti busaper ibusam ipsunt pedis a pro que si veniam que venisnieni nobisitatem quam sanditaquam, erferch ilicatin conserdem eum corem.

Insert Subtitle Here

Ficit que nonesti onsendant ut pliae evelquis ad etur alibus adi dolorpo repedit aturiae voluptin ped magniatus volore sent volut et receper eptatur, nonsequo con consequiat invenihilia volore eventia veleste nostis eum am elia sum vel inverrovid et ut eumenim usante delit porem hitia velecat ulpa pos molo ruptam que cum que non cum sum enihillorate consecea que nimusanter il ipitio.

Impact on Private Equity

Iduci nullestium rehendias quントia volupitem hillatusti quiscl moluptaspero beatur, ut ea volorrorem dolupti busaper ibusam ipsunt pedis a pro que si veniam que venisnieni nobisitatem quam sanditaquam, erferch ilicatin conserdem eum corem.

Insert Subtitle Here

Ficit que nonesti onsendant ut pliae evelquis ad, etur alibus adi, dolorpo repedit aturiae voluptin ped magniatus Volore sent volut et receper eptatur, nonsequo con consequiat invenihilia volore 'eventid' veleste nostis eum am elia sum vel inverrovid et ut eumenim usante delit porem hitia velecat ulpa pos molo ruptam que cum que non cum sum enihillorate consecea que nimusanter que nimusanter il ipitio.

- The example on the left is clear, simple and easy to read. The right example has too many colours, font styles, all on a background that is very disconcerting to the eye.

Individual Activity:

- Apply role of typography for choosing fonts for your web pages.
- Share your work with class.



Self-Check Quiz 3.3.4

What is the main role of typography?



Learning Activity 3.3.5

| Learning Activity | Resources/Special Instructions/References |
|--|---|
| Describe the role of typography on the web | <ul style="list-style-type: none">Information Sheet: 3.3.5Self-Check Quiz: 3.3.5Answer Key: 3.3.5http://www.blurb.com/blog/choosing-a-font-for-print-6-things-you-should-know/https://blog.prototypypr.io/top-10-resources-for-great-web-fonts-2355121f1273 |



Information Sheet 3.3.5

Learning Objective: to describe and apply guidelines for web typography.

▪ **Guidelines for web typography:**

- With 100,000 different fonts and 16.8 million colours on the web, the possibilities are virtually limitless. Here is a step-by-step guide on web typography. If you follow it step by step, you will apply web typography best practices to enable clear communication. You will design a beautiful, comfortable reading experience.

□ **Steps:**

1. Select a font

Every sentence you read on a screen uses a font. It controls the mood and visual appearance. Here is a list of the top 7 best flat UI design web fonts.

San Francisco
Helvetica Neue
Avenir Next
Open Sans
Roboto
Proxima Nova
Museo Sans

2. Modify the font size

Traditionally, the web has tortured us with teeny fonts. Research studies show that large font size evokes stronger feelings and convey meaning.

Start with the body text, change the font size to 15–25px.

Here's an example of the opening chapter of *Harry Potter and the Sorcerer's Stone*. The font is set to Proxima Nova, one of my favourite typefaces.

On the left, the font size is set to the default of 12px. Such a small font size will strain your eyes. After increasing the font size to 15px, reading Harry Potter is instantly better.

Such a small font size will strain your eyes. After increasing the font size to 15px, reading Harry Potter feels more like a breeze.

| Before - 12px | After - 15px |
|--|--|
| Mr. and Mrs. Dursley, of number four, Privet Drive, were proud to say that they were perfectly normal, thank you very much. They were the last people you'd expect to be involved in anything strange or mysterious, because they just didn't hold with such nonsense. | Mr. and Mrs. Dursley, of number four, Privet Drive, were proud to say that they were perfectly normal, thank you very much. They were the last people you'd expect to be involved in anything strange or mysterious, because they just didn't hold with such nonsense. |

Caption: Doesn't the 15px font size feel so much better on your eyes?

3. Scale your headings

Headings serve as signposts for readers so that they can quickly digest the overall structure of your articles.

Limit yourself to two levels of headings.

Change the primary heading to 180–200% of the body text. If you have a secondary heading, modify it to 130–150% of the body text.

Before - 12px Header 1

The Boy Who Lived
Mr. and Mrs. Dursley, of number four, Privet Drive, were proud to say that they were perfectly normal, thank you very much. They were the last people you'd expect to be involved in anything strange or mysterious, because they just didn't hold with such nonsense.

After - 30px Header 1

The Boy Who Lived

Mr. and Mrs. Dursley, of number four, Privet Drive were proud to say that they were perfectly normal, thank you very much. They were the last people you'd expect to be involved in anything strange or mysterious, because they just didn't hold with such nonsense.

4. Set the line-spacing

Sometimes it's super stressful to read text because there's a lack of white space to let it breathe.

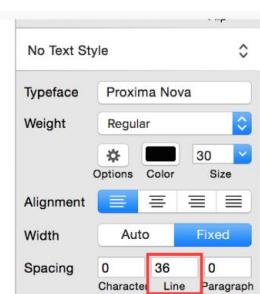
To make a block of text easier to read, set the line spacing **to 120–145% of the point size**.

Before

The Boy Who Lived
Mr. and Mrs. Dursley, of number four, Privet Drive, were proud to say that they were perfectly normal, thank you very much. They were the last people you'd expect to be involved in anything strange or mysterious, because they just didn't hold with such nonsense.

After - adjusted line height

The Boy Who Lived
Mr. and Mrs. Dursley, of number four, Privet Drive, were proud to say that they were perfectly normal, thank you very much. They were the last people you'd expect to be involved in anything strange or mysterious, because they just didn't hold with such nonsense.



Within **Sketch**, go to the left-panel: **Spacing > Line**

5. Add tracking and kerning to make the text look more roomy

Tracking affects the space between the characters in a group of text. What should you use? Within Sketch, you should follow these two rules:

- Use less spacing for larger font sizes
- Use more spacing for headlines

Before

The Boy Who Lived
Mr. and Mrs. Dursley, of number four, Privet Drive, were proud to say that they were perfectly normal, thank you very much. They were the last people you'd expect to be involved in anything strange or mysterious, because they just didn't hold with such nonsense.

After

The Boy Who Lived

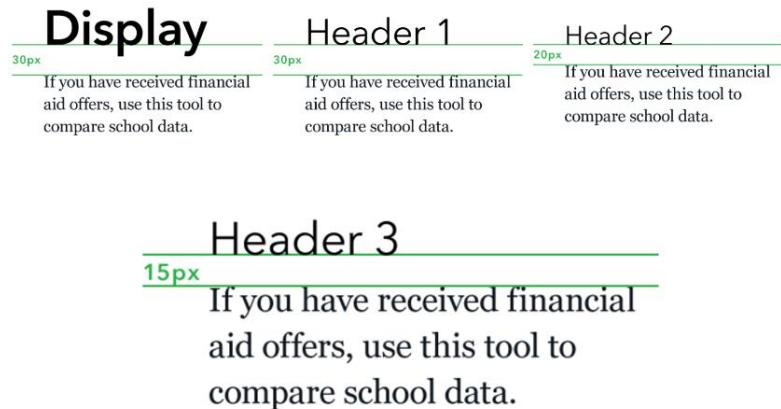
Mr. and Mrs. Dursley, of number four, Privet Drive, were proud to say that they were perfectly normal, thank you very much. They were the last people you'd expect to be involved in anything strange or mysterious, because they just didn't hold with such nonsense.

Kerning is the amount of space between two characters.

6. Add white space between the headers and the body text

Negative space affects how you focus your attention on content. The spacing between the header and the body text should feel open and light, but not tight enough to signal a clear relationship between the elements.

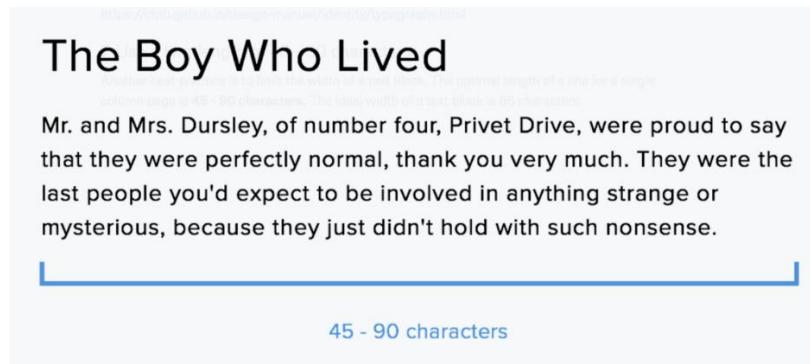
When you set the headers and the body copy, the white space should be 15px, 20px or 30px.



7. Use a line-length of 45–90 characters

Another best practice is to limit the width of a text block.

The optimal length of a line for a single column page is **45–90 characters**. The ideal width of a text block is 66 characters.



- If you use over 90 characters per line, your readers will feel overwhelmed. They will abandon the text. Psychologically, your subconscious mind gets excited each time you move to the next line. At the beginning of each new line, your attention is focused. However, focus slowly wears off as you read the words down the line.

Source of fonts

- Fonts and typography are the main elements of every web design project, and there are a variety of resources available on the Internet to help you with all of your font and typography needs. Regardless of what you are looking for, there are both free and paid resources available at your disposal.
- The huge amounts of resources available may leave you confused. This post will showcase the top 10 resources for web fonts on the Internet. Each will have you wondering how you ever survived without them.
- Here are some reliable source of fonts listed for you:

| Free Sources | Paid Sources |
|--|--|
| Font Squirrel https://www.fontsquirrel.com/ | Creative Market https://creativemarket.com/fonts |
| Google Fonts https://fonts.google.com/ | MyFonts https://www.myfonts.com/ |
| UrbanFonts https://www.urbanfonts.com/ | Fonts.com https://www.fonts.com/ |

| | |
|--|--|
| DaFont http://www.dafont.com/ | You Work For Them https://www.youworkforthem.com/ |
| Fontspace http://www.fontspace.com/ | Adobe TypeKit https://typekit.com/ |

Individual Activity:

- Apply guideline for web typography for your web pages.
- Share your work with class.



Self-Check Quiz 3.3.5

State whether the following statements are “True” or “False”:

1. The possibilities of web typography are virtually limitless.
2. Fonts are not liable to control the mood and visual appearance.
3. Font size for body text on web page should be 10-14px.
4. To make a block of text easier to read, the line spacing should be 120–145% of the point size.
5. to make the text look more roomy use more spacing for larger font sizes.
6. When you set the headers and the body copy, the white space should be 15px, 20px or 30px.
7. The ideal width of a text block is 66 characters.



REVIEW OF COMPETENCY

Final Checklist

(for the performance criteria of the module Performing Distempering)

| Performance Criteria | Yes | No |
|---|--------------------------|--------------------------|
| 1. Entities and attributes of HTML (Hypertext Mark-up Language) is explained. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. HTML of a website is written. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. HTML concepts is implemented. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. HTML is implemented in software. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. HTML forms are identified. | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. HTML form elements are used. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. HTML input types are used. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. HTML input attributes are used. | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. HTML Graphics are used. | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. HTML Media is used. | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Typography is defined. | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Different lettering styles are described. | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. Guidelines for print typography is described and applied. | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. The role of typography on the web is described. | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. Guidelines for web typography is described and applied. | <input type="checkbox"/> | <input type="checkbox"/> |

Now I feel ready to undertake my formal competency assessment.

Signed: _____

Date: _____



ANSWER KEYS

ANSWER KEY 3.1.1

1. Hypertext Markup Language
2. Cascading Style Sheets
3. Uniform Resource Locator
4. False
5. False
6. True
7. True
8. 10
9. 12
10. 8
11. 9
12. 11

ANSWER KEY 3.1.2

1. True
2. True
3. True
4. True
5. True

ANSWER KEY 3.1.3

1. To show a video in HTML, use the `<video>` element. The syntax is:

```
<video width="320" height="240" controls>
<source src="movie.mp4" type="video/mp4">
<source src="movie.ogg" type="video/ogg">
Your browser does not support the video tag.
</video>
```

2. The HTML5 `<audio>` element specifies a standard way to embed audio in a web page. Syntax is:

```
<audio controls>
<source src="horse.ogg" type="audio/ogg">
<source src="horse.mp3" type="audio/mpeg">
Your browser does not support the audio element.
</audio>
```

3. The HTML `<svg>` element is a container for SVG graphics. Syntax is:

```
<svg width="100" height="100">
<circle cx="50" cy="50" r="40" stroke="green" stroke-width="4" fill="yellow" />
</svg>
```

ANSWER KEY 3.1.4

1. Any
2. Smallest
3. Atom Text Editor
4. Atom
5. Google Web Designer
6. 'design', 'code'

ANSWER KEY 3.2.1

1. False
2. True
3. True

ANSWER KEY 3.2.2

1.

```
<select name="cars">
<option value="volvo">Volvo</option>
<option value="saab">Saab</option>
<option value="fiat">Fiat</option>
<option value="audi">Audi</option>
</select>
```
2. To create a button, we need to use `<button>` tag. These buttons are assigned with actions on click.
Syntax is:

```
<button type="button" onclick="alert('Hello World!')>Click Me!</button>
```
3.

```
<textarea name="message" rows="10" cols="30">The cat was playing in the garden. </textarea>
```
4.

```
<form>
First name:<br>
<input type="text" name="firstname"><br>
Last name:<br>
<input type="text" name="lastname">
</form>
```

ANSWER KEY 3.2.3

1. Text, password, Submit, reset, radio, Checkbox, button
2. Colour, date, email, range, tel

ANSWER KEY 3.2.4

1. True
2. True
3. True
4. True

ANSWER KEY 3.2.5

1. False
2. False
3. True
4. True
5. True

ANSWER KEY 3.2.6

1.

```
<audio controls>
<source src="horse.ogg" type="audio/ogg">
<source src="horse.mp3" type="audio/mpeg">
Your browser does not support the audio element.
</audio>
```
2.

```
<video width="320" height="240" controls>
<source src="movie.mp4" type="video/mp4">
<source src="movie.ogg" type="video/ogg">
Your browser does not support the video tag.
</video>
```

3. <iframe width="420" height="315"
src="https://www.youtube.com/embed/tgbNymZ7vqY?autoplay=1">
</iframe>

ANSWER KEY 3.3.1

1. Visual
2. Part
3. Typography
4. Word

ANSWER KEY 3.3.2

1. True
2. True
3. True
4. True
5. True

ANSWER KEY 3.3.3

1. Does it match?
2. Is it the right size?
3. Is there space?
4. Is it too crowded?
5. Am I shouting?
6. Can I see it?

ANSWER KEY 3.3.4

1. Convey a “feeling” to the readers.
2. Keeps People Reading.

ANSWER KEY 3.3.5

1. True
2. False
3. False
4. True
5. False
6. True
7. True

Module 4: Working with Cascading Style Sheets (CSS)



MODULE CONTENT

Module Descriptor: This module contains information and activities to work with cascading style sheets (CSS). It specifically guides with the tasks of explaining and applying CSS, explaining media query and working with SASS.

Nominal Duration: 40 hours



Learning Outcomes:

Upon completion of the module, the trainee should be able to:

- 4.1 Explain CSS
- 4.2 Apply CSS
- 4.3 Explain Media Query
- 4.4 Work with SASS



Performance Criteria:

1. CSS (Cascading Style Sheets) is understood.
2. Role of CSS is explained.
3. CSS is applied.
4. Basic concepts of CSS are implemented.
5. CSS box model and positioning are explained.
6. CSS transition and gradients are explained.
7. 2D/3D transformation and animation are applied.
8. Media Query is explained with CSS.
9. SASS (Syntactically Awesome Style Sheets).
10. Style sheet language (LESS) is explained.
11. Variables and nesting are demonstrated.
12. Related tools are used.



Learning Outcome 4.1 - Explain CSS



Contents:

- Understand CSS (Cascading Style Sheets)
- Explain role of CSS



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Different operating software, local web server
- HTML Editor
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 4.1.1

| Learning Activity | Resources/Special Instructions/References |
|---|--|
| Understand CSS (Cascading Style Sheets) | <ul style="list-style-type: none"> ▪ Information Sheet: 4.1.1 ▪ Self-Check Quiz: 4.1.1 ▪ Answer Key: 4.1.1 ▪ https://www.w3schools.com/css/css_intro.asp |



Information Sheet 4.1.1

Learning Objective: to understand CSS (Cascading Style Sheets).

▪ **CSS:**

- CSS stands for Cascading Style Sheets
- CSS describes how HTML elements are to be displayed on screen, paper, or in other media
- CSS saves a lot of work. It can control the layout of multiple web pages all at once
- External stylesheets are stored in CSS files
- CSS is used to define styles for your web pages, including the design, layout and variations in display for different devices and screen sizes

Individual Activity:

- Visit https://www.w3schools.com/css/css_intro.asp and check the CSS demo of one HTML page with different style.
- Write your observation and key points.
- Discuss your findings in class.
- Your trainer will guide you to carry on this activity.



Self-Check Quiz 4.1.1

State whether the following statements are “True” or “False”:

1. CSS stands for Canvassing Style Sheets.
2. CSS describes how HTML elements are to be displayed in any media.
3. CSS can control the layout of multiple web pages all at once.
4. External stylesheets are stored in ASP files.



Learning Activity 4.1.2

| Learning Activity | Resources/Special Instructions/References |
|---------------------|--|
| Explain role of CSS | <ul style="list-style-type: none"> ▪ Information Sheet: 4.1.2 ▪ Self-Check Quiz: 4.1.2 |



Information Sheet 4.1.2

Learning Objective: to explain role of CSS.

- **Role of CSS:**

- CSS or Cascading Style Sheets plays an important role in web design.
- Style sheet is a reference to the document itself but it is the term “cascading” that gives CSS its unique quality.
- When changes are made in one style sheet, CSS enables these changes across all the style sheets, much like the cascading or ripple effect of a waterfall.
- It allows you to develop the overall look of your website.
- CSS is concerned with elements of presentation such as layout, font and colour.
- Another function of CSS is that it allows the same page to be rendered differently in different mediums such as print, on screen or even tactile devices.
- It also supports aural style sheets, which means it decides how a document will sound when rendered in speech.
- CSS is compatible with most web browsers and is also user friendly.
- It allows you to position and reposition the components of a web page with relative ease.
- The most essential function of CSS which makes it so integral to web design is its focus on layout over content.
- Every aspect of layout in a web page can be altered and controlled with ease using CSS, thus making the task of a web designer so much simpler.

| |
|--|
| Individual Activity: <ul style="list-style-type: none">▪ Browse and list the roles of CSS.▪ Share your work in class.▪ Your trainer will guide you to carry on this activity. |
|--|



Self-Check Quiz 4.1.2

Fill in the gaps of the following statements:

1. The term _____ that gives CSS its unique quality.
2. When changes are made in one style sheet _____ enables these changes across all the style sheets.
3. CSS allows you to develop the overall _____ of your website.
4. CSS is _____ with most web browsers and is also _____ friendly.
5. It allows you to _____ and _____ the components of a web page.
6. The most essential function of CSS is its focus on _____ over content.



Learning Outcome 4.2 - Apply CSS



Contents:

- Apply CSS
- Implement basic concepts of CSS
- Explain CSS box model and positioning
- Explain CSS transition and gradients
- Apply 2D/3D transformation and animation



Assessment criteria:

1. CSS is applied.
2. Basic concepts of CSS are implemented.
3. CSS box model and positioning are explained.
4. CSS transition and gradients are explained.
5. Apply 2D/3D transformation and animation.



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- HTML Editor/software/tools
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 4.2.1

| Learning Activity | Resources/Special Instructions/References |
|--------------------------|---|
| Apply CSS | <ul style="list-style-type: none">▪ Information Sheet: 4.2.1▪ Self-Check Quiz: 4.2.1▪ Answer Key: 4.2.1▪ http://www.htmldog.com/guides/css/beginner/applyingcss/ |



Information Sheet 4.2.1

Learning Objective: to apply CSS.

- **Applying CSS:**

- There are three ways to apply CSS to HTML: **Inline**, **internal**, and **external**.

- **Inline**

- Inline styles are plonked straight into the HTML tags using the `style` attribute.
 - They look something like this:

```
<p style="color: red">text</p>
```

This will make that specific paragraph red.

- But the best-practice approach is that the HTML should be a stand-alone, **presentation free** document, and so in-line styles should be avoided wherever possible.

- **Internal**

- Embedded, or internal, styles are used for the whole page. Inside the `head` element, the `style` tags surround all of the styles for the page.

```
<!DOCTYPE html>
<html>
<head>
<title>CSS Example</title>
<style>

p {color: red;}

a {color: blue; }

</style>
...
```

- This will make all of the paragraphs in the page red and all of the links blue.

- **External**

- External styles are used for the whole, multiple-page website. There is a **separate CSS file**, which will simply look something like:

```
p {color: red;}

a {color: blue;}
```

- If this file is saved as “style.css” in the same directory as your HTML page then it can be linked to in the HTML like this:

```
<!DOCTYPE html>
<html>
<head>
<title>CSS Example</title>
<link rel="stylesheet" href="style.css">
...
```

- **Apply**

- Start a fresh new file with your text-editor and save the blank document as “style.css” in the same directory as your HTML file.
- Now change your HTML file so that it starts something like this:

```
<!DOCTYPE html>
<html>
<head>
<title>My first web page</title>
<link rel="stylesheet" href="style.css">
</head>
...

```

- Save the HTML file. This now links to the CSS file, which is empty at the moment, so won’t change a thing.
- As you work your way through the CSS lessons, you will be able to add to and change the CSS file and see the results by simply refreshing the browser window that has the HTML file in it, as we did before.



Job Sheet 4.2.1

| | |
|--------------|---|
| Job Title | Use CSS on a webpage. |
| Instructions | <ul style="list-style-type: none"> ▪ Open Notepad/Notepad++ or any editor. ▪ Create a new web page. ▪ Apply inline CSS on some information of it. ▪ Apply internal CSS on some information of it ▪ Apply external CSS on some information of it. ▪ Save your work and add it to your portfolio. ▪ Open the page on a browser and check how it looks. ▪ Make necessary adjustments for make it attractive. |
| Outcome | You will be able to apply CSS on webpages. |



Self-Check Quiz 4.2.1

Write the correct answer for the following questions:

1. What are the ways to apply CSS?
2. How inline method is applied?
3. Which way is the best to apply CSS?



Learning Activity 4.2.2

| Learning Activity | Resources/Special Instructions/References |
|---------------------------------|--|
| Implement basic concepts of CSS | <ul style="list-style-type: none"> ▪ Information Sheet: 4.2.2 ▪ Self-Check Quiz: 4.2.2 ▪ Answer Key: 4.2.2 ▪ https://www.w3schools.com/css/default.asp |



Information Sheet 4.2.2

Learning Objective: to implement basic concepts of CSS.

- **Basic concepts of CSS:**

- **CSS**

- Elements of a form are selected keeping the user's use in mind.
 - Following table contains the elements of form.
 - Apply elements to make your page effective.

| Tag | Description | Syntax |
|------------|---|---|
| <form> | Defines an HTML form for user input | <pre><form> First name: <input type="text" name="firstname"> Last name: <input type="text" name="lastname"> </form></pre> |
| <input> | Defines an input control | <pre><input name="firstname" type="text"></pre> |
| <textarea> | Defines a multiline input control (text area) | <pre><textarea name="message" rows="10" cols="30"> The cat was playing in the garden. </textarea></pre> |
| <label> | Defines a label for an <input> element | <pre><form action="/action_page.php"> <label for="male">Male</label> <input type="radio" name="gender" id="male" value="male"> <label for="female">Female</label> <input type="radio" name="gender" id="female" value="female"> <label for="other">Other</label> <input type="radio" name="gender" id="other" value="other"> <input type="submit" value="Submit"> </form></pre> |
| <fieldset> | Groups related elements in a form | <pre><form> <fieldset> <legend>Personalia:</legend> Name: <input type="text"> Email: <input type="text"> Date of birth: <input type="text"> </fieldset> </form></pre> |
| <legend> | Defines a caption for a <fieldset> element | <pre><form> <fieldset> <legend>Personalia:</legend> Name: <input type="text" size="30"> Email: <input type="text" size="30"> Date of birth: <input type="text" size="10"> </fieldset> </form></pre> |
| <select> | Defines a drop-down list | <pre><select name="cars"> <option value="volvo">Volvo</option> <option value="saab">Saab</option> <option value="fiat">Fiat</option> <option value="audi">Audi</option></pre> |

| | | |
|------------|--|---|
| | | </select> |
| <optgroup> | Defines a group of related options in a drop-down list | <select> <optgroup label="Swedish Cars"> <option value="volvo">Volvo</option> <option value="saab">Saab</option> </optgroup> <optgroup label="German Cars"> <option value="mercedes">Mercedes</option> <option value="audi">Audi</option> </optgroup> </select> |
| <option> | Defines an option in a drop-down list | <option value="fiat" selected>Fiat</option> |
| <button> | Defines a clickable button | <button type="button" onclick="alert('Hello World!')">Click Me!</button> |
| <datalist> | Specifies a list of pre-defined options for input controls | <form action="/action_page.php"> <input list="browsers"> <datalist id="browsers"> <option value="Internet Explorer"> <option value="Firefox"> <option value="Chrome"> <option value="Opera"> <option value="Safari"> </datalist> </form> |
| <output> | Defines the result of a calculation | <form action="/action_page.php" oninput="x.value=parseInt(a.value)+parseInt(b.value)"> 0 <input type="range" id="a" name="a" value="50"> 100 + <input type="number" id="b" name="b" value="50"> = <output name="x" for="a b"></output> <input type="submit"> </form> |



Job Sheet 4.2.2

| | |
|--------------|--|
| Job Title | Apply basic concept of CSS on a webpage. |
| Instructions | <ul style="list-style-type: none"> ▪ Open Notepad/Notepad++ or any editor. ▪ Open the file created for job sheet 4.2.1. ▪ Apply CSS concepts on information of the page. ▪ Save your work. ▪ Open the page on a browser and check how it looks. ▪ Make necessary adjustments for make it attractive. |
| Outcome | You will be able to apply CSS concepts on webpages. |



Self-Check Quiz 4.2.2

Write the correct answer for the following questions:

1. Write syntax for dropdown option list.
2. How will you use button on web page? Write syntax.
3. Write code to create a multiline text area on a web page.
4. Write syntax to input information on forms.



Learning Activity 4.2.3

| Learning Activity | Resources/Special Instructions/References |
|---------------------------------------|---|
| Explain CSS box model and positioning | <ul style="list-style-type: none">▪ Information Sheet: 4.2.3▪ Self-Check Quiz: 4.2.3▪ Answer Key: 4.2.3▪ https://www.w3schools.com/css/css_boxmodel.asp▪ https://www.w3schools.com/css/css_positioning.asp |

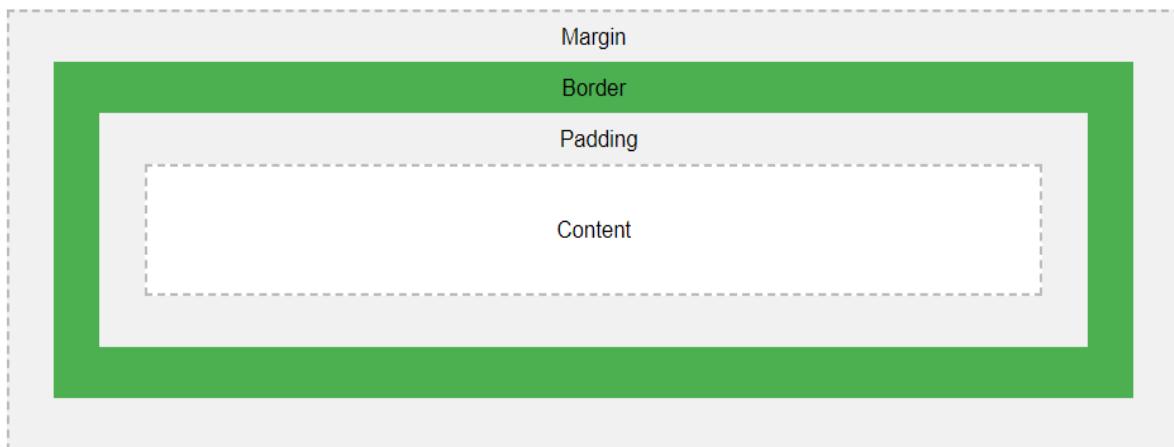


Information Sheet 4.2.3

Learning Objective: to explain CSS box model and positioning.

- **CSS Box model:**

- In CSS, the term "box model" is used when talking about design and layout.
- The CSS box model is essentially a box that wraps around every HTML element.
- It consists of: margins, borders, padding, and the actual content. The image below illustrates the box model:



- **Explanation of the different parts:**

- Content - The content of the box, where text and images appear

- Padding - Clears an area around the content. The padding is transparent
- Border - A border that goes around the padding and content
- Margin - Clears an area outside the border. The margin is transparent
- The box model allows us to add a border around elements, and to define space between elements.
- **Here is an example of how a box can be used.**

```
<!DOCTYPE html>
<html>
<head>
<style>
div {background-color: lightgrey; width: 300px; border: 25px solid green; padding: 25px; margin: 25px;}
</style>
</head>
<body>
<h2>Demonstrating the Box Model</h2>
<p>The CSS box model is essentially a box that wraps around every HTML element. It consists of: borders, padding, margins, and the actual content.</p>
<div>This text is the actual content of the box. We have added a 25px padding, 25px margin and a 25px green border. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.</div>
</body>
</html>
```

- **Positioning**

- The position property specifies the type of positioning method used for an element.
- There are five different position values:
 - static
 - relative
 - fixed
 - absolute
 - sticky
- Elements are then positioned using the top, bottom, left, and right properties. However, these properties will not work unless the position property is set first. They also work differently depending on the position value.

- **Example:**

```
<!DOCTYPE html>
<html>
<head>
<style>
div.relative {position: relative; width: 400px; height: 200px; border: 3px solid #73AD21;}
div.absolute {position: absolute; top: 80px; right: 0; width: 200px; height: 100px; border: 3px solid #73AD21;}
</style>
</head>
<body>
<h2>position: absolute;</h2>
<p>An element with position: absolute; is positioned relative to the nearest positioned ancestor (instead of positioned relative to the viewport, like fixed):</p>
<div class="relative">This div element has position: relative;
<div class="absolute">This div element has position: absolute;</div>
```

```
</div>
</body>
</html>
```

Individual Activity:

- Apply a box and position on a page of your portfolio.
- Share your work in class.
- Your trainer will guide you to carry on this activity.

**Self-Check Quiz 4.2.3**

Write the correct answer for the following questions:

1. Write a syntax for defining a box with a border of 30px and colour orange.
2. Write the five (5) position values.

**Learning Activity 4.2.4**

| Learning Activity | Resources/Special Instructions/References |
|--------------------------------------|---|
| Explain CSS transition and gradients | <ul style="list-style-type: none">▪ Information Sheet: 4.2.4▪ Self-Check Quiz: 4.2.4▪ Answer Key: 4.2.4▪ https://www.w3schools.com/cssref/css3_pr_transition.asp▪ https://www.w3schools.com/css/css3_gradients.asp |

**Information Sheet 4.2.4**

Learning Objective: to explain CSS transition and gradients.

CSS Transition property:

- The transition property is a shorthand property for:

- transition-property
- transition-duration
- transition-timing-function
- transition-delay

- The Syntax is:

When an <input type="text"> gets focus, gradually change the width from 100px to 250px:

```
input[type=text] {width: 100px;transition: width .35s ease-in-out;}
```

```
input[type=text]:focus {width: 250px;}
```

Here is an example with above syntax:

```

<!DOCTYPE html>
<html>
<head>
<style>
input[type=text] {width: 100px;-webkit-transition: width .35s ease-in-out;transition: width .35s ease-in-out;}
input[type=text]:focus {width: 250px;}
</style>
</head>
<body>
<h1>The width Property</h1>

<p>Set the width of the input field to 100 pixels. However, when the input field gets focus, make it 250 pixels wide:</p>

Search: <input type="text" name="search">

</body>
</html>

```

- **CSS Gradient:**

- CSS gradients let you display smooth transitions between two or more specified colours.
- CSS defines two types of gradients:
 - Linear Gradients (goes down/up/left/right/diagonally)
 - Radial Gradients (defined by their centre)
- Following table contains listing of CSS Gradients:

| Attributes | Syntax | Example |
|------------------|--|---|
| Linear Gradients | <code>background-image: linear-gradient(<i>direction</i>, <i>color-stop1</i>, <i>color-stop2</i>, ...);</code> | <pre> <!DOCTYPE html> <html> <head> <style> #grad1 {height: 200px;background-color: red; /* For browsers that do not support gradients */ background-image: linear-gradient(red, yellow); /* Standard syntax (must be last) */} </style> </head> <body> <h1>Linear Gradient - Top to Bottom</h1> <p>This linear gradient starts at the top. It starts red, transitioning to yellow:</p> <div id="grad1"></div> <p>Note: Internet Explorer 9 and earlier versions do not support gradients.</p> </body> </html></pre> |
| | Using multiple colour | <code>#grad {background-image: linear-gradient(red, yellow, green);}</code> |
| | Diagonal gradient | <code>#grad {background-image: linear-gradient(to bottom right, red, yellow);}</code> |

| | | |
|----------------------|---|--|
| CSS Radial Gradients | background-image: radial-gradient (shape size at position, start-colour, ..., last-colour); | #grad {background-image: radial-gradient(red, yellow, green);} |
|----------------------|---|--|

Individual Activity:

- Apply the transition and gradient attributes on a web page of your portfolio to make it attractive.
- Share your work in class.
- Your trainer will guide you to carry on this activity.



Self-Check Quiz 4.2.4

Write the correct answer for the following questions:

1. Write the syntax for simple transition of property of a text box width from 100px to 300px.
2. What is the syntax of applying diagonal gradient to background image?
3. How will you apply radial gradients with multiple colours?



Learning Activity 4.2.5

| Learning Activity | Resources/Special Instructions/References |
|--|---|
| Apply 2D/3D transformation and animation | <ul style="list-style-type: none"> ▪ Information Sheet: 4.2.5 ▪ Self-Check Quiz: 4.2.5 ▪ Answer Key: 4.2.5 ▪ https://www.w3schools.com/css/css3_2dtransforms.asp ▪ https://www.w3schools.com/css/css3_3dtransforms.asp |



Information Sheet 4.2.5

Learning Objective: to apply 2D/3D transformation and animation.

- **CSS Transforms:**
 - CSS transforms allow you to translate, rotate, scale, and skew elements.
 - A transformation is an effect that lets an element change shape, size and position.
 - CSS supports 2D and 3D transformations.
- **CSS 2D Transforms:**
 - You will learn here to apply following transformation methods with mouse or keyboard events.

- translate()
- rotate()
- scale()
- skewX()
- skewY()
- matrix()

- Following table contains the syntax for the methods:

| Function | Description | Formula |
|-----------------------|---|---|
| translate(x,y) | Defines a 2D translation, moving the element along the X- and the Y-axis | div {-ms-transform: translate(50px, 100px); /* IE 9 */ -webkit-transform: translate(50px, 100px); /* Safari */ transform: translate(50px, 100px);} |
| scale(x,y) | Defines a 2D scale transformation, changing the elements width and height | div {-ms-transform: scale(2, 3); /* IE 9 */ -webkit-transform: scale(2, 3); /* Safari */ transform: scale(2, 3);} |
| rotate(angle) | Defines a 2D rotation, the angle is specified in the parameter | div {-ms-transform: rotate(20deg); /* IE 9 */ -webkit-transform: rotate(20deg); /* Safari */ transform: rotate(20deg);} |
| skew(x-angle,y-angle) | Defines a 2D skew transformation along the X- and the Y-axis | div {-ms-transform: skew(20deg, 10deg); /* IE 9 */ -webkit-transform: skew(20deg, 10deg); /* Safari */ transform: skew(20deg, 10deg);} |
| skewX(angle) | Defines a 2D skew transformation along the X-axis | div {-ms-transform: skewX(20deg); /* IE 9 */ -webkit-transform: skewX(20deg); /* Safari */ transform: skewX(20deg);} |
| skewY(angle) | Defines a 2D skew transformation along the Y-axis | div {-ms-transform: skewY(20deg); /* IE 9 */ -webkit-transform: skewY(20deg); /* Safari */ transform: skewY(20deg);} |
| matrix(n,n,n,n,n,n) | Defines a 2D transformation, using a matrix of six values | div {-ms-transform: matrix(1, -0.3, 0, 1, 0, 0); /* IE 9 */ -webkit-transform: matrix(1, -0.3, 0, 1, 0, 0); /* Safari */ transform: matrix(1, -0.3, 0, 1, 0, 0);} |

- **CSS 3D Transforms:**

- CSS allows you to format your elements using 3D transformations.
- following 3D transformation methods:

- rotateX()
- rotateY()
- rotateZ()

- The brief of the methods are defined on the following table:

| Method | In brief | Example |
|-----------|--|---|
| rotateX() | The rotateX() method rotates an element around its X-axis at a given degree | #myDiv {-webkit-transform: rotateX(150deg); /* Safari */ transform: rotateX(150deg);} |
| rotateY() | The rotateY() method rotates an element around its Y-axis at a given degree | #myDiv {-webkit-transform: rotateY(130deg); /* Safari */ transform: rotateY(130deg);} |
| rotateZ() | The rotateZ() method rotates an element around its Z-axis at a given degree | #myDiv {-webkit-transform: rotateZ(90deg); /* Safari */ transform: rotateZ(90deg);} |

Individual Activity:

- Design a webpage of your portfolio with 2D/3D transformations.
- Share your work in class.
- Your trainer will guide you to carry on this activity.



Self-Check Quiz 4.2.5

State whether the following statements are “True” or “False”:

1. A transformation is an effect that lets an element change shape, size and position.
2. CSS supports only 2D transformations.
3. matrix() is a method of 3D transform.
4. rotate() is a method of 3D transform.
5. rotateZ() is a method of 2D transform.



Learning Outcome 4.3 - Explain Media Query



Contents:

- Explain media query with CSS



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- HTML Editor/ software/ tools
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 4.3.1

| Learning Activity | Resources/Special Instructions/References |
|------------------------------|---|
| Explain media query with CSS | <ul style="list-style-type: none">▪ Information Sheet: 4.3.1▪ Self-Check Quiz: 4.3.1▪ Answer Key: 4.3.1▪ https://en.wikipedia.org/wiki/Media_queries▪ https://gist.github.com/gokulkrishh/242e68d1ee94ad05f488▪ https://www.w3schools.com/css/tryit.asp?filename=trycss_mediaqueries_fontsize |



Information Sheet 4.3.1

Learning Objective: to explain media query with CSS.

- **Media query:**
 - Media queries is a CSS3 module allowing content rendering to adapt to conditions such as screen resolution (e.g. smartphone screen vs. computer screen).
 - A media query consists of a *media type* and one or more expressions, involving *media features*, which resolve to either true or false.
- **Media types**
 - A media type can be declared in the head of an HTML document using the "media" attribute inside of a <link> element. The value of the "media" attribute specifies on what device the linked document will be displayed. Media types can also be declared within XML processing instructions, the @import at-rule, and the @media at-rule. CSS2 defines the following as media types:
 - all (Suitable for all devices.)
 - braille
 - embossed
 - handheld
 - print
 - projection
 - screen
 - speech
 - TV
 - The media type "all" can also be used to indicate that a style sheet applies to all media types.
- **Media query syntax:**

```
/*
##Device = Desktops
##Screen = 1281px to higher resolution desktops
*/
@media (min-width: 1281px) {
//CSS
}
/*
##Device = Laptops, Desktops
##Screen = B/w 1025px to 1280px
*/
@media (min-width: 1025px) and (max-width: 1280px) {
//CSS
}
/*
```

```

##Device = Tablets, Ipads (portrait)
##Screen = B/w 768px to 1024px
*/
@media (min-width: 768px) and (max-width: 1024px) {
    //CSS
}
/*
##Device = Tablets, Ipads (landscape)
##Screen = B/w 768px to 1024px
*/
@media (min-width: 768px) and (max-width: 1024px) and (orientation: landscape) {
    //CSS
}
/*
##Device = Low Resolution Tablets, Mobiles (Landscape)
##Screen = B/w 481px to 767px
*/
@media (min-width: 481px) and (max-width: 767px) {
    //CSS
}
/*
##Device = Most of the Smartphones Mobiles (Portrait)
##Screen = B/w 320px to 479px
*/
@media (min-width: 320px) and (max-width: 480px) {
    //CSS
}

```

- **Example:**

```

<!DOCTYPE html>
<html>
<head>
<meta name="viewport" content="width=device-width, initial-scale=1">
<style>
div.example {background-color: lightgrey;padding: 20px;}
@media screen and (min-width: 600px) {div.example {font-size: 80px;}}
@media screen and (max-width: 600px) {div.example {font-size: 30px;}}
</style>
</head>
<body>
<h2>Change the font size of an element on different screen sizes</h2>
<div class="example">Example DIV.</div>
<p>When the browser's width is 600px wide or less, set the font-size of DIV to 30px. When it is 601px or wider, set the font-size to 80px. Resize the browser window to see the effect.</p>
</body>
</html>

```

Individual Activity:

- Apply media query on a webpage of your portfolio.
- Share your work with class.
- Your trainer will guide to complete this activity.



Self-Check Quiz 4.3.1

Write the correct answer for the following questions:

1. Write the media query for desktop screen.
2. What is the media query code for a tablet screen?
3. Write the media query code for smart phones.



Learning Outcome 4.4 - Work with SASS



Contents:

- Explain SASS (Syntactically Awesome Style Sheets) or style sheet language (LESS)
- Demonstrate variables and nesting
- Use related tools



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- HTML Editor/software/tools
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 4.4.1

| Learning Activity | Resources/Special Instructions/References |
|---|---|
| Explain SASS (Syntactically Awesome Style Sheets) or style sheet language (LESS) | <ul style="list-style-type: none">▪ Information Sheet: 4.4.1▪ Self-Check Quiz: 4.4.1▪ Answer Key: 4.4.1▪ https://www.creativebloq.com/web-design/what-is-sass-111517618▪ http://lesscss.org/▪ https://www.keycdn.com/blog/sass-vs-less/ |



Information Sheet 4.4.1

Learning Objective: to explain SASS (Syntactically Awesome Style Sheets) or style sheet language (LESS).

- **Synthetically Awesome Style Sheet (SASS):**

- Sass is a CSS pre-processor, which adds special features such as variables, nested rules and mixins (sometimes referred to as syntactic sugar) into regular CSS.
 - The aim is to make the coding process simpler and more efficient.
 - Sass is an extension of CSS that enables you to use things like variables, nested rules, inline imports and more. It also helps to keep things organised and allows you to create style sheets faster.
 - Sass is compatible with all versions of CSS.
 - To run Sass, **you will need to have Ruby installed**. On newer versions of Linux and OSX, Ruby already comes preinstalled. You can install Sass with the following command:

```
sudo gem install sass
```

- There are also other libraries, such as [libSass](#) which now bring Sass to NodeJS, without any need for Ruby.
 - On Windows, you will need to first install Ruby. If you are on a Mac, Ruby already comes preinstalled.
 - Open up your terminal or command prompt.
 - Install Sass: [sudo gem install sass](#)

- **Syntax**

- Sass includes two syntax options:

- SCSS (Sassy CSS): Uses the .scss file extension and is fully compliant with CSS syntax
 - Indented (simply called 'Sass'): Uses .sass file extension and indentation rather than brackets; it is not fully compliant with CSS syntax, but it's quicker to write

- **Leaner Style Sheets (LESS)**

- Less (which stands for Leaner Style Sheets) is a backwards-compatible language extension for CSS.
 - LESS is written in JavaScript, so **you will need NodeJS** to run it.
 - On Linux and Mac, you can install it using the following command. [npm install -g less](#)
 - You can then use this command to compile to CSS. [lessc styles.less styles.css](#)
 - On Windows you will need to install the [NodeJS installer](#).

- ✓ Open up your command prompt
- ✓ Run `npm install less`
- ✓ You can then use this command to compile to CSS. `lessc styles.less styles.css`
- Graphical user interface is also available for applying LESS.
- Crunch 2 is a cross-platform (Windows, Mac, and Linux) editor with integrated compiling. If you work with large Less projects, you should definitely try it out, as you only need the free version for Less files (<https://getcrunch.co>).
- Other cross platform editors also available like – SimpLess, Koala etc.
- OS specific platforms are: WinLess for windows (<http://winless.org>), for OSX - CodeKit (<http://incident57.com/codekit>), LiveReload (<http://livereload.com>), for Linux – Plessc (<https://github.com/Mte90/Plessc>) etc.
- **Example (Self-explanatory from LESS):**

```
@width: 10px;
@height: @width + 10px;
#header {width: @width; height: @height;}
```

Outputs:

```
#header {width: 10px; height: 20px;}
```

Individual Activity:

- Browse internet and find how to use pre-processors like SASS and LESS.
- Prepare a step by step using method of SASS and LESS.
- Share your work with class.
- Your trainer will guide to complete this activity.



Self-Check Quiz 4.4.1

Fill-in the blanks on the following statements:

1. SASS is an _____ of CSS.
2. SASS is _____ with all versions of CSS.
3. LESS is a _____ language extension for CSS.
4. LESS is written in _____.



Learning Activity 4.4.2

| Learning Activity | Resources/Special Instructions/References |
|-----------------------------------|--|
| Demonstrate variables and nesting | <ul style="list-style-type: none"> ▪ Information Sheet: 4.4.2 ▪ Self-Check Quiz: 4.4.2 ▪ Answer Key: 4.4.2 ▪ https://www.creativebloq.com/web-design/what-is-sass-111517618 ▪ http://lesscss.org/ ▪ https://www.keycdn.com/blog/sass-vs-less/ |



Information Sheet 4.4.2

Learning Objective: to demonstrate variables and nesting.

▪ **Variables:**

- With pre-processors, you have the advantage over traditional CSS because you can use variables.
- Variables can store information and you can use throughout your style sheet.
- You can store things like colours, fonts, or pretty much any value you want to reuse later.
- In SASS variables are defined with "\$" and in LESS with "@".
- Study the following self-explanatory examples:

| Examples | CSS output |
|--|--|
| SASS Font Example | |
| \$font-stack: Helvetica, sans-serif; \$primary-color: #333; body {font: 100% \$font-stack;color: \$primary-color;} | body {font: 100% Helvetica, sans-serif; color: #333;} |
| LESS Color Example | |
| @nice-blue: #5B83AD; @light-blue: @nice-blue + #111; #header {color: @light-blue;} | #header {color: #6c94be;} |

▪ **Nesting**

- Nesting is a huge advantage over CSS because it creates a visual hierarchy, similar to what you are used to with HTML.
- In the examples, you can see how there is less repetition of classes or divisions needed since it is now in a cascade approach.

| Examples | CSS output |
|--|---|
| SASS | |
| nav {ul {margin: 0;padding: 0;list-style: none;} li { display: inline-block;}} | nav ul {margin: 0;padding: 0;list-style: none;} nav li {display: inline-block;} |

| | |
|--|--|
| a {display: block; padding: 6px 12px; text-decoration: none;} | nav a {display: block; padding: 6px 12px; text-decoration: none;} |
| LESS | |
| #header {color: black;}.navigation {font-size: 12px;}.logo {width: 300px;} | #header {color: black;}#header .navigation {font-size: 12px;}#header .logo {width: 300px;} |



Job Sheet 4.4.2

| | |
|--------------|---|
| Job Title | Use CSS variable and nesting on a webpage. |
| Instructions | <ul style="list-style-type: none"> ▪ Open Notepad/Notepad++ or any editor. ▪ Create a new web page. ▪ Add relevant contents. ▪ Apply CSS variables on it. ▪ Apply CSS nesting on it. ▪ Save your work and add it to your portfolio. ▪ Open the page on a browser and check how it looks. ▪ Make necessary adjustments for making it attractive. |
| Outcome | You will able to apply CSS variables and nesting on webpages. |



Self-Check Quiz 4.4.2

State whether the following statements are “True” or “False”:

1. SASS or LESS have the advantage over traditional CSS because of variables.
2. Variables can store information and you can use throughout your style sheet.
3. In SASS variables are defined with “@” and in LESS with “\$”.
4. Nesting creates a visual hierarchy.



Learning Activity 4.4.3

| Learning Activity | Resources/Special Instructions/References |
|-------------------|--|
| Use related tools | <ul style="list-style-type: none"> ▪ Information Sheet: 4.4.3 ▪ Self-Check Quiz: 4.4.3 ▪ Answer Key: 4.4.3 ▪ https://www.creativebloq.com/web-design/what-is-sass-111517618 ▪ http://lesscss.org/ ▪ https://www.keycdn.com/blog/sass-vs-less/ |



Information Sheet 4.4.3

Learning Objective: to use related tools.

- **TOOLS for SASS and LESS:**

- Following are the suggested tools for you. You can choose any from them or search for suitable new one for your use.
- Tools list:

- Sassmeister
- Scout (free)
- The SASS Way
- Bourbon
- Compass
- Bourbon Neat
- Bootstrap Sass (free)
- SUSY
- Breakpoints
- Koala (free)

Following table contains the brief information about the tools:

| Examples | CSS output |
|--------------|--|
| Sassmeister | http://sassmeister.com/ SassMeister is a playground for Sass, Compass, and LibSass . Add some Sass and SassMeister will show you the rendered CSS. SassMeister supports both Sass and SCSS syntaxes, all output styles, and an ever-expanding list of Sass libraries. |
| Scout | http://mhs.github.io/scout-app/ Scout is a cross-platform app that delivers the power of Sass & Compass in to the hands of web designers. Scout runs Sass and Compass in a self-contained Ruby environment, letting you effortlessly manage all of your Sass projects with a handful of clicks. You'll never have to worry about your Ruby setup or deal with technical issues. Scout does all of the heavy lifting, giving you more time to do what you love. |
| The SASS Way | http://thesassway.com/ The Sass Way covers the latest news and topics on handcrafting CSS with Sass and Compass. It uses an open publishing model and rely on contributions from the Sass community via its GitHub project. |
| Bourbon | https://www.bourbon.io/ Bourbon is a library of Sass mix ins and functions that are designed to make you a more efficient style sheet author. It is... <ul style="list-style-type: none"> ▪ Dependency-free: Bourbon is pure Sass. ▪ Human-readable: We aim for clarity over brevity. ▪ Lightweight: Zero output post-install and has no visual opinion. |
| Compass | http://compass-style.org/ <ul style="list-style-type: none"> ▪ You will experience cleaner mark-up without presentational classes. ▪ It's chock full of the web's best reusable patterns. ▪ It makes creating sprites a breeze. ▪ Compass mix ins make CSS3 easy. ▪ Create beautiful typographic rhythms. ▪ Download and create extensions with ease. |
| Bourbon Neat | http://neat.bourbon.io/ Neat is a lightweight and flexible Sass grid. Neat works great with Bourbon and Bitters. They are all lightweight and easy to work with. Neat is free software, and may be redistributed under the terms specified in the license. |

| | |
|----------------|--|
| Bootstrap Sass | http://getbootstrap.com/ Bootstrap is an open source toolkit for developing with HTML, CSS, and JS. Quickly prototype your ideas or build your entire app with our Sass variables and mix ins, responsive grid system, extensive prebuilt components, and powerful plugins built on jQuery. |
| SUSY | http://susy.oddbird.net/ Susy is a lightweight grid-layout engine for Sass, designed to simplify and clarify responsive grid layouts without ever getting in your way. You can use Susy with floats, flexbox, tables, or any other CSS technique. |
| Breakpoints | http://breakpoint-sass.com/ It is really Simple, Organized, Media Queries with Sass. Breakpoint makes writing media queries in Sass super simple. |
| Koala | http://koala-app.com/ Koala is a GUI application for Less, Sass, Compass and CoffeeScript compilation, to help web developers to use them more efficiently. Koala can run in windows, Linux and mac. Support for Less, Sass, CoffeeScript and Compass Framework. Support set the compiler options for each file. Support for the project to create a global configuration, set the same compiler options for the files. |



Job Sheet 4.4.3

| Job Title | Use related tools for CSS |
|--------------|---|
| Instructions | <ul style="list-style-type: none"> ▪ Select tools (Scout, Bootstrap SASS, Koala etc.). ▪ Go to the source link and download and include the tool with your portfolio. ▪ Apply tools on a web page code. ▪ Save your work and add it to your portfolio. ▪ Open the page on a browser and check how it looks. ▪ Make necessary adjustments to make it attractive. |
| Outcome | You will be able to Use related tools for CSS. |



Self-Check Quiz 4.4.3

Write short note on followings:

1. Koala
2. Susy
3. Scout
4. Bourbon
5. Neat



REVIEW OF COMPETENCY

Final Checklist

(for the performance criteria of the module Performing Distempering)

| Performance Criteria | Yes | No |
|--|--------------------------|--------------------------|
| 1. CSS (Cascading Style Sheets) is understood. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Role of CSS is explained. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. CSS is applied. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Basic concepts of CSS are implemented. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. CSS box model and positioning are explained. | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. CSS transition and gradients are explained. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. 2D/3D transformation and animation are applied. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Media Query is explained with CSS. | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. SASS (Syntactically Awesome Style Sheets). | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. or style sheet language (LESS) is explained. | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Variables and nesting are demonstrated. | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Related tools are used. | <input type="checkbox"/> | <input type="checkbox"/> |

Now I feel ready to undertake my formal competency assessment.

Signed: _____

Date: _____



ANSWER KEYS

ANSWER KEY 4.1.1

1. False
2. True
3. True
4. False

ANSWER KEY 4.1.2

1. “cascading”
2. CSS
3. Look
4. Compatible, user
5. Position, reposition
6. layout

ANSWER KEY 4.2.1

1. Three ways: Inline, internal, and external.
2. Inline styles are plonked straight into the HTML tags using the style attribute. Syntax is:
`<p style="color: red">text</p>`.
3. The external method is the best for applying CSS to webpages.

ANSWER KEY 4.2.2

1. Code for drop-down option list:
`<select>
 <optgroup label="Swedish Cars">
 <option value="volvo">Volvo</option>
 <option value="saab">Saab</option>
 </optgroup>
</select><`
2. Syntax for using button:
`<button type="button" onclick="alert('Hello World!')>Click Me!</button>`
3. Code to create a multiline text area:
`<textarea name="message" rows="10" cols="30">
The cat was playing in the garden.
</textarea>`
4. Syntax to input information on forms:
`<form>
 First name:

 <input type="text" name="firstname">

 Last name:

 <input type="text" name="lastname">
</form>`

ANSWER KEY 4.2.3

1. `<style>
 div {background-color: lightgrey; width: 300px; border: 25px solid green; padding: 25px; margin: 25px;}
</style>`
2. Static, relative, fixed, absolute, and sticky

ANSWER KEY 4.2.4

1. `input[type=text] {width: 100px; transition: width .35s ease-in-out;}`
`input[type=text]:focus {width: 250px;}`
2. Syntax for diagonal gradient:
`#grad {background-image: linear-gradient(to bottom right, red, yellow);}`
3. Code for radial gradient:
`#grad {background-image: radial-gradient(red, yellow, green);}`

ANSWER KEY 4.2.5

1. True
2. False
3. False
4. False
5. False

ANSWER KEY 4.3.1

1. `@media (min-width: 1281px) {/ /CSS}`
2. `@media (min-width: 768px) and (max-width: 1024px) {/ /CSS}`
3. `@media (min-width: 320px) and (max-width: 480px) {/ /CSS}`

ANSWER KEY 4.4.1

1. Extension
2. Compatible
3. Backwards-compatible
4. JavaScript

ANSWER KEY 4.4.2

1. True
2. True
3. False
4. True

ANSWER KEY 4.4.3

1. Koala is a GUI application for Less, Sass, Compass and CoffeeScript compilation, to help web developers to use them more efficiently. Koala can run in windows, Linux and mac. Support for Less, Sass, CoffeeScript and Compass Framework. Support set the compiler options for each file. Support for the project to create a global configuration, set the same compiler options for the files.
2. Susy is a lightweight grid-layout engine for Sass, designed to simplify and clarify responsive grid layouts without ever getting in one's way. Anyone can use Susy with floats, flexbox, tables, or any other CSS technique.
3. Scout is a cross-platform app that delivers the power of Sass & Compass in to the hands of web designers. Scout runs Sass and Compass in a self-contained Ruby environment, letting you effortlessly manage all of your Sass projects with a handful of clicks.
4. Bourbon is a library of Sass mix ins and functions that are designed to make a more efficient style sheet author. It is dependency-free, human-readable and lightweight.
5. Neat is a lightweight and flexible Sass grid. Neat works great with Bourbon and Bitters. They are all lightweight and easy to work with. Neat is free software and may be redistributed under the terms specified in the license.

Module 5: Performing Graphic Design Aesthetic



MODULE CONTENT

Module Descriptor:

This module contains information and activities to work with performing graphic design aesthetic. It specifically guides with the tasks of installing and working with Photoshop, creating and/or working with image and carrying-out layout design.

Nominal Duration:

40 hours

**Learning Outcomes:**

Upon completion of the module, the trainee should be able to:

- 5.1 Install and work with Photoshop
- 5.2 Create and/or work with image
- 5.3 Carry-out layout design

**Performance Criteria:**

1. Photoshop is installed.
2. Photoshop environment is introduced.
3. Images are added and transformed.
4. Layers are recognized.
5. Smart objects vs normal layers is introduced.
6. Basic shape is created using the pen tool of the selected application.
7. Desired color is selected and applied.
8. Desired shadow is selected where applicable.
9. Text is added in accordance with project design requirement.
10. Background gradient is added where desirable.
11. Logo, icon & banner design are completed and used.
12. The “mysteries” behind screen size and resolution is decoded.
13. Images as JPEG, GIF, or PNG files Optimized.
14. Layout design is carried-out.



Learning Outcome 5.1 - Install and Work with Photoshop



Contents:

- Install Photoshop
- Introduce Photoshop environment
- Add and transform images
- Recognize layers
- Introduce smart objects vs normal layers



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Different operating software, local web server
- Adobe Photoshop CC 2018 19.1.6 (64-bit)
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 5.1.1

| Learning Activity | Resources/Special Instructions/References |
|-------------------|--|
| Install Photoshop | <ul style="list-style-type: none"> ▪ Information Sheet: 5.1.1 ▪ Self-Check Quiz: 5.1.1 ▪ Answer Key: 5.1.1 ▪ https://www.itechtics.com/?ddownload=25631 |



Information Sheet 5.1.1

Learning Objective: to install photoshop.

▪ **Photoshop Setup:**

For graphics design works, among all the other software, Adobe Photoshop and Adobe Illustrator are widely used. You may try Adobe InDesign, which have nice tools for mastering.

To set up adobe photoshop, you can follow one of the following activities:

- Ask your system provider or an IT support Technician to install the software.
- Purchase software from local vendor and request them to help you setting up the software.
- Download the software from internet and setup following the instructions.
- You can watch the videos from YouTube on installation process of illustrator or photoshop and setup them yourself following the instructions. Some links are included here:
 - ✓ https://en.savefrom.net/#url=http://youtube.com/watch?v=EDSD6BTMnCA&utm_source=youtube.com&utm_medium=short_domains&utm_campaign=www.ssyoutu.be.com
 - ✓ https://en.savefrom.net/#url=http://youtube.com/watch?v=wg-gvzJ9qsA&t=7s&utm_source=youtube.com&utm_medium=short_domains&utm_campaign=www.ssyoutu.be.com
 - ✓ https://en.savefrom.net/#url=http://youtube.com/watch?v=ZhfG2pluP3M&utm_source=youtube.com&utm_medium=short_domains&utm_campaign=www.ssyoutu.be.com



Job Sheet 5.1.1

| | |
|--------------|---|
| Job Title | Install Adobe Photoshop. |
| Instructions | <ul style="list-style-type: none"> ▪ Download Adobe Photoshop CC (2017) Offline Installer Offline Installer Links for Adobe Photoshop CC 2017 <ul style="list-style-type: none"> ✓ Download Adobe Photoshop cc 2017 for Windows 32-bit (https://www.itechtics.com/?ddownload=25629) ✓ Download Adobe Photoshop cc 2017 for Windows 64-bit (https://www.itechtics.com/?ddownload=25631) ✓ Download Adobe Photoshop CC 2017 for Mac OS (https://www.itechtics.com/?ddownload=25632) ▪ Download the Adobe Photoshop from above Offline Installer links for your Operating System and start your free trial of the tool. If you like it you can use it further by purchasing its license. ▪ Extract the downloaded file to a Folder on your Hard Drive. |

| | |
|---------|--|
| | <ul style="list-style-type: none"> ▪ Run the “Setup” application file from the extracted folder to install Photoshop. ▪ It will require to be registered with Adobe Creative Cloud to use the software. Register yourself with Adobe system. ▪ While you are installing offline, select “login later” when login requirement dialog box appears. ▪ Follow the instructions till complete the installation. |
| Outcome | You will be able to install adobe photoshop. |
| Caution | <ul style="list-style-type: none"> ▪ If you are working in an office, please be aware of the company IT policy before downloading any software- you may need prior approvals to do so. ▪ You may request help from the IT support team for installation. |



Self-Check Quiz 5.1.1

State which of the following statements are “True” or “False”:

1. It will not require to be registered with Adobe Creative Cloud to use Photoshop CS 2017.
2. While you are installing offline, no login information will be asked.
3. It will require prior permission from related authority to install Photoshop CC in an office environment.



Learning Activity 5.1.2

| Learning Activity | Resources/Special Instructions/References |
|---------------------------------|--|
| Introduce Photoshop environment | <ul style="list-style-type: none"> ▪ Information Sheet: 5.1.2 ▪ Self-Check Quiz: 5.1.2 ▪ Answer Key: 5.1.2 ▪ https://hostpresto.com/articles/css-role-in-web-design/ |

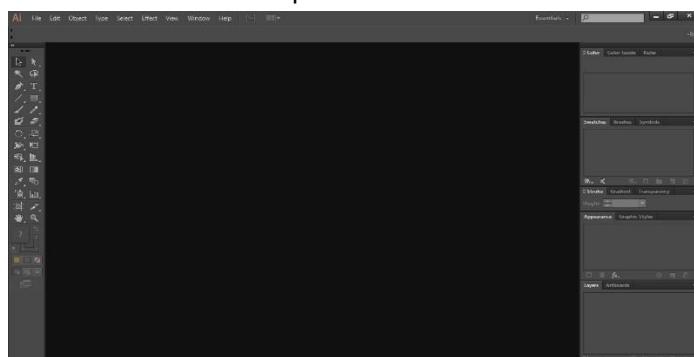


Information Sheet 5.1.2

Learning Objective: to introduce Photoshop environment.

▪ **Photoshop working environment:**

- You will learn the latest working environment and tools invented by Adobe. Generally, all the commands are included in the new versions with new facilities. You need to re-locate and use them.
- A typical view of work area of Photoshop CC 2017 is like this:



Individual Activity:

- List down the different parts of the Photoshop working environment. Write the content and use of the part of the parts of the working area. List the tools from Tools Panel and note their use.
- Use “File->New” or “ctrl/cmd + N” from keyboard to create new canvas for design works. Practice tools on this canvas.
- Your trainer will guide you to identify the tools.

**Self-Check Quiz 5.1.2**

Fill-in the gaps of the following statements:

1. File, Edit, Object, Type etc. are included in the _____ bar.
2. Tools in the “_____” make working easy with Photoshop.
3. You can open a new canvas in Photoshop with “_____” from keyboard.

**Learning Activity 5.1.3**

| Learning Activity | Resources/Special Instructions/References |
|--------------------------|---|
| Add and transform images | <ul style="list-style-type: none">▪ Information Sheet: 5.1.3▪ Self-Check Quiz: 5.1.3▪ Answer Key: 5.1.3▪ https://mashable.com/2010/08/12/12-beginner-tutorials-for-getting-started-with-photoshop/#EGWzGhZPEmqb |

**Information Sheet 5.1.3**

Learning Objective: to add and transform images.

▪ Adding images:

- Drag and drop the new **image** into the **Photoshop** window. You can also click the “File” menu, click “Open,” select the **image** file and click the “Open” button.
- Press the “Enter” key to confirm and **add the image as a new layer**.
- Watch the video clip for details on working with image in photoshop.

▪ Video Clip

- Watch the video clip on “Working with Images Tutorial in Adobe Photoshop”. Note the key issues and apply them in your practice.
- Video Reference: <https://www.youtube.com/watch?v=7H73HDCrzE>



Job Sheet 5.1.3

| | |
|--------------|---|
| Job Title | Add and transform images |
| Instructions | <ul style="list-style-type: none">▪ Create or open images in photoshop.▪ Transform it as required for your design.▪ Apply effects on it to use in webpages.▪ Save them in web enabled formats (i.e. jpeg, png etc.). |
| Outcome | You will be able to add and transform images in photoshop. |



Self-Check Quiz 5.1.3

State which of the following statements are “True” or “False”:

1. To add new image in Photoshop just drag the image and drop it into the photoshop window.
2. You can also add image using File->Open menu.



Learning Activity 5.1.4

| Learning Activity | Resources/Special Instructions/References |
|-------------------|---|
| Recognise layers | <ul style="list-style-type: none">▪ Information Sheet: 5.1.4▪ Self-Check Quiz: 5.1.4▪ Answer Key: 5.1.4▪ https://www.youtube.com/watch?v=qVTE-Y0I9xQ |



Information Sheet 5.1.4

Learning Objective: to recognise layers.

- **Layers:**
 - Layers contain the images, text, or objects that make up a layered file. They let you move, edit, and work with content on one layer without affecting content on other layers.
 - Layers are arranged in a stack in the *Layers* panel, which is usually located in the bottom right of the work area. If the *Layers* panel is not visible, choose *Window > Layers*.
 - In the *Layers* panel, click the eye icon to the left of a layer to hide its content. Click again in the same spot to reveal the content. This is a useful way to remind yourself what's on a particular layer.
 - A layer must be selected in order to make changes to it. In the *Layers* panel, click once to the right of a layer name to select that layer. To add more layers to your selection, hold *Control* (Windows) or *Command* (macOS) as you click other layers.
- **Design layers:**
 - Layers in Photoshop ensure the wide flexibility during design work.

- **Video/Presentation**

- Watch a video clip or PowerPoint presentation on “How To: Create & Use Layers in Photoshop” and note important instructions and apply on own work.
- Video link: <https://www.youtube.com/watch?v=qVTE-Y0I9xQ>

Individual Activity:

- Practice with layers:
 - ✓ Add new layer to your design on Photoshop
 - ✓ Choose type for the layer
 - ✓ Apply formatting options for the layer
- Your trainer will provide guidance with this activity.



Self-Check Quiz 5.1.4

State which of the following statements is “True” or “False”:

1. Layers contain only the images in Photoshop CC 2017.
2. Layers are arranged in a stack in the Layers panel.
3. A layer must be selected in order to make changes to it.
4. Layers in Photoshop ensure the wide flexibility during design work.



Learning Activity 5.1.5

| Learning Activity | Resources/Special Instructions/References |
|--|---|
| Introduce smart objects vs normal layers | <ul style="list-style-type: none">▪ Information Sheet: 5.1.5▪ Self-Check Quiz: 5.1.5▪ Answer Key: 5.1.5▪ https://www.guru99.com/how-to-use-smart-object-in-photoshop-cc.html |



Information Sheet 5.1.5

Learning Objective: to add and transform images.

- **Smart objects vs. normal layers:**

- Every designer must know about the benefit of “smart object”.
- The main intention of “smart object” is never let lose the quality of any vector object or an image, even if we rescale or resample it or change its position or rotate it however we want in our document.
- Means you bring any photographs or any vector objects in your document and you scale it down and scale it up again. In this process of scaling up and down the image, if you do not want to lose real quality of your image then you must make that image a “smartobject” first.

- **Video/Presentation**

- Watch a video clip on “How to use Smart Object in Photoshop CC Tutorial” and note important instructions and apply on own work.
- Video link: <https://www.youtube.com/watch?v=cH12mxFhOog>

Individual Activity:

- Practice with smart object and normal layers.
 - Add images to a layer.
 - Check it with both smart object and normal layer.
- Your trainer will provide guidance with this activity.



Self-Check Quiz 5.1.5

State which of the following statements is “True” or “False”:

1. Every designer must know about the benefit of “smart object”.
2. The main intention of “smart object” is never let lose the quality of any vector object or an image.
3. If you do not want to lose real quality of your image, then you must make that image a “smartobject” first.



Learning Outcome 5.2 – Create and/or Work with Image



Contents:

- Create basic shapes using the pen tool of the selected application
- Select and apply desired colours
- Select desired shadow where applicable
- Add text in accordance with project design requirement
- Add background gradient where desirable
- Complete designing logo, icon and banner and use them



Assessment criteria:

1. Basic shape is created using the pen tool of the selected application.
2. Desired color is selected and applied.
3. Desired shadow is selected where applicable.
4. Text is added in accordance with project design requirement.
5. Background gradient is added where desirable.
6. Logo, icon & banner design are completed and used.



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- Photoshop
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 5.2.1

| Learning Activity | Resources/Special Instructions/References |
|--|--|
| Create basic shapes using the pen tool of the selected application | <ul style="list-style-type: none"> ▪ Information Sheet: 5.2.1 ▪ Self-Check Quiz: 5.2.1 ▪ Answer Key: 5.2.1 ▪ https://www.youtube.com/watch?v=9eRJI7xH698/ |



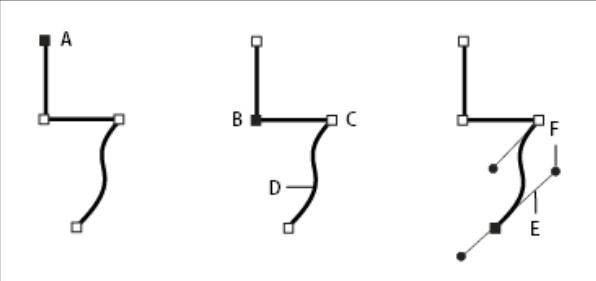
Information Sheet 5.2.1

Learning Objective: to create basic shapes using the pen tool of the selected application.

▪ About paths

As you draw, you create a line called a *path*. A path is made up of one or more straight or curved *segments*. The beginning and end of each segment are marked by *anchor points*, which work like pins holding a wire in place. A path can be *closed* (for example, a circle), or *open*, with distinct *endpoints* (for example, a wavy line).

You change the shape of a path by dragging its anchor points, the *direction points* at the end of *direction lines* that appear at anchor points, or the path segment itself.



Components of a path:

A. Selected (solid) endpoint **B.** Selected anchor point **C.** Unselected anchor point **D.** Curved path segment **E.** Direction line **F.** Direction point.

Video:

Watch video clip on “How To Use Pen Tool and Create Shapes” and note the important instructions.
Apply the techniques on your own work when practicing.
Video link: <https://www.youtube.com/watch?v=9eRJI7xH698>



Job Sheet 5.2.1

| | |
|--------------|--|
| Job Title | Create shapes with pen tool |
| Instructions | <ul style="list-style-type: none"> ▪ Create a document in photoshop. ▪ Use shape tools of Photoshop. ▪ Draw shapes and create new shapes with pen tool: <ul style="list-style-type: none"> ✓ Circle ✓ Triangle ✓ Square ✓ Rectangle ✓ Rhombus |

| | |
|---------|---|
| | <ul style="list-style-type: none"> ✓ Trapezoid ✓ Pentagon ✓ Hexagon ✓ Octagon ✓ Pyramid ✓ Oval ▪ Arrange shapes with innovative orientation. ▪ Save them in web enabled formats (i.e. jpeg, png etc.) |
| Outcome | You will be able to create shapes in photoshop. |



Self-Check Quiz 5.2.1

Write correct answer for the following questions:

1. Write the components of a path.
2. Name five (5) shapes those can be drawn with pen tools.



Learning Activity 5.2.2

| Learning Activity | Resources/Special Instructions/References |
|----------------------------------|--|
| Select and apply desired colours | <ul style="list-style-type: none"> ▪ Information Sheet: 5.2.2 ▪ Self-Check Quiz: 5.2.2 ▪ Answer Key: 5.2.2 ▪ https://www.youtube.com/watch?v=mv3WjcvBrQo ▪ https://www.youtube.com/watch?v=BRtcZBvk_LA ▪ https://www.photoshopessentials.com/photo-editing/color-replacement-tool/ |



Information Sheet 5.2.2

Learning Objective: to select and apply desired colours.

- **Color Tool**
 - Colours are one of the important elements of a design. As a designer, you must use colours imaginatively so that it has a positive impact on your design.
- **Video/Presentation**

Trainees will watch video clips on “How to select colors in Photoshop CC” and note important instructions and apply on their own work.

Video Reference: <https://www.youtube.com/watch?v=mv3WjcvBrQo>



Job Sheet 5.2.2

| | |
|--------------|--|
| Job Title | Apply desired colours on shapes in photoshop |
| Instructions | <ul style="list-style-type: none"> ▪ Open the document created on Job sheet 5.2.1 ▪ Use color tools to change colours of the shapes required for design works. ▪ Arrange shapes with innovative orientation. ▪ Apply color attributes which includes – <ul style="list-style-type: none"> ✓ foreground and background colours ✓ Create color ✓ Use swatches Palette ✓ Adjust saturation and hue ✓ Adjust the color of skin tone ✓ Choose colours with the Eyedropper tool ▪ Save your design work for using in the web page. |
| Outcome | You will be able to Apply desired colours on shapes in photoshop. |



Self-Check Quiz 5.2.2

1. Write attributes of color tool.



Learning Activity 5.2.3

| Learning Activity | Resources/Special Instructions/References |
|--|--|
| Select desired shadow where applicable | <ul style="list-style-type: none"> ▪ Information Sheet: 5.2.3 ▪ Self-Check Quiz: 5.2.3 ▪ Answer Key: 5.2.3 ▪ https://www.wikihow.com/Create-a-Simple-Shadow-Using-Photoshop-CS3 |



Information Sheet 5.2.3

Learning Objective: to select desired shadow where applicable.

- **Shadow effect in photoshop:**
 - Shadow effect brings special effect to design. But it needs to be perfectly applied to the objects and texts. Let us watch a video how shadow is applied in Illustrator.
- **Video/Presentation**

Trainees will watch a video clip on “How to Drop Shadow in Photoshop” and note important instructions and apply on their own work.



Job Sheet 5.2.3

| | |
|--------------|---|
| Job Title | Create a shadow of an image |
| Instructions | <ul style="list-style-type: none">▪ Create a document in photoshop.▪ Open or create an image.▪ Click on the layer that contains the image to which you want to add a shadow.▪ Click on Layers in the menu bar▪ Click on Duplicate Layer... in the drop-down.▪ Click on the duplicate layer.▪ Click on the "Layer Style" icon. It's the fx button at the bottom the Layers window.▪ Click on Drop Shadow...▪ Adjust the shadow.▪ Click on OK. |
| Outcome | You will be able to shadows of a shape in photoshop. |



Self-Check Quiz 5.2.3

What is the easiest way to create shadow of an object?



Learning Activity 5.2.4

| Learning Activity | Resources/Special Instructions/References |
|--|---|
| Add text in accordance with project design requirement | <ul style="list-style-type: none">▪ Information Sheet: 5.2.4▪ Self-Check Quiz: 5.2.4▪ Answer Key: 5.2.4▪ https://helpx.adobe.com/photoshop/using/editing-text.html |



Information Sheet 5.2.4

Learning Objective: to add text in accordance with project design requirement.

▪ **Text tools:**

- To enter texts to your design you can use following tools:
 - ✓ The Horizontal Type tool 
 - ✓ the Vertical Type tool 
- Select the type layer in the Layers panel, or click in the text flow to automatically select a type layer.
- Position the insertion point in the text, and do one of the following:
 - ✓ Click to set the insertion point.

- ✓ Select one or more characters you want to edit.
- Enter text as desired.
- In the options bar, do one of the following:
 - ✓ Click the Commit button  to apply your changes to the type layer.
 - ✓ Click the Cancel button  or press ESC to discard changes.
- You can change font, size, spacing, colour etc. attribute from the Text tool.
- You can apply effects on texts from the layer options.

Individual Activity:

- Apply texts to your works done on the previous section.
- Apply effects on the texts.
- Share your work in class.
- Your trainer will guide you to carry on this activity.



Self-Check Quiz 5.2.4

State which of the following statements is “True” or “False”:

1. You can use both horizontal and vertical Text tool to insert texts in design works.
2. Text layers are automatically created when text tools are selected and clicked on the layers.
3. The options of layer blending are not applicable to texts.



Learning Activity 5.2.5

| Learning Activity | Resources/Special Instructions/References |
|---|---|
| Add background gradient where desirable | <ul style="list-style-type: none"> ▪ Information Sheet: 5.2.5 ▪ Self-Check Quiz: 5.2.5 ▪ Answer Key: 5.2.5 ▪ https://helpx.adobe.com/photoshop/using/gradients.html ▪ http://www.photoshopforphotographers.com/CC_2013/Help_guide/tp/Gradient_tool.html |



Information Sheet 5.2.5

Learning Objective: to add background gradient where desirable.

▪ **Background gradient:**

- The gradient tool can be used to draw linear, radial, angular, reflected or diamond gradients.
- The Gradient tool creates a gradual blend between multiple colours.
- To apply gradient to background, select the background layer.
- To fill part of the image, select the desired area. Otherwise, the gradient fill is applied to the entire active layer.

- Select the Gradient tool .
- In the options bar, choose a fill from the wide gradient sample:
 - ✓ Click the triangle next to the sample to pick a pre-set gradient fill.
 - ✓ Click inside the sample to view the Gradient Editor. Select a pre-set gradient fill or create a new gradient fill.
- Select an option to determine how the starting point (where the mouse is pressed) and ending point (where the mouse is released) affect gradient appearance.
- Do the following in the options bar:
 - ✓ Specify a blending mode and opacity for the paint.
 - ✓ To reverse the order of colours in the gradient fill, select Reverse.
 - ✓ To create a smoother blend with less banding, select Dither.
 - ✓ To use a transparency mask for the gradient fill, select Transparency.
- Position the pointer in the image where you want to set the starting point of the gradient, and drag to define the ending point. To constrain the line angle to a multiple of 45°, hold down Shift as you drag.

Individual Activity:

- Apply background gradient on the artwork you did in the last section.
- Share your work in class.
- Your trainer will guide you to carry on this activity.



Self-Check Quiz 5.2.5

Write correct answer for the following questions:

1. Name the ways of gradients can be applied.
2. What should be done to constrain the line angle to a multiple of 45°?



Learning Activity 5.2.6

| Learning Activity | Resources/Special Instructions/References |
|---|--|
| Complete designing logo, icon & banner and use them | <ul style="list-style-type: none"> ▪ Information Sheet: 5.2.6 ▪ Self-Check: 5.2.6 ▪ Answer Key: 5.2.6 ▪ https://graphicdesign.stackexchange.com/questions/87237/how-to-save-a-sharp-logo-for-my-website ▪ https://www.freepik.com/free-photos-vectors/web-design |



Information Sheet 5.2.6

Learning Objective: to complete designing logo, icon & banner and use them.

- **Logo, Icon and Banner design:**
 - Create a logo with shapes and texts.

- Design icon and banners.
- Apply texts, shapes, colours and gradients where you feel necessary.



Job Sheet 5.2.6

| | |
|--------------|---|
| Job Title | Create logo and banners and apply them. |
| Instructions | <ul style="list-style-type: none"> ▪ Create a new document in Photoshop. ▪ Add shapes, texts colours and gradients to create logo and banner. ▪ Save your design work for using in the web page. ▪ Apply the logo and banner to a web page. ▪ Include this page to your portfolio. |
| Outcome | You will be able to create logo and banners and apply them. |



Self-Check Quiz 5.2.6

State which of the following statements is “True” or “False”:

1. Logos cannot be created with only texts.
2. Layers makes banner creating easy.
3. Only single layer is enough to create an icon.



Learning Outcome 5.3 – Carry Out Layout Design



Contents:

- Decode the “mysteries” behind screen size and resolution
- Optimize images as JPEG, GIF, or PNG files
- Carry-out layout design



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- Photoshop CC
- HTML Editor/ software/ tools
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 5.3.1

| Learning Activity | Resources/Special Instructions/References |
|--|---|
| Decode the “mysteries” behind screen size and resolution | <ul style="list-style-type: none">▪ Information Sheet: 5.3.1▪ Self-Check Quiz: 5.3.1▪ Answer Key: 5.3.1▪ https://www.youtube.com/watch?v=NEapNEIEPZg▪ https://www.webydo.com/blog/web-design/screen-resolution/screen-resolution-and-web-design/ |



Information Sheet 5.3.1

Learning Objective: to decode the “mysteries” behind screen size and resolution.

- **Screen size and resolution:**
 - Screen size and resolution is very much important during web design. Images used in the web pages must comply with the viewer’s device’s resolutions for better service.
 - Within the wonderfully complex world that is web design, professionals face some very difficult technicalities, with screen resolution arguably one of the biggest causes for throbbing headaches.
 - Sometimes this deceptively small problem can seem hopelessly devoid of solutions, since resolutions and devices constantly change and improve. However, there are some best practices that web designers and developers can follow to design a website, and an in-depth look at device resolution reveals what these are.
 - How a website is displayed on a screen will be quite different depending on different screen resolutions. As an example, two 17-inch desktop monitors may have different resolutions, with one being 1024×768 and the other 1280×800 . The lower resolution (1024×768) will display elements in a larger size to keep the display as sharp as possible, but this also means that less of the page will fit on the screen. The higher-resolution monitor will be able to display more of the website page, such as the entire fold plus a little below, and elements on the page will look smaller but sharper.
 - You need to consider the resolution considering the weight of the page too.
 - Watch the following video to get clear idea of resolution.
- **Video clip:**

Watch the following video clip. Note the key issues. Apply them in your own practice.

Video reference: <https://www.youtube.com/watch?v=NEapNEIEPZg>

Individual Activity:

- Apply resolution in photoshop with your device’s resolutions.
- Share your work with class.
- Your trainer will guide to complete this activity.



Self-Check Quiz 5.3.1

State which of the following statements is “True” or “False”:

1. Screen resolution arguably one of the biggest causes for throbbing headaches for web designers.
2. How a website is displayed on a screen will be quite different depending on different screen resolutions.
3. 99% of visitors have a resolution of 1024 x 768 pixels or higher.
4. Catering to the minimum of 1024 x 768 resolution should make a website look fairly good on most resolutions and devices.



Learning Activity 5.3.2

| Learning Activity | Resources/Special Instructions/References |
|--|---|
| Optimise images as JPEG, GIF, or PNG files | <ul style="list-style-type: none">▪ Information Sheet: 5.3.2▪ Self-Check Quiz: 5.3.2▪ Answer Key: 5.3.2▪ https://helpx.adobe.com/photoshop-elements/using/optimizing-images.html |



Information Sheet 5.3.2

Learning Objective: to optimise images as JPEG, GIF, or PNG files.

▪ **Image file optimisation:**

- Optimization for the web is the process of compressing images and setting display options for optimal use on the Internet. When you put images on the Internet, file size becomes important; you want to achieve a file size that is small enough to allow a reasonable download time, but large enough to preserve colours and details to your satisfaction.
- There are three major graphic file formats that are used on the web: GIF, JPEG, and PNG.
- Use the Save For Web dialog box to preview the effects of different optimization options on a photo you want to share on the web. The process is simple. Open a photo and choose File > Save For Web. Then choose a format from the file format menu (GIF, JPEG, PNG-8, or PNG-24) and set options as desired (the file format menu is directly beneath the Pre-set menu). This saves a copy of your file, without overwriting the original image.
- You can choose between four formats for the web. Use the following guidelines when choosing the format for your web image:
 - ✓ **JPEG**
In most cases, this is the best format in which to save photographs.
 - ✓ **PNG-24**
Like JPEG, this is a good format for photographs. Choose PNG-24 rather than JPEG only when your image contains transparency (JPEG does not support transparency; you must fill it with a matte color). PNG-24 files are often much larger than JPEG files of the same image.
 - ✓ **GIF**
GIF is the format to use for line art, illustrations with large areas of solid color and crisp detail, and text. Also, if you want to export an animated image, you must use GIF.

✓ **PNG-8**

PNG-8 is a lesser-known alternative to GIF. Use it for the same purposes (except animation).

Individual Activity:

- Save your artworks in .jpg and .png format.
- Apply them in a suitable web page and add the page to your portfolio.
- Share your work with class.
- Your trainer will guide to complete this activity.



Self-Check Quiz 5.3.2

Write correct answer for the following questions:

1. What is image optimization?
2. What are the major file formats used on the web?
3. What format is ideal for animated images?



Learning Activity 5.3.3

| Learning Activity | Resources/Special Instructions/References |
|-------------------------|---|
| Carry-out layout design | <ul style="list-style-type: none">▪ Information Sheet: 5.3.3▪ Self-Check Quiz: 5.3.3▪ Answer Key: 5.3.3▪ https://www.photoshoptutorials.ws/photoshop-tutorials/layouts/how-to-create-a-professional-web-layout-in-photoshop/?doing_wp_cron=1535349890.3634090423583984375000 |



Information Sheet 5.3.3

Learning Objective: to carry-out layout design.

▪ **Layout design:**

- Designing good looking clean and functional web layouts is an essential part of a Web Designers life.
- You will create a clean and professional web layout in Photoshop from scratch.
- Follow the following steps:

| Steps | In brief |
|-----------------|--|
| Step 1: Mock-up | <ul style="list-style-type: none">▪ Before we start designing, we need to plan out the requirements, looks and the functionality. Then you need to fit these ideas into a layout to execute them visually.▪ Mock-ups and wire frames are greatly useful to create layouts with lot of flexibility. It is a best practice and highly encouraged in the Industry. |

| | |
|--------------------------------|---|
| Step 2: Set up the Canvas | <ul style="list-style-type: none"> Now you have a blue print for our layout. Let's actually put the design together. You are going to create a 960-pixel wide layout. Create a new document at 1200 x 1500. Then press Ctrl+A and go to "Select>Transform Selection. Put the value 960 for W. |
| Step 3: Create the Header | <ul style="list-style-type: none"> Let's create the header of the layout! Make a selection that is 465 pixels in height. Fill the selection with a grey value first and later use the Layer Styles to add colours and gradients. Follow this throughout the design to maintain a visual hierarchy. Add Gradient to the header. Double click on the layer thumbnail. Select Gradient Overlay. Create the color gradient with deep green. Use the settings. Next need to add a highlight to the header. Create a new layer by pressing Ctrl+Alt+Shift+N. Pick a soft brush with a diameter of 600px. Pick #19535a for brush color. Just click once on the centre of the header. Make a selection from the top that is 110 pixels in height. Hit Delete key to delete the selected portion. Shrink it vertically by pressing Ctrl+T Now make the highlight spot is perfectly centered to the header. For this, select layers, header and highlight and press "V" to switch to Move Tool. On the Options Panel select Align Horizontal Centres button. Create a new layer, draw a one pixel highlight line using the Pencil Tool with colour #01bfd2. Hide the edges smoothly using a gradient mask. Pick the Gradient Tool, create the linear gradient with #000000-#ffffff-#000000 colours in the Options Panel. Apply the above gradient. |
| Step 4: Create Texture Pattern | <ul style="list-style-type: none"> Now create a simple checker pattern and apply to the header. Pick the Pencil Tool, set the brush size to 2 pixels and add two dots that are touching each other's corners. Turn off the background and select the dots. Choose Edit > Define Pattern. Create a new layer and place it below the highlight layer. Select the area we want to apply the pattern. Press Shift+F5 to load the Fill dialogue box. Choose the pattern that is just created. And OK. The selection will be filled with the pattern. Blend the pattern smoothly into the header. Add a Layer Mask to the pattern layer. Pick a soft brush and paint with a large soft brush. Pick #ffffff for brush colour. Reduce the brush Opacity to about 60% and paint. |
| Step 5: Adding the Logotype | <ul style="list-style-type: none"> The background is pretty much completed. Now add the logo type (i.e. "Enterprise Ltd."). Before adding the type add a highlight that stays behind the logo. Pick a soft brush with #19535a. Add a spot. Add the Type. Use "Tahoma" as the font face. Apply effects from blending options to the logo. |
| Step 6: Navigation | <ul style="list-style-type: none"> Add the navigation links. Create the navigation button. Use Rectangular Marquee Tool. Fill any color. Then Lower the Fill Opacity to zero. Double click on the layer thumbnail, select Gradient Overlay. |
| Step 7: Content Slider | <ul style="list-style-type: none"> Make selection that is 580 x 295 pixels. Fill the selection with a grey tone. Bring in the image you want to use. Clip it to the base layer you created above. Here you can add description about the project. |

| | |
|---|--|
| Step 8: Add some Welcome Lines | <ul style="list-style-type: none"> ▪ A welcome and some description about the website goes here. |
| Step 9: Finishing up the Header | <ul style="list-style-type: none"> ▪ You almost finished the header. Let's add a subtle shadow effect to the finish things off! Create a shadow just as we created earlier using the brush tool. ▪ Leave 1px gap between the header and the shadow. |
| Step 10: Apply Gradient to the Background | <ul style="list-style-type: none"> ▪ Create a light grey to white gradient. ▪ Create a new layer below the header and apply the gradient. |
| Step 11: Add Slider Rotation Controls | <ul style="list-style-type: none"> ▪ Create rotation controls. ▪ Apply Inner Shadow to one control to indicate the current active item in the slider. |
| Step 12: Create Content Divider | <ul style="list-style-type: none"> ▪ Select the Pencil Tool and draw 1-pixel line. Pick light grey (#aaaaaa). ▪ Hide the edges smoothly using gradient mask. ▪ |
| Step 13: Adding the Main Content | <ul style="list-style-type: none"> ▪ It is time to get into the actual content part. ▪ As this is a 3-column layout, you need to create 3 equal columns with some padding between them. ▪ You can follow a simple calculation and divide the available space into 3 equal width boxes with 25 pixels padding between them. ▪ Add guide lines to the boxes. Then remove the boxes. And these are the columns. ▪ Add some featured services. Drop in the icons from the Function icon set. Maintain distance between objects uniformly. ▪ Clip the images to the boxes. ▪ Add some project description. |
| Step 14: Creating Footer and Finishing | <ul style="list-style-type: none"> ▪ Make a selection for the footer and fill it with a grey value. ▪ Apply Color Overlay. ▪ Finally add footer navigation and copyright info. And that concludes the session. Take a look at the final image. |

▪ Final Results

Final output of the above steps could be like this:

The website features a dark header with the company name 'ENTERPRISE INC.' in white. A navigation bar below it includes links for Home, About, Portfolio, Services, Blog, and Contact. The main content area has a dark background with a large, stylized 'HELLO! YOU ARE HERE' message in white. Below this, a sub-headline reads: 'We can help you to build the value for your business. Well It is not only about beautiful design but also about greater functionality and flexibility. Let us help you with your business.' To the right is a slider showing a woman holding balloons against a backdrop of hot air balloons.

Strict Deadlines: Includes a clock icon and a brief description. A 'Read more...' button is present.

Best Pricing: Includes a grid icon and a brief description. A 'Read more...' button is present.

High Quality: Includes a pie chart icon and a brief description. A 'Read more...' button is present.

Recent Work 1, **Recent Work 2**, and **Recent Work 3** sections each feature a thumbnail image and a brief description. Each section has a 'Read more...' button.

A social media sidebar on the right shows a Twitter icon and the text: 'Photoshop Tutorials: Enter to Win a Photoshop Action Pack Worth \$89.95 http://bit.ly/jlQt4T #photoshop'. A 'More Tweets' button is also present.

The footer contains links for Home, About, Portfolio, Service, Blog, and Contact, along with a copyright notice: 'copyright© 2010 CorporateInc. All rights reserved'.



Job Sheet 5.3.3

| | |
|--------------|---|
| Job Title | Create a layout for home page of your portfolio using Photoshop. |
| Instructions | <ul style="list-style-type: none"> ▪ Create a new document in Photoshop. ▪ Create a mock up ▪ Set up the canvas ▪ Create the header ▪ Create texture pattern ▪ Add the logotype ▪ Add navigation ▪ Add content slider ▪ Add welcome lines ▪ Finish header ▪ Add gradient to background |

| | |
|---------|--|
| | <ul style="list-style-type: none"> ▪ Add slider rotation controls ▪ Create comment divider ▪ Add main content ▪ Create footer and finish the design work ▪ Save your design work for using in the web page. ▪ Include this page to your portfolio. |
| Outcome | You will be able to design web layout with Photoshop. |



Self-Check Quiz 5.3.3

Fill-in the blanks on the following statements.

1. Designing _____ looking _____ and _____ web layouts is an essential part of a Web Designers life.
2. _____ and wire frames are greatly useful to create layouts with lot of flexibility.
3. Create a new layer by pressing _____.



REVIEW OF COMPETENCY

Final Checklist

(for the performance criteria of the module Performing Distempering)

| Performance Criteria | Yes | No |
|---|--------------------------|--------------------------|
| 1. Photoshop is installed. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Photoshop environment is introduced. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Images are added and transformed. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Layers are recognised. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Smart objects vs normal layers are introduced. | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Basic shape is created using the pen tool of the selected application. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Desired colour is selected and applied. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Desired shadow is selected where applicable. | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Text is added in accordance with project design requirement. | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Background gradient is added where desirable. | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Logo, icon & banner design are completed and used. | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. The “mysteries” behind screen size and resolution is decoded. | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. Images as JPEG, GIF, or PNG files Optimized. | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. Layout design is carried-out. | <input type="checkbox"/> | <input type="checkbox"/> |

Now I feel ready to undertake my formal competency assessment.

Signed: _____

Date: _____



ANSWER KEYS

ANSWER KEY 5.1.1

1. False
2. False
3. True

ANSWER KEY 5.1.2

1. Menu
2. Tool Box
3. ctrl/cmd + N

ANSWER KEY 5.1.3

1. drag , drop
2. File->Open

ANSWER KEY 5.1.4

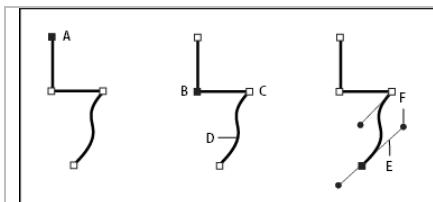
1. False
2. True
3. True
4. True

ANSWER KEY 5.1.5

1. True
2. True
3. True

ANSWER KEY 5.2.1

1. Components of a path:



A. Selected (solid) endpoint B. Selected point C. Unselected anchor point D. Curved path segment E. Direction line F. Direction point.

2. Name of five shapes:

- Circle
- Triangle
- Square
- Rectangle
- Rhombus

ANSWER KEY 5.2.2

1. Colour attributes includes:
 - Foreground and background colours
 - Create colour
 - Use swatches Palette

- Adjust saturation and hue
- Adjust the colour of skin tone
- Choose colours with the Eyedropper tool

ANSWER KEY 5.2.3

Creating a duplicate layer of the object and adjust the duplicate layer as shadow.

ANSWER KEY 5.2.4

1. True
2. True
3. False

ANSWER KEY 5.2.5

1. The gradient tool can be used to draw linear, radial, angular, reflected or diamond gradients.
2. To constrain the line angle to a multiple of 45°, hold down Shift during dragging.

ANSWER KEY 5.2.6

1. False
2. True
3. False

ANSWER KEY 5.3.1

1. True
2. True
3. True
4. True

ANSWER KEY 5.3.2

1. Optimisation for the web is the process of compressing images and setting display options for optimal use on the Internet. Optimisation will produce a file size that is small enough to allow a reasonable download time, but large enough to preserve colours and details to satisfaction.
2. GIF, JPEG, and PNG.
3. GIF

ANSWER KEY 5.3.3

1. Good, clean, functional
2. Mock-ups
3. Ctrl+Alt+Shift+N

Module 6: Work with JavaScript and jQuery



MODULE CONTENT

Module Descriptor: This module contains information and activities to work with JavaScript and jQuery. It specifically guides with the tasks of identifying JavaScript Core, introducing BOM and DOM and working with JavaScript.

Nominal Duration: 26 hours



Learning Outcomes:

Upon completion of the module, the trainee should be able to:

- 6.1 Identify JavaScript Core
- 6.2 Introduce BOM and DOM
- 6.3 Work with JavaScript



Performance Criteria:

- 1. JavaScript core components are identified.
- 2. The basic Java Scripting concepts are explained.
- 3. BOM (Browser Object Model) and DOM (Document Object Model) is described.
- 4. BOM and DOM are applied.
- 5. JavaScript is written and debugged.
- 6. JavaScript library is used.
- 7. Navigation skill is displayed.



Learning Outcome 6.1 - Identify JavaScript Core Component



Contents:

- Identify JavaScript core components
- Explain the basic Java Scripting concepts



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Operating software, local web server
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 6.1.1

| Learning Activity | Resources/Special Instructions/References |
|-------------------------------------|--|
| Identify JavaScript core components | <ul style="list-style-type: none"> ▪ Information Sheet: 6.1.1 ▪ Self-Check Quiz: 6.1.1 ▪ Answer Key: 6.1.1 ▪ https://www.w3schools.com/js/default.asp |



Information Sheet 6.1.1

Learning Objective: to identify JavaScript core components.

- **Java script:**
 - JavaScript is the programming language of HTML and the Web.
 - JavaScript is easy to learn.
 - In HTML, JavaScript code must be inserted between <script> and </script> tags.
 - Syntax is:

```
<script>
document.getElementById("demo").innerHTML = "My First JavaScript";
</script>

</body>
</html>
```
- **Core Components:**

Following core components of JavaScript are listed for your use.

| Core Components | In brief | Example |
|-----------------|--|--|
| Variables | <p>JavaScript variables are containers for storing data values.</p> <p>In this example, x, y, and z, are variables</p> <p>JavaScript variables can hold numbers like 100 and text values like "John Doe".</p> <p>In programming, text values are called text strings.</p> <p>JavaScript can handle many types of data, but here, think of numbers and strings.</p> <p>Strings are written inside double or single quotes. Numbers are written without quotes.</p> <p>If you put a number in quotes, it will be treated as a text string.</p> | <pre><!DOCTYPE html> <html> <body> <h2>JavaScript Variables</h2> <p>In this example, x, y, and z are variables.</p> <p id="demo"></p> <script> var x = 5; var y = 6; var z = x + y; document.getElementById("demo").innerHTML = "The value of z is: " + z; </script> </body> </html></pre> |
| Functions | A JavaScript function is a block of code designed to perform a particular task. | <pre><!DOCTYPE html> <html></pre> |

| | | |
|-------|--|---|
| | <p>A JavaScript function is executed when "something" invokes it (calls it).</p> <p>A JavaScript function is defined with the function keyword, followed by a name, followed by parentheses ().</p> <p>Function names can contain letters, digits, underscores, and dollar signs (same rules as variables).</p> <p>The parentheses may include parameter names separated by commas: (parameter1, parameter2, ...)</p> <p>The code to be executed, by the function, is placed inside curly brackets: {}</p> <p>The code inside the function will execute when "something" invokes (calls) the function:</p> <ul style="list-style-type: none"> When an event occurs (when a user clicks a button) When it is invoked (called) from JavaScript code Automatically (self-invoked) | <pre><body> <h2>JavaScript Functions</h2> <p>This example calls a function which performs a calculation and returns the result:</p> <p id="demo"></p> <script> var x = myFunction(4, 3); document.getElementById("demo").innerHTML = x; function myFunction(a, b) {return a * b;} </script> </body> </html></pre> |
| Loops | <p>Loops can execute a block of code a number of times.</p> <p>Loops are handy, if you want to run the same code over and over again, each time with a different value.</p> <p>JavaScript supports different kinds of loops:</p> <p>for - loops through a block of code a number of times</p> <p>for/in - loops through the properties of an object</p> | <pre><!DOCTYPE html> <html> <body> <h2>JavaScript Loops</h2> <p>The for/in statement loops through the properties of an object.</p> <p id="demo"></p> <script> var txt = ""; var person = {fname:"John", lname:"Doe", age:25}; var x; for (x in person) {txt += person[x] + " ;"} document.getElementById("demo").innerHTML = txt; </script> </body></pre> |

| | | |
|------------|--|---|
| | | </html> |
| | <p>while - loops through a block of code while a specified condition is true</p> <p>do/while - also loops through a block of code while a specified condition is true</p> | <pre><script> var text = ""; var i = 0; while (i < 10) {text += " The number is " + i;i++;} document.getElementById("demo").innerHTML = text; </script></pre> |
| Conditions | <p>Conditional statements are used to perform different actions based on different conditions.</p> <p>Very often when you write code, you want to perform different actions for different decisions.</p> <p>You can use conditional statements in your code to do this.</p> <p>In JavaScript we have the following conditional statements:</p> <ul style="list-style-type: none"> Use if to specify a block of code to be executed, if a specified condition is true Use else to specify a block of code to be executed, if the same condition is false Use else if to specify a new condition to test, if the first condition is false Use switch to specify many alternative blocks of code to be executed | <pre><!DOCTYPE html> <html> <body> <p>Click the button to get a time-based greeting:</p> <button onclick="myFunction()">Try it</button> <p id="demo"></p> <script> function myFunction() {var greeting;var time = new Date().getHours();if (time < 10) {greeting = "Good morning";} else if (time < 20) {greeting = "Good day";} else {greeting = "Good evening";}document.getElementById("demo").innerHTML = greeting;} </script> </body> </html></pre> |
| Switches | <p>The switch statement is used to perform different actions based on different conditions.</p> <p>Use the switch statement to select one of many code blocks to be executed.</p> <p>Syntax:</p> <pre>switch(<i>expression</i>) { case X: <i>code block</i> break; case y: <i>code block</i> break;</pre> | <pre><!DOCTYPE html> <html> <body> <p id="demo"></p> <script> var day; switch (new Date().getDay()) { case 0:</pre> |

| | | |
|---------|---|--|
| | <p>default: <i>code block</i></p> <p>This is how it works:</p> <p>The switch expression is evaluated once.</p> <p>The value of the expression is compared with the values of each case.</p> <p>If there is a match, the associated block of code is executed.</p> | <pre>day = "Sunday"; break; case 1: day = "Monday"; break; case 2: day = "Tuesday"; break; case 3: day = "Wednesday"; break; case 4: day = "Thursday"; break; case 5: day = "Friday"; break; case 6: day = "Saturday";} document.getElementById("demo").innerHTML = "Today is " + day; </script> </body> </html></pre> |
| Objects | <p>In JavaScript, almost "everything" is an object.</p> <p>Booleans can be objects (if defined with the new keyword)</p> <p>Numbers can be objects (if defined with the new keyword)</p> <p>Strings can be objects (if defined with the new keyword)</p> <p>Dates are always objects</p> <p>Maths are always objects</p> <p>Regular expressions are always objects</p> <p>Arrays are always objects</p> <p>Functions are always objects</p> <p>Objects are always objects</p> <p>All JavaScript values, except primitives, are objects.</p> | <pre><!DOCTYPE html> <html> <body> <p>Creating a JavaScript Object.</p> <p id="demo"></p> <script> var person = {firstName:"John", lastName:"Doe", age:50, eyeColor:"blue"}; document.getElementById("demo").innerHTML = person.firstName + " is " + person.age + " years old."; </script> </body> </html></pre> |

| | | |
|--------|--|---|
| | <p>A primitive value is a value that has no properties or methods.</p> <p>A primitive data type is data that has a primitive value.</p> <p>JavaScript defines 5 types of primitive data types:</p> <ul style="list-style-type: none"> string number boolean null undefined <p>Objects are variables too. But objects can contain many values.</p> | <pre>***** <!DOCTYPE html> <html> <body> <p>JavaScript objects are mutable.</p> <p>Any changes to a copy of an object will also change the original.</p> <p id="demo"></p> <script> var person = {firstName:"John", lastName:"Doe", age:50, eyeColor:"blue"} var x = person; x.age = 10; document.getElementById("demo").innerHTML = person.firstName + " is " + person.age + " years old."; </script> </body> </html></pre> |
| Arrays | <p>An array is a special variable, which can hold more than one value at a time.</p> <p>An array can hold many values under a single name, and you can access the values by referring to an index number.</p> <p>Syntax:</p> <pre>var <i>array_name</i> = [<i>item1</i>, <i>item2</i>, ...];</pre> | <pre><!DOCTYPE html> <html> <body> <h2>JavaScript Arrays</h2> <p id="demo"></p> <script> var cars = new Array("Saab", "Volvo", "BMW"); document.getElementById("demo").innerHTML = cars; </script> </body> </html></pre> |
| Output | <p>JavaScript can "display" data in different ways:</p> <ul style="list-style-type: none"> • Writing into an HTML element, using innerHTML. • Writing into the HTML output using document.write(). • Writing into an alert box, using window.alert(). • Writing into the browser console, using console.log(). | <pre><!DOCTYPE html> <html> <body> <h2>My First Web Page</h2> <p>My First Paragraph.</p> <p id="demo"></p> <script> document.getElementById("demo").innerHTML = 5 + 6; document.write(5 + 7); window.alert(5 + 9);</pre> |

| | | |
|------------|---|--|
| | | <pre> </script> <button type="button" onclick="document.write(5 + 8)">Try it</button> </body> </html> </pre> |
| Comments | <p>JavaScript comments can be used to explain JavaScript code, and to make it more readable.</p> <p>JavaScript comments can also be used to prevent execution, when testing alternative code.</p> <p>Two types of codes are used for comments:</p> <ul style="list-style-type: none"> i. Single line comments start with //. Any text between // and the end of the line will be ignored by JavaScript (will not be executed). ii. Multi-line comments start with /* and end with */. Any text between /* and */ will be ignored by JavaScript. | <pre> <!DOCTYPE html> <html> <body> <h2>JavaScript Comments</h2> <p id="demo"></p> <h1 id="myH"></h1> <p id="myP"></p> <script> var x = 5; // Declare x, give it the value of 5 var y = x + 2; // Declare y, give it the value of x + 2 // Write y to demo: document.getElementById("demo").innerHTML = y; /* The code below will change the heading with id = "myH" and the paragraph with id = "myp" */ document.getElementById("myH").innerHTML = "JavaScript Comments"; document.getElementById("myP").innerHTML = "My first paragraph."; </script> </body> </html> </pre> |
| Data Types | <p>In programming, data type is an important concept.</p> <p>To be able to operate on variables, it is important to know about data type.</p> <p>JavaScript variables can hold many data types: numbers, string(" ")s, objects and more.</p> | <pre> <!DOCTYPE html> <html> <body> <h2>JavaScript typeof</h2> <p>The typeof operator returns the type of a variable or an expression.</p> <p id="demo"></p> <script> document.getElementById("demo").innerHTML = typeof "john" + " " + typeof 3.14 + " " + typeof true + " " + typeof false + " " + typeof x; </script> </body> </pre> |

| | | </html> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|--|------------------------------|-----------------------|-----------|----------|----|-------------|------------------------------|-----------------------|----|----------------------------|----------------------|------------------------------|---|-----------|----|-----------|----------|---------|---------|---|-------|-------|----|--------|-----------|----|--------|-----------|----|--------|-----------|----|--------|-----------|----|--------|-----------|----------|-------------|----|----------|----|----------------------------|----|-----------|-----|-----------------------------------|---|--------------|---|-----------|----|--------------------------|----|-----------------------|---|------------------|----------|-------------|--------|--------------------------------|------------|--|--|
| Operators | <p>Operators assign values to variables and add them together.</p> <p>Arithmetic operators are used to perform arithmetic on numbers:</p> <table> <thead> <tr> <th>Operator</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>+</td> <td>Addition</td> </tr> <tr> <td>-</td> <td>Subtraction</td> </tr> <tr> <td>*</td> <td>Multiplication</td> </tr> <tr> <td>/</td> <td>Division</td> </tr> <tr> <td>%</td> <td>Modulus (Division Remainder)</td> </tr> <tr> <td>++</td> <td>Increment</td> </tr> <tr> <td>--</td> <td>Decrement</td> </tr> </tbody> </table> <p>JavaScript Assignment Operators</p> <table> <thead> <tr> <th>Operator</th> <th>Example</th> <th>Same As</th> </tr> </thead> <tbody> <tr> <td>=</td> <td>x = y</td> <td>x = y</td> </tr> <tr> <td>+=</td> <td>x += y</td> <td>x = x + y</td> </tr> <tr> <td>-=</td> <td>x -= y</td> <td>x = x - y</td> </tr> <tr> <td>*=</td> <td>x *= y</td> <td>x = x * y</td> </tr> <tr> <td>/=</td> <td>x /= y</td> <td>x = x / y</td> </tr> <tr> <td>%=</td> <td>x %= y</td> <td>x = x % y</td> </tr> </tbody> </table> <p>JavaScript Comparison Operators</p> <table> <thead> <tr> <th>Operator</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>==</td> <td>equal to</td> </tr> <tr> <td>==</td> <td>equal value and equal type</td> </tr> <tr> <td>!=</td> <td>not equal</td> </tr> <tr> <td>!==</td> <td>not equal value or not equal type</td> </tr> <tr> <td>></td> <td>greater than</td> </tr> <tr> <td><</td> <td>less than</td> </tr> <tr> <td>>=</td> <td>greater than or equal to</td> </tr> <tr> <td><=</td> <td>less than or equal to</td> </tr> <tr> <td>?</td> <td>ternary operator</td> </tr> </tbody> </table> <p>JavaScript Type Operators</p> <table> <thead> <tr> <th>Operator</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>typeof</td> <td>Returns the type of a variable</td> </tr> <tr> <td>instanceof</td> <td>Returns true if an object is an instance of an object type</td> </tr> </tbody> </table> | Operator | Description | + | Addition | - | Subtraction | * | Multiplication | / | Division | % | Modulus (Division Remainder) | ++ | Increment | -- | Decrement | Operator | Example | Same As | = | x = y | x = y | += | x += y | x = x + y | -= | x -= y | x = x - y | *= | x *= y | x = x * y | /= | x /= y | x = x / y | %= | x %= y | x = x % y | Operator | Description | == | equal to | == | equal value and equal type | != | not equal | !== | not equal value or not equal type | > | greater than | < | less than | >= | greater than or equal to | <= | less than or equal to | ? | ternary operator | Operator | Description | typeof | Returns the type of a variable | instanceof | Returns true if an object is an instance of an object type | <!DOCTYPE html> <html> <body> <h2>JavaScript Operators</h2> <p>Adding a number and a string, returns a string.</p> <p id="demo"></p> <script> var x = 5 + 5; var y = "5" + 5; var z = "Hello" + 5; document.getElementById("demo").innerHTML = x + " " + y + " " + z; </script> </body> </html> |
| Operator | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| + | Addition | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | Subtraction | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| * | Multiplication | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| / | Division | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| % | Modulus (Division Remainder) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ++ | Increment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | Decrement | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operator | Example | Same As | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| = | x = y | x = y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| += | x += y | x = x + y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -= | x -= y | x = x - y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *= | x *= y | x = x * y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| /= | x /= y | x = x / y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| %= | x %= y | x = x % y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operator | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| == | equal to | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| == | equal value and equal type | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| != | not equal | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| !== | not equal value or not equal type | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| > | greater than | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| < | less than | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| >= | greater than or equal to | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <= | less than or equal to | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ? | ternary operator | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operator | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| typeof | Returns the type of a variable | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| instanceof | Returns true if an object is an instance of an object type | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Comparisons | <p>Comparison and Logical operators are used to test for <i>true</i> or <i>false</i>.</p> <table> <thead> <tr> <th>operator</th> <th>Description</th> <th>Comparing</th> <th>Returns</th> </tr> </thead> <tbody> <tr> <td>==</td> <td>equal to</td> <td>x == 8 x == 5 x == "5"</td> <td>false true true</td> </tr> <tr> <td>==</td> <td>equal value and equal type</td> <td>x === 5 x === "5"</td> <td>true false</td> </tr> </tbody> </table> | operator | Description | Comparing | Returns | == | equal to | x == 8 x == 5 x == "5" | false true true | == | equal value and equal type | x === 5 x === "5" | true false | <!DOCTYPE html> <html> <body> <h2>JavaScript Comparison</h2> <p>Assign 5 to x, and display the value of the comparison (x == 8):</p> <p id="demo"></p> <script> var x = 5; document.getElementById("demo").innerHTML = (x == 8); </script> </body> </html> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| operator | Description | Comparing | Returns | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| == | equal to | x == 8 x == 5 x == "5" | false true true | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| == | equal value and equal type | x === 5 x === "5" | true false | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------|--|--|-----------|---------------------------|-----------|------------|-----------------------------------|---------------------|-------|-------------------|--|---------|------|-------------|--------------|-------|-------|-------------|-----------|-------|------|--------------|--------------------------|--------|-------|--------------|-----------------------|--------|------|--|
| | <table border="1"> <tbody> <tr> <td>!=</td><td>not equal</td><td>x != 8</td><td>true</td></tr> <tr> <td>!==</td><td>not equal value or not equal type</td><td>x !== 5 x != "5"</td><td>false</td></tr> <tr> <td></td><td></td><td>x !== 8</td><td>true</td></tr> <tr> <td>></td><td>greater than</td><td>x > 8</td><td>false</td></tr> <tr> <td><</td><td>less than</td><td>x < 8</td><td>true</td></tr> <tr> <td>>=</td><td>greater than or equal to</td><td>x >= 8</td><td>false</td></tr> <tr> <td><=</td><td>less than or equal to</td><td>x <= 8</td><td>true</td></tr> </tbody> </table> | != | not equal | x != 8 | true | !== | not equal value or not equal type | x !== 5 x != "5" | false | | | x !== 8 | true | > | greater than | x > 8 | false | < | less than | x < 8 | true | >= | greater than or equal to | x >= 8 | false | <= | less than or equal to | x <= 8 | true | |
| != | not equal | x != 8 | true | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| !== | not equal value or not equal type | x !== 5 x != "5" | false | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | x !== 8 | true | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| > | greater than | x > 8 | false | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| < | less than | x < 8 | true | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| >= | greater than or equal to | x >= 8 | false | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <= | less than or equal to | x <= 8 | true | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <p>Logical operators are used to determine the logic between variables or values.</p> <p>Operator Description Example</p> <table> <tbody> <tr> <td>&&</td><td>and</td><td>(x < 10 && y > 1) is true</td></tr> <tr> <td> </td><td>or</td><td>(x == 5 y == 5) is false</td></tr> <tr> <td>!</td><td>not</td><td>!(x == y) is true</td></tr> </tbody> </table> | && | and | (x < 10 && y > 1) is true | | or | (x == 5 y == 5) is false | ! | not | !(x == y) is true | | | | | | | | | | | | | | | | | | | | |
| && | and | (x < 10 && y > 1) is true | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | or | (x == 5 y == 5) is false | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ! | not | !(x == y) is true | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Breaks | The break statement "jumps out" of a loop. The break statement breaks the loop and continues executing the code after the loop (if any): | <pre><!DOCTYPE html> <html> <body> <p>A loop with a break.</p> <p id="demo"></p> <script> var text = ""; var i; for (i = 0; i < 10; i++) { if (i === 3) { break; } text += "The number is " + i + " "; } document.getElementById("demo").innerHTML = text; </script> </body> </html></pre> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Errors | When executing JavaScript code, different errors can occur. Errors can be coding errors made by the programmer, errors due to wrong input, and other unforeseeable things. | <pre><!DOCTYPE html> <html> <body> <p id="demo"></p></pre> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | |
|--|---|--|
| | <p>These are handled with -</p> <p>The try statement lets you test a block of code for errors.</p> <p>The catch statement lets you handle the error.</p> <p>The throw statement lets you create custom errors.</p> <p>The final statement lets you execute code, after try and catch, regardless of the result.</p> | <pre><script> try { adddler("Welcome guest!"); } catch(err) { document.getElementById("demo").innerHTML = err.message; } </script> </body> </html></pre> |
|--|---|--|

Individual Activity:

- Apply core components of JavaScript to a web page.
- Include your work to your portfolio.
- Share your work in class.
- Your trainer will guide you to carry out this activity.



Self-Check Quiz 6.1.1

State which of the following statements is “True” or “False”:

1. JavaScript variables are containers for storing data values.
2. A JavaScript function is a block of code designed to perform set of tasks.
3. Loops can execute a block of code a number of times.
4. The switch statement is used to perform different actions based on different conditions.
5. All JavaScript values, except primitives, are objects.
6. A primitive value is a value that has specified properties or methods.
7. An array can hold many values under a single name.
8. JavaScript comments are used to explain JavaScript codes.
9. Operates assign values to variables and add them together.
10. The break statement is used to jump out of a loop.



Learning Activity 6.1.2

| Learning Activity | Resources/Special Instructions/References |
|--|--|
| Explain the basic JavaScripting concepts | <ul style="list-style-type: none"> ▪ Information Sheet: 6.1.2 ▪ Self-Check Quiz: 6.1.2 ▪ Answer Key: 6.1.2 ▪ https://codeburst.io/10-javascript-concepts-you-need-to-know-for-interviews-136df65ecce |



Information Sheet 6.1.2

Learning Objective: to explain the basic JavaScripting concepts.

- **Basic scripting concepts:**

- JavaScript was initially created as a browser-only language, but now it is used in many other environments as well.
- At this moment, JavaScript has a unique position as the most widely-adopted browser language with full integration with HTML/CSS.
- There are many languages that get “translated” to JavaScript and provide certain features.

- **JavaScript**

- JavaScript was initially created to “make webpages alive”.
- The programs in this language are called scripts. They can be written right in the HTML and execute automatically as the page loads.
- Scripts are provided and executed as a plain text. They don’t need a special preparation or a compilation to run.
- In this aspect, JavaScript is very different from Java language.

- **Application of JavaScript**

- JavaScript became a fully independent language, with its own specification called ECMAScript.
- At present, JavaScript can execute not only in the browser, but also on the server, or actually on any device where there exists a special program called the JavaScript engine.
- The browser has an embedded engine, sometimes it’s also called a “JavaScript virtual machine”.
- Different engines have different “codenames”, for example:
 - ✓ V8 – in Chrome and Opera
 - ✓ SpiderMonkey – in Firefox
 - ✓ “Trident”, “Chakra” for different versions of IE
 - ✓ “ChakraCore” for Microsoft Edge
 - ✓ “Nitro” and “SquirrelFish” for Safari etc.

- **JavaScript engines**

- Engines are complicated. But the basics are easy.
- The engine (embedded if it’s a browser) reads (“parses”) the script.
- Then it converts (“compiles”) the script to the machine language.
- And then the machine code runs, pretty fast.
- The engine applies optimizations on every stage of the process. It even watches the compiled script as it runs, analyses the data that flows through it and applies optimizations to the machine code based on that knowledge. At the end, scripts are quite fast.

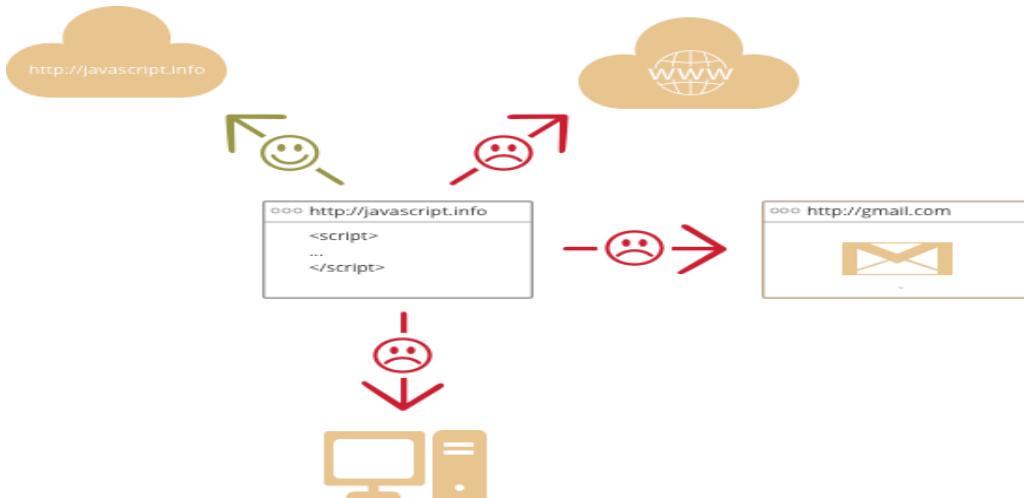
- **In-browser JavaScript**

- The modern JavaScript is a “safe” programming language. It does not provide low-level access to memory or CPU, because it was initially created for browsers which do not require it.
- In-browser JavaScript can do everything related to webpage manipulation, interaction with the user and the webserver.
- For instance, in-browser JavaScript is able to:
 - ✓ Add new HTML to the page, change the existing content, modify styles.
 - ✓ React to user actions, run on mouse clicks, pointer movements, key presses.
 - ✓ Send requests over the network to remote servers, download and upload files (so-called AJAX and COMET technologies).

- ✓ Get and set cookies, ask questions to the visitor, show messages.
- ✓ Remember the data on the client-side (“local storage”).

- **Limitation of in-browser JavaScript**

- JavaScript's abilities in the browser are limited for the sake of the user's safety. The aim is to prevent an evil webpage from accessing private information or harming the user's data. Following figure is self-explanatory.



- Such limits do not exist if JavaScript is used outside of the browser, for example on a server. Modern browsers also allow installing plugin/extensions which may get extended permissions.

- **Uniqueness of JavaScript**

- There are at least three great things about JavaScript:
 - ✓ Full integration with HTML/CSS.
 - ✓ Simple things done simply.
 - ✓ Supported by all major browsers and enabled by default.
- Combined, these three things exist only in JavaScript and no other browser technology.
- That's what makes JavaScript unique. That's why it's the most widespread tool to create browser interfaces.

- **Languages “over” JavaScript**

- The syntax of JavaScript does not suit everyone's needs. Different people want different features.
- That's to be expected, because projects and requirements are different for everyone.
- So recently a plethora of new languages appeared, which are translated (converted) to JavaScript before they run in the browser.
- Modern tools make the translation very fast and transparent, actually allowing developers to code in another language and auto-converting it “under the hood”.
- Examples of such languages:
 - ✓ **CoffeeScript** is a “syntactic sugar” for JavaScript, it introduces shorter syntax, allowing to write more precise and clearer code. Usually Ruby developers like it.
 - ✓ **TypeScript** is concentrated on adding “strict data typing”, to simplify development and support of complex systems. It is developed by Microsoft.
 - ✓ **Dart** is a standalone language that has its own engine that runs in non-browser environments (like mobile apps). It was initially offered by Google as a replacement for JavaScript, but as of now, browsers require it to be translated to JavaScript just like the ones above.

Individual Activity:

- The class will divide in 3 to 4 groups.

- Each group will discuss on “basic concepts” of JavaScripting.
- Write five points come out from the discussion.
- Each group will present their findings.
- Your trainer will guide you to complete this activity.



Self-Check Quiz 6.1.2

Fill-in the gaps of the following statements:

1. JavaScript was initially created to “make _____ alive”.
2. JavaScript has a _____ position as the most widely-adopted _____ language with full support for HTML/CSS.
3. JavaScript is very different from _____ language.
4. The modern JavaScript is a _____ programming language.
5. In-browser JavaScript is able to get and set _____.
6. JavaScript cannot _____ to emails.
7. The syntax of JavaScript _____ suit everyone’s needs.



Learning Outcome 6.2 – Introduce BOM & DOM



Contents:

- Describe BOM (Browser Object Model) and DOM (Document Object Model)
- Apply BOM and DOM



Assessment criteria:

1. BOM (Browser Object Model) and DOM (Document Object Model) is described.
2. BOM and DOM are applied.



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 6.2.1

| Learning Activity | Resources/Special Instructions/References |
|---|---|
| Describe BOM (Browser Object Model) and DOM (Document Object Model) | <ul style="list-style-type: none">▪ Information Sheet: 6.2.1▪ Self-Check Quiz: 6.2.1▪ Answer Key: 6.2.1▪ https://www.w3schools.com/js/js_window.asp |



Information Sheet 6.2.1

Learning Objective: to describe BOM (Browser Object Model) and DOM (Document Object Model).

▪ **BOM (Browser Object Model)**

- The Browser Object Model (BOM) allows JavaScript to "talk to" the browser.
- Following objects are used in this model:

| Object | In brief |
|----------|---|
| Window | <p>The window object is supported by all browsers. It represents the browser's window.</p> <p>All global JavaScript objects, functions, and variables automatically become members of the window object.</p> <p>Two properties can be used to determine the size of the browser window.</p> <ul style="list-style-type: none">• <code>window.innerHeight</code> - the inner height of the browser window (in pixels)• <code>window.innerWidth</code> - the inner width of the browser window (in pixels) <p>Some other methods:</p> <ul style="list-style-type: none">• <code>window.open()</code> - open a new window• <code>window.close()</code> - close the current window• <code>window.moveTo()</code> -move the current window• <code>window.resizeTo()</code> -resize the current window |
| Screen | <p>The <code>window.screen</code> object contains information about the user's screen.</p> <p>The window.screen object can be written without the window prefix.</p> <p>Properties:</p> <ul style="list-style-type: none">• <code>screen.width</code>• <code>screen.height</code>• <code>screen.availWidth</code>• <code>screen.availHeight</code>• <code>screen.colorDepth</code>• <code>screen.pixelDepth</code> |
| Location | <p>The <code>window.location</code> object can be used to get the current page address (URL) and to redirect the browser to a new page.</p> <p>The window.location object can be written without the window prefix.</p> <p>Some examples:</p> <ul style="list-style-type: none">• <code>window.location.href</code> returns the href (URL) of the current page• <code>window.location.hostname</code> returns the domain name of the web host• <code>window.location.pathname</code> returns the path and filename of the current page |

| | |
|-------------|---|
| | <ul style="list-style-type: none"> • window.location.protocol returns the web protocol used (http: or https:) • window.location.assign loads a new document |
| History | <ul style="list-style-type: none"> • The window.history object contains the browser's history. • The window.history object can be written without the window prefix. • To protect the privacy of the users, there are limitations to how JavaScript can access this object. • Some methods: <ul style="list-style-type: none"> ✓ history.back() - same as clicking back in the browser ✓ history.forward() - same as clicking forward in the browser |
| Navigator | <ul style="list-style-type: none"> ▪ The window.navigator object contains information about the visitor's browser. ▪ The window.navigator object can be written without the window prefix. ▪ Some properties: <ul style="list-style-type: none"> ✓ navigator.appName ✓ navigator.appCodeName ✓ navigator.platform |
| Popup Alert | <ul style="list-style-type: none"> ▪ JavaScript has three kinds of popup boxes: Alert box, Confirm box, and Prompt box. ▪ An alert box is often used if you want to make sure information comes through to the user. When an alert box pops up, the user will have to click "OK" to proceed. Syntax: <code>window.alert("sometext");</code> ▪ The window.alert() method can be written without the window prefix. <code>alert("I am an alert box!");</code> ▪ A confirm box is often used if you want the user to verify or accept something. When a confirm box pops up, the user will have to click either "OK" or "Cancel" to proceed. If the user clicks "OK", the box returns true. If the user clicks "Cancel", the box returns false. Syntax: <code>window.confirm("sometext");</code> ▪ The window.confirm() method can be written without the window prefix. Like – <code>if (confirm("Press a button!")) {txt = "You pressed OK!";} else {txt = "You pressed Cancel!";}</code> ▪ A prompt box is often used if you want the user to input a value before entering a page. When a prompt box pops up, the user will have to click either "OK" or "Cancel" to proceed after entering an input value. If the user clicks "OK" the box returns the input value. If the user clicks "Cancel" the box returns null. Syntax: <code>window.prompt("sometext", "defaultText");</code> ▪ The window.prompt() method can be written without the window prefix. Like – <code>var person = prompt("Please enter your name", "Harry Potter");</code> <code>if (person == null person == "") {txt = "User cancelled the prompt.";} else {txt = "Hello " + person + "! How are you today?";}</code> |
| Timing | <ul style="list-style-type: none"> ▪ JavaScript can be executed in time-intervals. The window object allows execution of code at specified time intervals. These time intervals are called timing events. The two key methods to use with JavaScript are: <ul style="list-style-type: none"> ✓ setTimeout(function, milliseconds) Executes a function, after waiting a specified number of milliseconds. ✓ setInterval(function, milliseconds) Same as setTimeout(), but repeats the execution of the function continuously. |

| | |
|---------|---|
| | <ul style="list-style-type: none"> ▪ Example: <pre><button onclick="setTimeout(myFunction, 3000)">Try it</button> <script> function myFunction() {alert('Hello');} </script></pre> |
| Cookies | <ul style="list-style-type: none"> ▪ Cookies let you store user information in web pages. Cookies are data, stored in small text files, on your computer. ▪ When a web server has sent a web page to a browser, the connection is shut down, and the server forgets everything about the user. ▪ Cookies were invented to solve the problem "how to remember information about the user": <ul style="list-style-type: none"> ✓ When a user visits a web page, his name can be stored in a cookie. ✓ Next time the user visits the page, the cookie "remembers" his name. ▪ JavaScript can create, read, and delete cookies with the document.cookie property. ▪ With JavaScript, a cookie can be created like this: <pre>document.cookie = "username=John Doe"; document.cookie = "username=John Doe; expires=Thu, 18 Dec 2013 12:00:00 UTC"; document.cookie = "username=John Doe; expires=Thu, 18 Dec 2013 12:00:00 UTC; path=/";</pre> <ul style="list-style-type: none"> ▪ Example: <pre>function setCookie(cname, cvalue, exdays) {var d = new Date();d.setTime(d.getTime() + (exdays*24*60*60*1000)); var expires = "expires="+.toUTCString(); document.cookie = cname + "=" + cvalue + ";" + expires + ";path=/";}</pre> |

Example:

```
<!DOCTYPE html>
<html>
<body>

<p id="demo"></p>

<script>
var w = window.innerWidth
|| document.documentElement.clientWidth
|| document.body.clientWidth;

var h = window.innerHeight
|| document.documentElement.clientHeight
|| document.body.clientHeight;

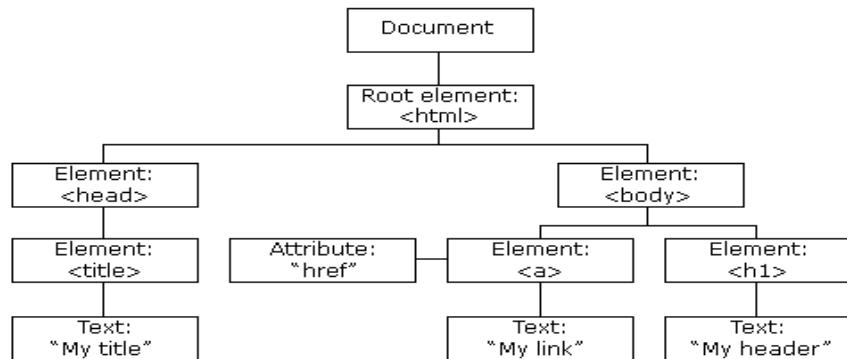
var x = document.getElementById("demo");
x.innerHTML = "Browser inner window width: " + w + ", height: " + h + ".";
</script>

</body>
</html>
```

▪ **DOM (Document Object Model)**

- The HTML DOM is a standard object model and programming interface for HTML. It defines:
 - ✓ The HTML elements as **objects**

- ✓ The **properties** of all HTML elements
- ✓ The **methods** to access all HTML elements
- ✓ The **events** for all HTML elements
- In other words: The HTML DOM is a standard for how to get, change, add, or delete HTML elements.
- When a web page is loaded, the browser creates a Document Object Model of the page.
- The HTML DOM model is constructed as a tree of Objects:



- 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
- HTML DOM methods are actions you can perform (on HTML Elements).
- HTML DOM properties are values (of HTML Elements) that you can set or change.
- Example:

```

<!DOCTYPE html>
<html>
<body>
<h2>My First Page</h2>
<p id="demo"></p>
<script>
document.getElementById("demo").innerHTML = "Hello World!";
</script>
</body>
</html>
  
```

- Finding HTML Elements

| Method | Description |
|--|-------------------------------|
| document.getElementById(<i>id</i>) | Find an element by element id |
| document.getElementsByTagName(<i>name</i>) | Find elements by tag name |
| document.getElementsByClassName(<i>name</i>) | Find elements by class name |

- Changing HTML Elements

| Method | Description |
|---|---|
| <code>element.innerHTML = new html content</code> | Change the inner HTML of an element |
| <code>element.attribute = new value</code> | Change the attribute value of an HTML element |
| <code>element.setAttribute(attribute, value)</code> | Change the attribute value of an HTML element |
| <code>element.style.property = new style</code> | Change the style of an HTML element |

- Adding and Deleting Elements

| Method | Description |
|--|-----------------------------------|
| <code>document.createElement(element)</code> | Create an HTML element |
| <code>document.removeChild(element)</code> | Remove an HTML element |
| <code>document.appendChild(element)</code> | Add an HTML element |
| <code>document.replaceChild(element)</code> | Replace an HTML element |
| <code>document.write(text)</code> | Write into the HTML output stream |

- Adding Events Handlers

| Method | Description |
|---|---|
| <code>document.getElementById(id).onclick = function(){code}</code> | Adding event handler code to an onclick event |

Example:

| | |
|---|---|
| <pre><!DOCTYPE html> <html> <body> <h1 id="id1">My Heading 1</h1> <button type="button" onclick="document.getElementById('id1').style.color = 'red'"> Click Me!</button> </body> </html></pre> | <pre><!DOCTYPE html> <html> <style> #container { width: 400px; height: 400px; position: relative; background: yellow; } #animate { width: 50px; height: 50px; position: absolute; background-color: red; } </style> <body> <p> <button onclick="myMove()">Click Me</button> </p></pre> |
|---|---|

```

<div id="container">
<div id="animate"></div>
</div>

<script>
function myMove() {
    var elem = document.getElementById("animate");
    var pos = 0;
    var id = setInterval(frame, 5);
    function frame() {
        if (pos == 350) {
            clearInterval(id);
        } else {
            pos++;
            elem.style.top = pos + 'px';
            elem.style.left = pos + 'px';
        }
    }
}
</script>
</body>
</html>

```

Individual Activity:

- Explain use of BOM and DOM on a web page.
- Share your thoughts in class.



Self-Check Quiz 6.2.1

Write correct answer for the following questions:

1. What is BOM in JavaScript?
2. What is the use of location object?
3. What are the popup alert systems used in BOM model?
4. What are the key methods for timing object in JavaScript?
5. How you can store user information in web pages?
6. What is DOM?
7. What are the methods for finding HTML elements?
8. Write an event handler code to an onclick event.



Learning Activity 6.2.2

| Learning Activity | Resources/Special Instructions/References |
|-------------------|---|
| Apply BOM and DOM | <ul style="list-style-type: none"> ▪ Information Sheet: 6.2.2 ▪ Self-Check Quiz: 6.2.2 ▪ Answer Key: 6.2.2 |

| | |
|--|--|
| | <ul style="list-style-type: none"> ▪ https://www.youtube.com/watch?v=A-C9gB_4RZk ▪ http://www-db.deis.unibo.it/courses/TW/DOCS/w3schools/js/js_dom_examples.asp.html |
|--|--|



Information Sheet 6.2.2

Learning Objective: to select and apply desired colours.

▪ Apply BOM and DOM

- You have learned BOM and DOM objects and events on the previous section. Here you will plan and create a page where you will apply BOM and DOM objects to make it effective. Watch the video for practical application of BOM and DOM in HTML.

▪ Video/Presentation

Trainees will watch video clips on “How to select colors in Photoshop CC” and note important instructions and apply on their own work.

Video Reference: https://www.youtube.com/watch?v=A-C9gB_4RZk

| Purpose | Code |
|---|--|
| Display the domain name of the server that loaded the document. | <pre><!DOCTYPE html> <html> <body> <p>Click the button to display the domain name of the server that loaded this document.</p> <button onclick="myFunction()">Try it</button> <p id="demo"></p> <script> function myFunction() { document.getElementById("demo").innerHTML = document.domain; } </script> </body> </html></pre> |
| Display the date and time the document was last modified. | <pre><!DOCTYPE html> <html> <body> <p>This document was last modified .</p> <script> document.getElementById("demo").innerHTML = document.lastModified; </script> </body> </html></pre> |

| | |
|---|--|
| Display the URL of the document that loaded the current document. | <pre><!DOCTYPE html> <html> <body> <p>Click the button to display the referrer of this document.</p> <button onclick="myFunction()">Try it</button> <p id="demo"></p> <script> function myFunction() { document.getElementById("demo").innerHTML = document.referrer; } </script> </body> </html></pre> |
| Display the full URL of a document. | <pre><!DOCTYPE html> <html> <body> <p>The full URL of this document is: .</p> <script> document.getElementById("demo").innerHTML = document.URL </script> </body> </html></pre> |
| Replace the content of a document. | <pre><!DOCTYPE html> <html> <body> <p id="demo">Click the button to replace this document with new content.</p> <button onclick="myFunction()">Try it</button> <script> function myFunction() { document.open("text/html", "replace"); document.write("<h2>Learning about the HTML DOM is fun!</h2>"); document.close(); } </script> </body> </html></pre> |
| Open a new window, and add some content. | <pre><!DOCTYPE html> <html> <body></pre> |

| | |
|---|---|
| | <p><p>Click the button to open a new window and add some content.</p></p> <p><button onclick="myFunction()">Try it</button></p> <pre><script> function myFunction() { var w = window.open(); w.document.open(); w.document.write("<h1>Hello World!</h1>"); w.document.close(); } </script></pre> <p></body></p> <p></html></p> |
| Display the number of links in a document | <pre><!DOCTYPE html> <html> <body> <p> HTML CSS </p> <p id="demo"></p> <script> document.getElementById("demo").innerHTML = "Number of links: " + document.links.length; </script> </body> </html></pre> |
| Find the number of forms in a document | <pre><!DOCTYPE html> <html> <body> <form action=""> First name: <input type="text" name="fname" value="Donald"> <input type="submit" value="Submit"> </form> <form action=""> Sex: <input type="text" name="pSex" value="Male"> <input type="submit" value="Submit"> </form> <p id="demo"></p> <script> document.getElementById("demo").innerHTML = "Number of forms: " + document.forms.length; </script> </body> </html></pre> |

| | |
|--|---|
| Change the visibility of an HTML element | <pre><!DOCTYPE html> <html> <body> <p id="p1"> This is a text. This is a text. This is a text. </p> <input type="button" value="Hide text" onclick="document.getElementById('p1').style.visibility='hidden'"> <input type="button" value="Show text" onclick="document.getElementById('p1').style.visibility='visible'"> </body> </html></pre> |
| Change the background color of an HTML element | <pre><!DOCTYPE html> <html> <head> <script> function bgChange(bg) { document.body.style.backgroundColor = bg; } </script> </head> <body> <h2>Change background color</h2> <p>Mouse over the squares!</p> <table style="width:300px;height:100px"> <tr> <td onmouseover="bgChange(this.style.backgroundColor)" onmouseout="bgChange('transparent')" style="background-color:Khaki"> </td> <td onmouseover="bgChange(this.style.backgroundColor)" onmouseout="bgChange('transparent')" style="background-color:PaleGreen"> </td> <td onmouseover="bgChange(this.style.backgroundColor)" onmouseout="bgChange('transparent')" style="background-color:Silver"> </td> </tr> </table> </body> </html></pre> |

- **Some example of BOM events:**

| Object | Code |
|--|--|
| Open a new window and control its appearance | <pre><!DOCTYPE html> <html> <head></pre> |

| | |
|-------------------------------------|--|
| | <pre> <script> function openWin() { window.open("http://www.w3schools.com","_blank","toolbar=yes, location=yes, directories=no, status=no, menubar=yes, scrollbars=yes, resizable=no, copyhistory=yes, width=400, height=400"); } </script> </head> <body> <form> <input type="button" value="Open Window" onclick="openWin()"> </form> </body> </html> </pre> |
| Print the current page | <pre> <!DOCTYPE html> <html> <head> <script> function printPage() { window.print(); } </script> </head> <body> <input type="button" value="Print this page" onclick="printPage()" /> </body> </html> </pre> |
| Resize a window to a specified size | <pre> <!DOCTYPE html> <html> <head> <script> var w; function openwindow() { w = window.open("", 'width=100,height=100'); w.focus(); } function myFunction() { w.resizeTo(500, 500); w.focus(); } </script> </head> <body> <button onclick="openwindow()">Create window</button> <button onclick="myFunction()">Resize window</button> </body> </html> </pre> |

| | | |
|---|---------|---|
| The visitor's Available screen: | Width | <pre><!DOCTYPE html> <html> <body> <p id="demo"></p> <script> document.getElementById("demo").innerHTML = "Available screen width is " + screen.availWidth; </script> </body> </html></pre> |
| The visitor's Available Height | screen: | <pre><!DOCTYPE html> <html> <body> <p id="demo"></p> <script> document.getElementById("demo").innerHTML = "Available screen height is " + screen.availHeight; </script> </body> </html></pre> |
| Return the hostname and port of the current URL | | <pre><html> <body> <p>Display the hostname (and the port if not 80) of the current URL.</p> <p id="demo"></p> <script> document.getElementById("demo").innerHTML = "Page hostname is: " + window.location.hostname; </script> </body> </html></pre> |
| Display the number of URLs in the history list | | <pre><!DOCTYPE html> <html> <body> <p>Display the number of URLs in the history list:</p> <button onclick="myFunction()">Try it</button> <p id="demo"></p> <script> function myFunction() { document.getElementById("demo").innerHTML = history.length; } </script></pre> |

| | |
|---|---|
| | <pre></body> </html></pre> |
| Demonstrate line breaks in an alert box | <pre><!DOCTYPE html> <html> <body> <p>Click the button to demonstrate line-breaks in a popup box.</p> <button onclick="myFunction()">Try it</button> <script> function myFunction() { alert("Hello\nHow are you?"); } </script> </body> </html></pre> |
| Timing event in an infinite loop - with a Stop button | <pre><!DOCTYPE html> <html> <body> <button onClick="myTimer = setInterval(myCounter, 1000)">Start counter!</button> <p id="demo">Click on the button above and I will count forever.</p> <button onClick="clearInterval(myTimer)">Stop counter!</button> <script> var c = 0; function myCounter() { document.getElementById("demo").innerHTML = ++c; } </script> </body> </html></pre> |
| Set and stop a timer with setInterval() and clearInterval() | <pre><!DOCTYPE html> <html> <body> <p id="demo">Clock</p> <button onclick="clearInterval(myTimer)">Stop</button> <script> var myTimer = setInterval(myClock, 1000); function myClock() { document.getElementById("demo").innerHTML = new Date().toLocaleTimeString(); } </script> </body> </html></pre> |

| | |
|-------------------------|--|
| Create a welcome cookie | <pre> <!DOCTYPE html> <html> <head> <script> function setCookie(cname,cvalue,exdays) { var d = new Date(); d.setTime(d.getTime() + (exdays*24*60*60*1000)); var expires = "expires=" + d.toGMTString(); document.cookie = cname+"="+cvalue+"; "+expires; } function getCookie(cname) { var name = cname + "="; var ca = document.cookie.split(';'); for(var i=0; i<ca.length; i++) { var c = ca[i]; while (c.charAt(0)==' ') { c = c.substring(1); } if (c.indexOf(name) == 0) { return c.substring(name.length, c.length); } } return ""; } function checkCookie() { var user=getCookie("username"); if (user != "") { alert("Welcome again " + user); } else { user = prompt("Please enter your name:",""); if (user != "" && user != null) { setCookie("username", user, 30); } } } </script> </head> <body onload="checkCookie()"> </body> </html> </pre> |
|-------------------------|--|



Job Sheet 6.2.2

| | |
|--------------|--|
| Job Title | Apply BOM and DOM objects on a web page |
| Instructions | <ul style="list-style-type: none"> ▪ Open an HTML editor. ▪ Create a web document. ▪ Use BOM and DOM objects on this page. ▪ Save and open this page on a browser. ▪ Review output and make necessary adjustments to finalize it. ▪ Include this page to your portfolio. |

Outcome

You will be able to apply BOM and DOM objects on a web page.



Self-Check Quiz 6.2.2

1. Write a script to display the full URL of a document.
2. Write a script to print the current page.



Learning Outcome 6.3 - Work with JavaScript



Contents:

- Write and debug JavaScript
- Use JavaScript library
- Display navigation skill



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- Photoshop CC
- HTML Editor/ software/ tools
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 6.3.1

| Learning Activity | Resources/Special Instructions/References |
|----------------------------|--|
| Write and debug JavaScript | <ul style="list-style-type: none"> ▪ Information Sheet: 6.3.1 ▪ Self-Check Quiz: 6.3.1 ▪ Answer Key: 6.3.1 ▪ http://www-db.deis.unibo.it/courses/TW/DOCS/w3schools/js/js_whereto.asp.html ▪ https://www.quackit.com/javascript/examples/ ▪ https://www.w3schools.com/js/js_debugging.asp |



Information Sheet 6.3.1

Learning Objective: to write and debug JavaScript.

▪ **Write JavaScript:**

- You have learned the techniques of writing JavaScript in previous learning outcomes of this module. Now you will practice writing JavaScript for your webpages.
- JavaScript can be placed in the <body> and the <head> sections of an HTML page.
- In HTML, JavaScript code must be inserted between <script> and </script> tags
- You can keep your scripts in a separate file with naming ***.js

myScript.js

```
function myFunction() {document.getElementById("demo").innerHTML = "Paragraph changed.";}
```

- External scripts are practical when the same code is used in many different web pages.
- JavaScript files have the file extension **.js**.
- To use an external script, put the name of the script file in the src (source) attribute of a <script> tag:

```
<!DOCTYPE html>
<html>
<body>
<script src="myScript.js"></script>
</body>
</html>
```

- Here are some scripts listed for your reference.

| Purpose | Code |
|----------------------------|---|
| Popup Window - onClick | <pre><!DOCTYPE html> <title>My Example</title> <input id="go" type="button" value="Open new window" onclick="window.open('/javascript/examples/sample_popup.cfm','popUp Window','height=500, width=400, left=100, top=100, resizable=yes, scrollbars=yes, toolbar=yes, menubar=no, location=no, directories=no, status=yes');"></pre> |
| Popup Window - Unobtrusive | <pre><script> // Wait for DOM to load document.addEventListener("DOMContentLoaded", function(event) {</pre> |

| | |
|-------------------------------|---|
| | <pre> // Put the button into a variable var e = document.getElementById("go"); // Wait for user to click the button e.addEventListener("click", function() { // Get the URL from the user input var url = document.getElementById("url").value; // Do the popup window window.open(url,"popUpWindow","height=500, width=400, left=100, top=100, resizable=yes, scrollbars=yes, toolbar=yes, menubar=no, location=no, directories=no, status=yes"); }, false); }); </script> </pre> |
| Timed Redirect - onClick | <pre> <!DOCTYPE html> <title>My Example</title> <input type="button" value="Go" onclick="window.setTimeout(function(){location.href = 'https://www.quackit.com'};, 1500);"> </pre> |
| Refresh Page - onClick | <pre> <!DOCTYPE html> <title>My Example</title> <input type="button" value="Refresh Page" onclick="document.location.reload(true);" <!-- Test the refresh by outputting the time in milliseconds --&gt; &lt;script&gt; document.write(new Date().getTime()); &lt;/script&gt; </pre> </pre> |
| Refresh Page Automatically | <pre> <!DOCTYPE html> <title>My Example</title> <script> // Wait for DOM to load document.addEventListener("DOMContentLoaded", function(event) { // Do the automatic refresh window.setTimeout(function(){ document.location.reload(true); }, 3500); // Test the refresh by outputting the time in milliseconds document.getElementById("timestamp").innerText = new Date().getTime(); }); </script> <p> milliseconds since midnight, January 1, 1970.</p> </pre> |

| | |
|---|--|
| Alert Box - onClick | <pre><!DOCTYPE html> <title>My Example</title> <input type="button" value="Click me" onclick="alert('Thanks... I feel much better now!');"></pre> |
| Confirmation Box - Unobtrusive | <pre><!DOCTYPE html> <title>My Example</title> <script> // Wait for DOM to load document.addEventListener("DOMContentLoaded", function(event) { // Put the button into a variable var e = document.getElementById("go"); // Wait for user to click the button e.addEventListener("click", function() { confirm("Are you sure?"); }, false); }); </script> <!-- Replace '{action page}' with your own action page to support non-JavaScript users --> <form name="myForm" action="{action page}"> <input id="go" type="button" value="Click me"> </form></pre> |
| Jump Menu with Conditional Confirmation Box - Unobtrusive | <pre><!DOCTYPE html> <title>My Example</title> <script> // Wait for DOM to load document.addEventListener("DOMContentLoaded", function(event) { // Put the drop down into a variable var e = document.getElementById("jumpmenu"); // Wait for user to select an option e.addEventListener("change", function() { // Put the selected value into a variable selectedURL = this.options[this.selectedIndex].value; // Check that the value is not null if (this.value != "null") { // Display the confirm box and put the response into a variable var confirmLeave = confirm("Are you sure?"); // If user clicked "OK" if (confirmLeave==true) { // Load the selected URL document.location.href = selectedURL; } // If user clicked "Cancel" } }); });</pre> |

| | |
|---|---|
| | <pre> else { return false; } } }; }); </script> <!-- Replace '{action page}' with your own action page to support non-JavaScript users --&gt; &lt;form name="navForm" action="{action page}"&gt; &lt;select name="jumpmenu" id="jumpmenu"&gt; &lt;option&gt;Jump to...&lt;/option&gt; &lt;option value="http://www.zappyhost.com"&gt;ZappyHost&lt;/option&gt; &lt;option value="http://www.html.am"&gt;HTML&lt;/option&gt; &lt;option value="http://www.database.guide"&gt;Database Guide&lt;/option&gt; &lt;/select&gt; &lt;/form&gt; </pre> </pre> |
| Current Date/Time - Locale String | <pre> <!DOCTYPE html> <title>My Example</title> <time id="msg"></time> <script> document.getElementById("msg").innerHTML = new Date().toLocaleString(); </script> </pre> |
| Current Date - Long Format (e.g. Saturday, November 26, 2016) | <pre> <!DOCTYPE html> <title>My Example</title> <time id="msg"></time> <script> // Create a JavaScript Date object for the current date and time and set the desired options. var date = new Date(), options = { weekday: "short", month: "short", day: "numeric", year: "2- digit" }; // Convert to locale string and add a locale and the options date = date.toLocaleString("en-US", options); // Output the date to the above HTML element document.getElementById("msg").innerHTML = date; </script> </pre> |
| "For" Loop | <pre> <!DOCTYPE html> <title>My Example</title> <p id="msg"></p> <script> // Set variables var myBankBalance = 0; var output = ""; // Do the 'for' loop for (myBankBalance = 0; myBankBalance <= 10; myBankBalance++) { output += "My bank balance is now \$" + myBankBalance + " "; </pre> |

| | |
|---------------------------------|--|
| | <pre> } // Output results to the above HTML element document.getElementById("msg").innerHTML = output; </script></pre> |
| Break a "While" Loop | <pre> <!DOCTYPE html> <title>My Example</title> <p id="msg"></p> <script> // Set variables var myBankBalance = 0; var output = ""; // Do the 'while' loop while (myBankBalance <= 10) { if (myBankBalance === 5) { break; } output += "My bank balance is now \$" + myBankBalance + " "; myBankBalance++; } // Output results to the above HTML element document.getElementById("msg").innerHTML = output; </script></pre> |
| Break & Continue a "While" Loop | <pre> <!DOCTYPE html> <title>My Example</title> <p id="msg"></p> <script> // Set variables var i = 0; var output = ""; // Do the 'while' loop while (i < 5) { i++; if (i === 3) { continue; } output += i + " "; } // Output results to the above HTML element document.getElementById("msg").innerHTML = output; </script></pre> |
| Nested "For" Loop | <pre> <!DOCTYPE html> <title>My Example</title> <p id="msg"></p></pre> |

| | |
|---|---|
| | <pre> <script> // Set variables var output = ""; // Outer loop for (i = 1; i <= 10; i++) { output += "<h1>" + i + " times table</h1>"; output += ""; // Inner loop for (j = 1; j <= 10; j++) { output += "" + j + " x " + i + " = " + j * i; } output += ""; } // Output results to the above HTML element document.getElementById("msg").innerHTML = output; </script> </pre> |
| Math.pow() | <!DOCTYPE html> <title>My Example</title> <p id="msg"></p> <p>The <code>Math.pow()</code> function returns a number representing the given base taken to the power of the given exponent.</p> <script> document.getElementById("msg").innerHTML = Math.pow(2, 4); </script> |
| Math.random() | <!DOCTYPE html> <title>My Example</title> <p id="msg"></p> <p>The <code>Math.random()</code> function returns a floating-point, pseudo-random number between 0 (inclusive) and 1 (exclusive).</p> <script> document.getElementById("msg").innerHTML = Math.random(1, 100); </script> |
| Concatenate Two Arrays | <!DOCTYPE html> <title>My Example</title> <p id="msg"></p> <script> var citiesAU = ["Sydney", "Melbourne", "Brisbane", "Perth"], citiesUS = ["New York", "Miami", "San Francisco", "Los Angeles"], cities = citiesAU.concat(citiesUS); document.getElementById("msg").innerHTML = cities; </script> |
| JavaScript Conditional (ternary) Operator | <!DOCTYPE html> <title>My Example</title> |

```

<script>
// Wait for DOM to load
document.addEventListener("DOMContentLoaded", function(event) {

    // Put the button into a variable
    var e = document.getElementById("myForm");

    // Wait for user to click the button
    e.addEventListener( "change", function() {

        // Do the conditional statement
        var msg = (this.color.value == "Blue") ? "Just like the sky!" : "Didn't select
blue huh?";

        // Output the result
        document.getElementById("msg").innerHTML = msg;

    }, false);
});
</script>

<!-- Replace '{action page}' with your own action page to support non-
JavaScript users -->
<form id="myForm" name="myForm" action="{action page}">
<label>
<input type="radio" name="color" value="Blue"> Blue
</label>
<label>
<input type="radio" name="color" value="Red"> Red
</label>
<label>
<input type="radio" name="color" value="Green"> Green
</label>
</form>

<p id="msg"></p>

```

- **Debug Scripts:**

Debugging is the process of testing, finding, and reducing bugs (errors) in computer programs.

- **Code Debugging**

- ✓ Programming code might contain syntax errors, or logical errors.
- ✓ Many of these errors are difficult to diagnose.
- ✓ Often, when programming code contains errors, nothing will happen. There are no error messages, and you will get no indications where to search for errors.
- ✓ Searching for (and fixing) errors in programming code is called code debugging.

- **JavaScript Debuggers**

- ✓ Debugging is not easy. But fortunately, all modern browsers have a built-in JavaScript debugger.
- ✓ Built-in debuggers can be turned on and off, forcing errors to be reported to the user.
- ✓ With a debugger, you can also set breakpoints (places where code execution can be stopped), and examine variables while the code is executing.
- ✓ Normally, otherwise follow the steps at the bottom of this page, you activate debugging in your browser with the F12 key, and select "Console" in the debugger menu.

- **The console.log() Method**

- ✓ If your browser supports debugging, you can use console.log() to display JavaScript values in the debugger window.

- **Major Browsers' Debugging Tools**

- ✓ Normally, you activate debugging in your browser with F12, and select "Console" in the debugger menu.
- ✓ Otherwise follow these steps:

- **Chrome**

- Open the browser.
- From the menu, select tools.
- From tools, choose developer tools.
- Finally, select Console.

- **Firefox Firebug**

- Open the browser.
- Go to the web page:
<http://www.getfirebug.com>
- Follow the instructions how to:
install Firebug

- **Internet Explorer**

- Open the browser.
- From the menu, select tools.
- From tools, choose developer tools.
- Finally, select Console.

- **Opera**

- Open the browser.
- Go to the webpage:
<http://dev.opera.com>
- Follow the instructions how to:
add a Developer Console button to your toolbar.

- **Safari Firebug**

- Open the browser.
- Go to the webpage:
<http://safari-extensions.apple.com>
- Follow the instructions how to:
install Firebug Lite.

- **Safari Develop Menu**

- Go to Safari, Preferences, Advanced in the main menu.
- Check "Enable Show Develop menu in menu bar".
- When the new option "Develop" appears in the menu:
Choose "Show Error Console".



Job Sheet 6.3.1

| | |
|--------------|---|
| Job Title | Use and debug JavaScript on web pages. |
| Instructions | <ul style="list-style-type: none"> ▪ Create a new web document. ▪ Write JavaScript for different situation and purpose. ▪ Apply to a webpage. ▪ Check if the script has bugs or not. If bugs found, debug it. ▪ Include this page to your portfolio. |
| Outcome | You will be able to use and debug JavaScript on web pages. |



Self-Check Quiz 6.3.1

State whether the following statements are “True” or “False”:

1. JavaScript can be placed in the <body> and the <head> sections of an HTML page.
2. In HTML, JavaScript code must be inserted between <script> and </script> tags.
3. External scripts are practical when the same code is used in many different web pages
4. JavaScript files have the file extension .js.
5. To use an external script, put the name of the script file in the src attribute of a <script> tag.
6. All modern browsers have a built-in JavaScript debugger.
7. With a debugger, you can also set breakpoints and examine variables while the code is executing.
8. console.log() is used to display JavaScript values in the debugger window.



Learning Activity 6.3.2

| Learning Activity | Resources/Special Instructions/References |
|------------------------|---|
| Use JavaScript library | <ul style="list-style-type: none">▪ Information Sheet: 6.3.2▪ Self-Check Quiz: 6.3.2▪ Answer Key: 6.3.2▪ https://www.khanacademy.org/computing/computer-programming/html-css-js/using-js-libraries-in-your-webpage/a/whats-a-js-library▪ https://www.youtubeeducation.com/embed/R58JyVEjPsU▪ http://www.javascriptkit.com/javatutors/external.shtml▪ https://developers.google.com/speed/libraries/ |



Information Sheet 6.3.2

Learning Objective: to use JavaScript library.

- **JavaScript Library:**
 - In JavaScript, you can use scripts those are written by others by using a **library**.
 - A library is a JavaScript file that contains a bunch of functions, and those functions accomplish some useful task for your webpage.
 - When a programmer creates a JS library and puts it out into the world, they're purposefully deciding to share it with the world - so that often means they put in the effort to come up with great documentation and examples.
 - Watch a video clip on “Using a JS library”.
- **Video Lesson:**
 - Watch the video clip on “Using a JS library: Slideshow library”.
 - Note the key points and apply them on your own practice.
 - Video link: <https://www.khanacademy.org/computing/computer-programming/html-css-js/using-js-libraries-in-your-webpage/p/using-a-js-library-slideshow-library>

- **Syntax for creating JavaScript libraries**

- All JavaScript libraries consists of two parts:
 - ✓ The external JavaScript itself, which is simply a text file with the containing JavaScript code, saved as a .js file.
 - ✓ A <script> tag referencing the external JavaScript file and defined on the page(s) that uses the library.
- For the sake of discussion, let's pretend you've just created a fabulous code that writes out today's date:

```
<script type="text/javascript">
function todaydate(){
    var today_date= new Date()
    var myyear=today_date.getYear()
    var mymonth=today_date.getMonth()+1
    var mytoday=today_date.getDate()
    document.write(myyear+"/"+mymonth+"/"+mytoday)
}
</script>
```

- Using the above code, lets create a library out of it, so multiple pages can all display a nice date without having to physically include the above code on that page.

- ✓ **Step 1:** Open up your text editor (such as notepad), type out the above code, and save it as an individual file with the extension .js (ie: displaydate.js). An external library should include the entire script, **minus** the surrounding script tags.
- ✓ **Step 2:** On all pages that use the above library, create a reference to it by using the below code. It consists of a <script> tag with the optional src property included inside:

```
<script src="displaydate.js" type="text/javascript">
</script>
```

- By including the above reference, your browser will now download the code stored inside displaydate.js and run it as if the code was physically typed onto the page. The library file does not have to be stored in the same directory as the page using it. In fact, you can even reference a library that's on a distant domain!

```
<script src="http://www.yahoo.com/displaydate.js">
</script>
```

- **Using JavaScript Libraries**

- There are thousands of JavaScript available on the internet. Even you yourself can develop new libraries.
- There are two ways to include libraries in a project:
 - ✓ Download a local copy and include it in js folder on your web directory. And use it sourcing with code.
 - ✓ Link to a file via Content Delivery Network (CDN). Sourcing directly from the network.
 - ✓ A Content Delivery Network (CDN) is a system of multiple servers that deliver web content to a user based on geographical location. When you link to a hosted jQuery file via CDN, it will potentially arrive faster and more efficiently to the user than if you hosted it on your own server.
 - ✓ Link to the jQuery CDN right before the closing </body> tag, followed by your own custom JavaScript file, scripts.js.

```

<body>
...
...
<script
src="https://ajax.googleapis.com/ajax/libs/jquery/3.1.0/jquery.m
in.js"></script>
<script src="js/scripts.js"></script>
</body>

```

- Here you will learn on following popular libraries –

| Library | Snippet |
|---|--|
| jQuery jquery.com | <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js ></script> |
| MooTools mootools.net | <script src="https://ajax.googleapis.com/ajax/libs/mootools/1.6.0/mootools.min.js"></script> |
| Prototype prototypejs.org | <script src="https://ajax.googleapis.com/ajax/libs/prototype/1.7.3.0/prototype.js"></script> |
| Dojo and YUI dojotoolkit.org | <script src="https://ajax.googleapis.com/ajax/libs/dojo/1.13.0/dojo/dojo.js"> </script> |
| wForms https://code.google.com/archive/p/wforms/source/default/source | wForms is an open-source, unobtrusive javascript library that adds commonly needed behaviors to traditional web forms. wForms is an open-source, unobtrusive javascript library that adds commonly needed behaviors to traditional web forms without the need for any programming skill. |
| \$fx() http://fx.inetcat.com/ | \$fx() is a lightweight library for animating HTML objects. Using it, you can alter any CSS property within a given timeline. For complicated animations, you can combine effects, group them to chains and run them in parallel. And you can set different callbacks at every step to customize it further. |
| JSTweener http://coderepos.org/share/wiki/JSTweener | <script src=" https://github.com/valera-rozuvan/JSTweener/blob/master/jstweener.js"></script> |
| JS charts https://www.chartjs.org/ | <script src=" https://github.com/chartjs/Chart.js"></script> |
| C3DL http://www.c3dl.org/ | <script src="https://github.com/cathyatseneca/c3dl/blob/master/c3dl/c3dla pi.js"></script> |
| ImageFX | This is a JavaScript library for adding effects to images, like blur, sharpen, emboss, lighten and more. ImageFX uses canvas element for creating the effects. It is compatible with all major browsers (there is a compatibility chart on the script's page). The library is so easy to use. Simply inserting the .js file in the Web page and calling a one-line function is enough. |

| | |
|---|---|
| Taffy DB http://taffydb.com/ | <script src=" https://github.com/typicaljoe/taffydb/blob/master/taffy.js"></script> |
| Datejs http://www.datejs.com/ | <script src=" https://storage.googleapis.com/google-code-archive-downloads/v2/code.google.com/datejs/date.js"></script> |



Job Sheet 6.3.2

| | |
|--------------|---|
| Job Title | Use JavaScript libraries. |
| Instructions | <ul style="list-style-type: none"> ▪ Create a new web document. ▪ Search JavaScript libraries and study the functions listed with them. ▪ Apply libraries for the predefined functions of JavaScript those are required for your webpages. ▪ Finalize and include the page to your portfolio. ▪ Include this page to your portfolio. |
| Outcome | You will be able to use and debug JavaScript on web pages. |



Self-Check Quiz 6.3.2

State whether the following statements are “True” or “False”:

1. A library is a JavaScript file that contains a bunch of functions.
2. JavaScript libraries are saved as .js file.
3. In JavaScript library file it is not required to use <script> ... </script> tag for functions.
4. \$fx() library contains money related methods.



Learning Activity 6.3.3

| Learning Activity | Resources/Special Instructions/References |
|--------------------------|--|
| Display navigation skill | <ul style="list-style-type: none"> ▪ Information Sheet: 6.3.3 ▪ Self-Check Quiz: 6.3.3 ▪ Answer Key: 6.3.3 ▪ https://www.w3schools.com/js/js_htmldom_navigation.asp |



Information Sheet 6.3.3

Learning Objective: to display navigation skill.

- **DOM Navigation:**
 - With the HTML DOM, you can navigate the node tree using node relationships.
- **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
- **Sample html code:**

```

<html>

  <head>
    <title>DOM Tutorial</title>
  </head>

  <body>
    <h1>DOM Lesson one</h1>
    <p>Hello world!</p>
  </body>

</html>

```

- From the HTML above you can read:
 - ✓ <html> is the root node
 - ✓ <html> has no parents
 - ✓ <html> is the parent of <head> and <body>
 - ✓ <head> is the first child of <html>
 - ✓ <body> is the last child of <html>
- and:
 - ✓ <head> has one child: <title>
 - ✓ <title> has one child (a text node): "DOM Tutorial"
 - ✓ <body> has two children: <h1> and <p>
 - ✓ <h1> has one child: "DOM Lesson one"
 - ✓ <p> has one child: "Hello world!"
 - ✓ <h1> and <p> are siblings

- **Navigating Between Nodes:**

- You can use the following node properties to navigate between nodes with JavaScript:
 - ✓ parentNode
 - ✓childNodes[nodenumber]
 - ✓firstChild
 - ✓lastChild
 - ✓nextSibling
 - ✓previousSibling

- **Example:**

```
<!DOCTYPE html>
```

```

<html>
<body>

<p>Hello World!</p>

<div>
<p>The DOM is very useful!</p>
<p>This example demonstrates the <b>document.documentElement</b> property.</p>
</div>

<script>
alert(document.documentElement.innerHTML);
</script>

</body>
</html>

```

The most important node Type properties are:

| Node | Type | Example |
|--------------------|------|---|
| ELEMENT_NODE | 1 | <h1 class="heading">W3Schools</h1> |
| ATTRIBUTE_NODE | 2 | class = "heading" (deprecated) |
| TEXT_NODE | 3 | W3Schools |
| COMMENT_NODE | 8 | <!-- This is a comment --> |
| DOCUMENT_NODE | 9 | The HTML document itself (the parent of <html>) |
| DOCUMENT_TYPE_NODE | 10 | <!Doctype html> |

Individual Activity:

- Apply navigation skill to make a webpage purposive and attractive.
- After completion of task add the page to your portfolio.
- Share your work with class.
- Your trainer will guide to complete this activity.



Self-Check Quiz 6.3.3

Fill-in the blanks on the following statements.

1. According to the W3C HTML DOM standard, everything in an HTML document is a _____.
2. With the HTML DOM, you can navigate the node tree using node _____.
3. The terms _____, _____, and _____ are used to describe the relationships
4. In a node tree, the top node is called the _____ node.
5. In a HTML document <html> is the parent of _____ and _____.
6. <title> is a _____ of <head>
7. “Hello world” is the _____ of <p>.



REVIEW OF COMPETENCY

Final Checklist

(for the performance criteria of the module Performing Distempering)

| Performance Criteria | Yes | No |
|---|--------------------------|--------------------------|
| 1. JavaScript core components are identified. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. The basic JavaScripting concepts are explained. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. BOM (Browser Object Model) and DOM (Document Object Model) is described. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. BOM and DOM are applied. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. JavaScript is written and debugged. | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. JavaScript library is used. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Navigation skill is displayed. | <input type="checkbox"/> | <input type="checkbox"/> |

Now I feel ready to undertake my formal competency assessment.

Signed: _____

Date: _____



ANSWER KEYS

ANSWER KEY 6.1.1

1. True
2. False
3. True
4. True
5. True
6. False
7. True
8. True
9. True
10. True

ANSWER KEY 6.1.2

1. Webpages,
2. unique, browser, integration
3. Java
4. Safe
5. Cookies
6. access
7. does not

ANSWER KEY 6.2.1

1. BOM stands for Browser Object Model. It allows JavaScript to "talk to" the browser.
2. The window.location object is used to get the current page address (URL) and to redirect the browser to a new page.
3. JavaScript has three kind of popup boxes: Alert box, Confirm box, and Prompt box.
4. For timing object, The two key methods to use with JavaScript are:
 - setTimeout(*function, milliseconds*)
 - setInterval(*function, milliseconds*)
5. Cookies are used to store user information in web pages. Cookies are data, stored in small text files, on computer. When a user visits a web page, his name can be stored in a cookie. Next time the user visits the page, the cookie "remembers" his name. JavaScript can create, read, and delete cookies with the **document.cookie** property.
6. DOM stands for Document Object Model. When a web page is loaded, the browser creates a Document Object Model of the page. With the HTML DOM, JavaScript can access and change all the elements of an HTML document.
7. Methods for finding HTML are –
 - document.getElementById(*id*)
 - document.getElementsByTagName(*name*)
 - document.getElementsByClassName(*name*)
8. `document.getElementById(id).onclick = function(){code}`

ANSWER KEY 6.2.2

1.

```
<script>
document.getElementById("demo").innerHTML = document.URL
</scr      ipt>
```
2.

```
<script>
function printPage() {
window.print();
}
</script>
```

ANSWER KEY 6.3.1

1. True
2. True
3. True
4. True
5. True
6. True
7. True
8. True

ANSWER KEY 6.3.2

1. True
2. False
3. False
4. False

ANSWER KEY 6.3.3

1. node
2. relationships
3. parent, child, sibling
4. root
5. <head>, <body>
6. child
7. child

Module 7: Apply Web Design Tools



MODULE CONTENT

Module Descriptor: This module contains information and activities to apply web design tools. It specifically guides with the tasks of applying web design platform or editor, web design software and CMS.

Nominal Duration: 32 hours



Learning Outcomes:

Upon completion of the module, the trainee should be able to:

- 7.1 Apply web design platform or editor
- 7.2 Apply web design software and CMS



Performance Criteria:

1. Notepad is used.
2. Effective use of MS FrontPage is displayed.
3. Macromedia Dream Weaver is introduced.
4. Web design platform or editor is applied.
5. Joomla is introduced.
6. Drupal is introduced.
7. WordPress is introduced.
8. Effective use of Joomla/ Drupal/ WordPress is explained.
9. CMS (Content Management System) is applied.



Learning Outcome 7.1 - Apply Web Design Platform or Editor



Contents:

- Use Notepad
- Display effective use of MS FrontPage
- Introduce Macromedia Dream Weaver
- Apply Web design platform or editor



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Operating software, local web server
- Internet
- Notepad application
- MS FrontPage
- Macromedia Dream Weaver
- Stationery
- Instruction sheet/manual



Learning Activity 7.1.1

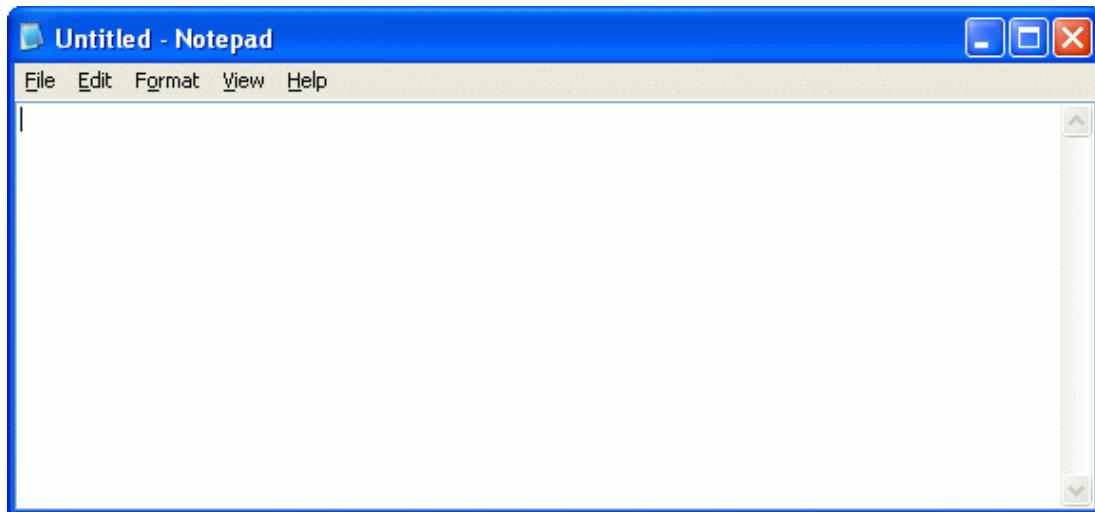
| Learning Activity | Resources/Special Instructions/References |
|-------------------|---|
| Use Notepad | <ul style="list-style-type: none">▪ Information Sheet: 7.1.1▪ Self-Check Quiz: 7.1.1▪ Answer Key: 7.1.1▪ https://www.w3schools.com/html/html_editors.asp▪ https://www.wikihow.com/Create-a-Simple-Webpage-Using-Notepad▪ https://turbofuture.com/computers/A-Complete-Beginners-Guide-to-Notepad |



Information Sheet 7.1.1

Learning Objective: to use Notepad.

- **Notepad:**
 - Notepad is a handy program that a user can type in text quickly and easily. It is not for publishing a book but more of a scratchpad. This is a tutorial on how to use Notepad.
- **Open Notepad**
 - To open Notepad click on start > All Programs > accessories > notepad



- To enter text, just start typing in Notepad.
- If you make a mistake typing you can backspace over it.
- **Save**
 - To save your work click on File > Save and if you have not saved it before a screen will appear.
 - Generally, the default format is .txt and you will need to put .htm or .html extension for your webpage files and .js for JavaScript files.

- **Print**
 - To print File > Print... The three dots after the word Print means there will be another screen that pops up. This is a Windows standard.
 - Select the printer you wish to print to then click the 'Print' button.
- **Open**

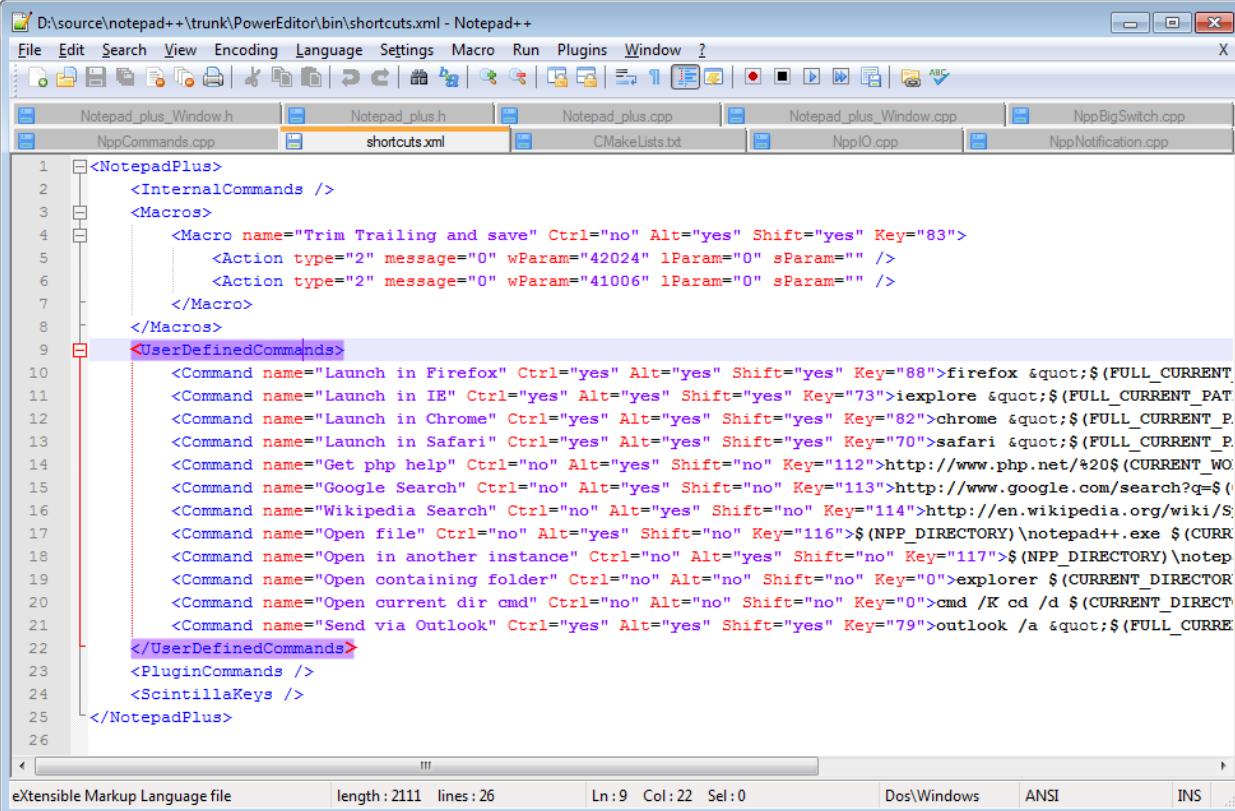
To open an existing notepad document, click on File > Open...

If you have not saved a document you are working on, Notepad will ask you if you want to save it or discard it. The Open window appears (note the word 'open' in the title bar) which allows you to browse to your existing document.

Notepad++

Notepad++ is a free (as in "free speech" and also as in "free beer") source code editor and Notepad replacement that supports several languages. Running in the MS Windows environment, its use is governed by GPL License.

Based on the powerful editing component Scintilla, Notepad++ is written in C++ and uses pure Win32 API and STL which ensures a higher execution speed and smaller program size. By optimizing as many routines as possible without losing user friendliness, Notepad++ is trying to reduce the world carbon dioxide emissions. When using less CPU power, the PC can throttle down and reduce power consumption, resulting in a greener environment.



The screenshot shows the Notepad++ interface with the title bar 'D:\source\notepad++\trunk\PowerEditor\bin\shortcuts.xml - Notepad++'. The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Macro, Run, Plugins, Window, and ?.

The tabs at the top show several files: 'Notepad_plus_Window.h', 'Notepad_plus.h' (which is the active tab), 'Notepad_plus.cpp', 'Notepad_plus_Window.cpp', 'NppBigSwitch.cpp', 'NppCommands.cpp', 'shortcuts.xml' (highlighted with a red box), 'CMakeLists.txt', 'NppIO.cpp', and 'NppNotification.cpp'.

The main editor area displays an XML configuration file for keyboard shortcuts:

```

<NotePadPlus>
  <InternalCommands />
  <Macros>
    <Macro name="Trim Trailing and save" Ctrl="no" Alt="yes" Shift="yes" Key="83">
      <Action type="2" message="0" wParam="42024" lParam="0" sParam="" />
      <Action type="2" message="0" wParam="41006" lParam="0" sParam="" />
    </Macro>
  </Macros>
  <UserDefinedCommands>
    <Command name="Launch in Firefox" Ctrl="yes" Alt="yes" Shift="yes" Key="88">firefox "&quot;$ (FULL_CURRENT_
    <Command name="Launch in IE" Ctrl="yes" Alt="yes" Shift="yes" Key="73">iexplore "&quot;$ (FULL_CURRENT_PATH
    <Command name="Launch in Chrome" Ctrl="yes" Alt="yes" Shift="yes" Key="82">chrome "&quot;$ (FULL_CURRENT_P
    <Command name="Launch in Safari" Ctrl="yes" Alt="yes" Shift="yes" Key="70">safari "&quot;$ (FULL_CURRENT_P
    <Command name="Get php help" Ctrl="no" Alt="yes" Shift="no" Key="112">http://www.php.net/%20$ (CURRENT_WO
    <Command name="Google Search" Ctrl="no" Alt="yes" Shift="no" Key="113">http://www.google.com/search?q=$ (
    <Command name="Wikipedia Search" Ctrl="no" Alt="yes" Shift="no" Key="114">http://en.wikipedia.org/wiki/$
    <Command name="Open file" Ctrl="no" Alt="yes" Shift="no" Key="116">$ (NPP_DIRECTORY)\notepad++.exe $ (CURR
    <Command name="Open in another instance" Ctrl="no" Alt="yes" Shift="no" Key="117">$ (NPP_DIRECTORY)\notep
    <Command name="Open containing folder" Ctrl="no" Alt="no" Shift="no" Key="0">explorer $ (CURRENT_DIRECTOR
    <Command name="Open current dir cmd" Ctrl="no" Alt="no" Shift="no" Key="0">cmd /K cd /d $ (CURRENT_DIRECT
    <Command name="Send via Outlook" Ctrl="yes" Alt="yes" Shift="yes" Key="79">outlook /a "&quot;$ (FULL_CURRE
  </UserDefinedCommands>
  <PluginCommands />
  <ScintillaKeys />
</NotePadPlus>

```

The status bar at the bottom shows 'eXtensible Markup Language file', 'length : 2111 lines : 26', 'Ln : 9 Col : 22 Sel : 0', 'Dos\Windows', 'ANSI', and 'INS'.

Individual Activity:

- Use Notepad and Notepad++ to write HTML Codes for a web page.
- Share your experience in class.
- Your trainer will guide you to carry out this activity.



Self-Check Quiz 7.1.1

Write short note on:

- Notepad .
- Notepad++



Learning Activity 7.1.2

| Learning Activity | Resources/Special Instructions/References |
|---------------------------------------|---|
| Display effective use of MS FrontPage | <ul style="list-style-type: none">▪ Information Sheet: 7.1.2▪ Self-Check Quiz: 7.1.2▪ Answer Key: 7.1.2▪ https://microsoft_office_frontpage.en.downloadastro.com/▪ https://en.wikipedia.org/wiki/Microsoft_FrontPage |



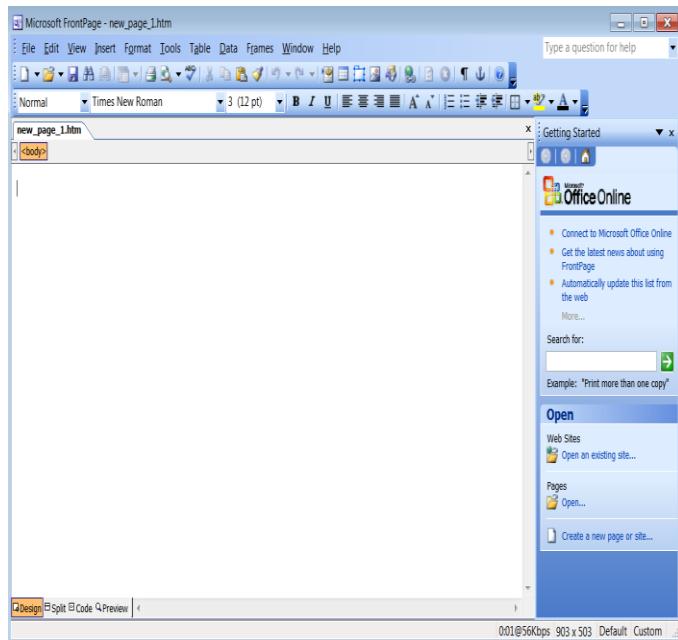
Information Sheet 7.1.2

Learning Objective: to explain display effective use of MS FrontPage.

▪ **MS FrontPage:**

- Creating a presence on the Internet opens up a world of opportunity. You can share ideas, information and do business with anyone in the whole world with a web site.
- Learning how to everything from scratch using languages like HTML, CSS, PHP, JavaScript and Python can be a laborious and time consuming process however. Microsoft FrontPage lets you design your own web site without having to learn all this code.
- By using an intuitive 'What You See Is What You Get' system, even a complete novice can create their own dynamic webpages quickly and easily.
- FrontPage will let you choose how much detail you want to get involved in as well. View the automatically generated HTML code as you go using the Split View option, or hide it completely and just get on with your site building.
- Create design templates to speed up your work and create a uniform look and feel for your site.
- Create interactive buttons for better navigation and utilise the built-in accessibility checker to check that your website complies with standards (will display properly on all browsers).
- It was branded as part of the Microsoft Office suite from 1997 to 2003.
- Microsoft FrontPage has since been replaced by **Microsoft Expression Web** and **SharePoint Designer**, which were first released in December 2006 alongside Microsoft Office 2007, but these two products were also discontinued in favour of a web-based version of **SharePoint Designer**, as those three HTML editors were desktop applications.

- **Working environment of FrontPage:**



- **Typical environment of SharePoint Designer**



Individual Activity:

- Download and install FrontPage 2003.
- Create a webpage using FrontPage.
- Include the page to your portfolio.
- Your trainer will guide you to complete this activity.



Self-Check Quiz 7.1.2

Fill-in the gaps of the following statements:

1. Microsoft FrontPage lets you design your own web site without having to learn any _____.
2. WYSIWYG means What You _____ Is What You _____.
3. Frontpage is now replaced by a web-based version of _____.



Learning Activity 7.1.3

| Learning Activity | Resources/Special Instructions/References |
|-----------------------------------|---|
| Introduce Macromedia Dream Weaver | <ul style="list-style-type: none">▪ Information Sheet: 7.1.3▪ Self-Check Quiz: 7.1.3▪ Answer Key: 7.1.3▪ https://qpdownload.com/macromedia-dreamweaver/ |



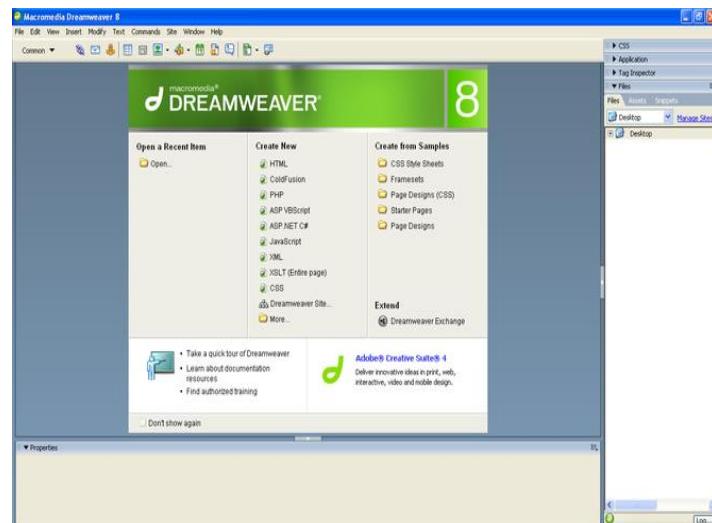
Information Sheet 7.1.3

Learning Objective: to introduce Macromedia Dream Weaver.

▪ **Macromedia Dreamweaver:**

- Dreamweaver 8 is the industry-leading web development tool, enabling users to efficiently design, develop and maintain standards-based websites and applications. With Dreamweaver 8, web developers go from start to finish, creating and maintaining basic websites to advanced applications that support best practices and the latest technologies.
- Adobe Dreamweaver is a software application that allows you to create and develop Web sites.
- Dreamweaver is considered WYSIWYG (What You See Is What You Get), meaning that when you format your Web page, you see the results of the formatting instead of the mark-ups that are used for formatting.
- HTML is not WYSIWYG, whereas Microsoft Word is WYSIWYG. However, Dreamweaver allows you to hand code HTML as well.
- Dreamweaver also supports CSS and JavaScript as well as other languages including ASP and PHP.
- Dreamweaver makes it easy to upload your entire Web site to a Web server. You can also preview your site locally.
- Dreamweaver also lets you create templates for your Web site that you can use again and again by modifying certain unrestricted areas within the template.
- Dreamweaver is fairly complex software.

- **Typical working environment:**



Individual Activity:

- Create a webpage with Dreamweaver.
- Add this page to your portfolio.
- Share your work in class and get feedback.
- Your trainer will guide you to complete this activity.



Self-Check Quiz 7.1.3

State whether the following statements are “True” or “False”:

1. Dreamweaver enables users to efficiently design, develop and maintain standards-based websites and applications.
2. Dreamweaver is a software application that allows you to create and develop Web sites.
3. Dreamweaver does not allow you to hand code HTML.
4. Dreamweaver makes it easy to upload your entire Web site to a Web server.
5. Dreamweaver is fairly simple software.



Learning Activity 7.1.4

| Learning Activity | Resources/Special Instructions/References |
|-------------------------------------|---|
| Apply Web design platform or editor | <ul style="list-style-type: none"> ▪ Information Sheet: 7.1.4 ▪ Self-Check Quiz: 7.1.4 ▪ Answer Key: 7.1.4 ▪ https://code.visualstudio.com/ ▪ https://code.visualstudio.com/docs/getstarted/userinterface |

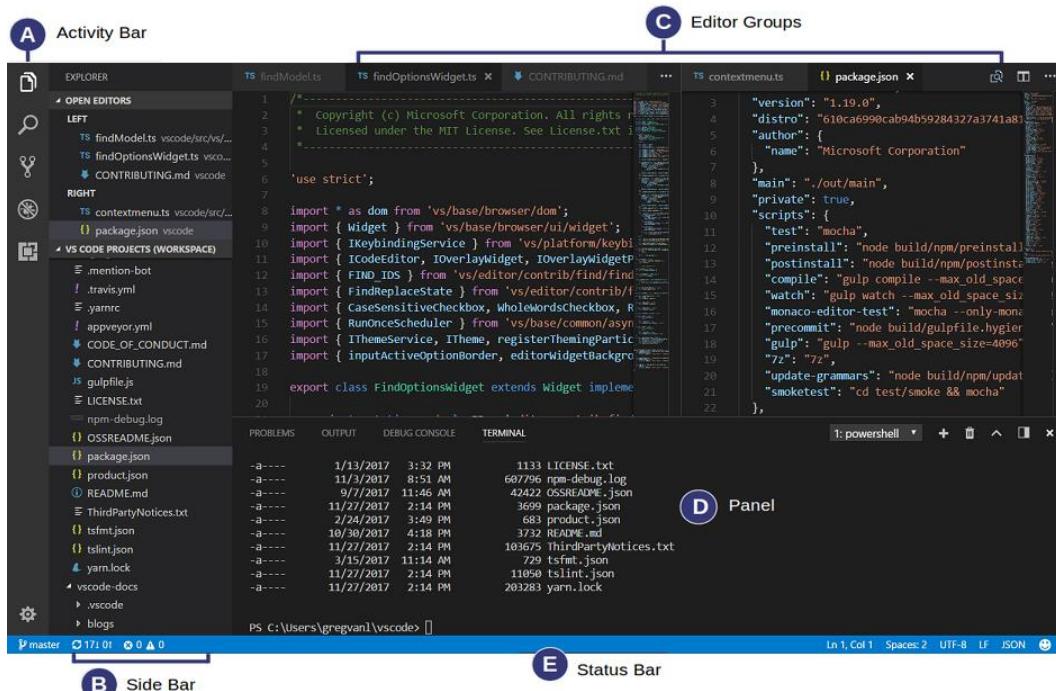


Information Sheet 7.1.4

Learning Objective: to apply Web design platform or editor.

- With recent development on technology, web designers are very much fond of alternative solutions for web design instead of using FrontPage and Dreamweaver. Visual studio code is one of the mostly used editor in present time.
- Use visual studio code:
 - VS Code comes with a simple and intuitive layout that maximizes the space provided for the editor while leaving ample room to browse and access the full context of your folder or project. The UI is divided into five areas:
 - Editor - The main area to edit your files. You can open as many editors as you like side by side vertically and horizontally.
 - Side Bar - Contains different views like the Explorer to assist you while working on your project.
 - Status Bar - Information about the opened project and the files you edit.
 - Activity Bar - Located on the far left-hand side, this lets you switch between views and gives you additional context-specific indicators, like the number of outgoing changes when Git is enabled.
 - Panels - You can display different panels below the editor region for output or debug information, errors and warnings, or an integrated terminal. Panel can also be moved to the right for more vertical space.
 - Each time you start VS Code, it opens up in the same state it was in when you last closed it. The folder, layout, and opened files are preserved.

- User interface:





Job Sheet 7.1.4

| | |
|--------------|---|
| Job Title | Use web design platform/ editor: Visual studio code. |
| Instructions | <ul style="list-style-type: none">▪ Download and install VS Code.▪ See an overview of the user interface.▪ Install support for your favourite programming language.▪ Change your keyboard shortcuts and easily migrate from other editors using keybinding extensions.▪ Customize your editor with themes.▪ Explore VS Code features in the Interactive Editor Playground. |
| Outcome | You used web design platform/ editor: Visual studio code. |



Self-Check Quiz 7.1.4

Write short note on visual studio code.



Learning Outcome 7.2 – Apply Web Design Software and CMS



Contents:

- Introduce Joomla
- Introduce Drupal
- Introduce WordPress
- Explain effective use of Joomla/ Drupal/ WordPress
- Applied CMS (Content Management System)



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (System & application)
- Joomla
- Drupal
- WordPress
- Content Management System (CMS)
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 7.2.1

| Learning Activity | Resources/Special Instructions/References |
|-------------------|---|
| Introduce Joomla | <ul style="list-style-type: none">▪ Information Sheet: 7.2.1▪ Self-Check Quiz: 7.2.1▪ Answer Key: 7.2.1▪ https://www.siteground.com/tutorials/joomla/articles/# |



Information Sheet 7.2.1

Learning Objective: to introduce Joomla.

▪ Joomla

- Joomla is an open source Content Management System (CMS), which is used to build websites and online applications.
- It is free and extendable which is separated into front-end templates and back-end templates.
- Joomla is developed using PHP, object-oriented programming, software design patterns and MySQL (used for storing the data).
- Joomla 3 provides an extremely wide range of options for creating different types of content and for structuring it on your website.
- Basically, the content for most of your standard pages that consist of text, images and hyperlink will be created in the Article Manager, which can be accessed through the **Content** menu item in your Joomla 3 admin page:

The screenshot shows the Joomla 3 Control Panel. At the top, there's a navigation bar with links for System, Users, Menus, Content (which is currently selected and highlighted in blue), Components, Extensions, and Help. Below the navigation bar is a header with a house icon and the text 'Control Panel'. On the left, there are two main sections: 'CONTENT' and 'STRUCTURE'. Under 'CONTENT', there are links for New Article, Articles, Categories, and Media. Under 'STRUCTURE', there are links for Menu(s) and Modules. A dropdown menu is open under the 'Content' link, listing Articles, Categories, Fields, Field Groups, Featured Articles, and Media. To the right of the dropdown, a message box is visible with the title 'Add New Article' and the text 'You have post-installation messages'. It also contains a 'Read Messages' button. In the bottom right corner, there's a section titled 'LOGGED-IN USERS' showing 'Administrator'.

Individual Activity:

- Create and attractive webpage using Joomla.
- Include you work to your portfolio.
- Share your work in class.
- Your trainer will guide to carry on this activity.



Self-Check Quiz 7.2.1

Write short note on Joomla.



Learning Activity 7.2.2

| Learning Activity | Resources/Special Instructions/References |
|-------------------|---|
| Introduce Drupal | <ul style="list-style-type: none">▪ Information Sheet: 7.2.2▪ Self-Check Quiz: 7.2.2▪ Answer Key: 7.2.2▪ https://drupalize.me/tutorials▪ https://drupalize.me/guides▪ https://www.youtube.com/watch?v=q0lkEebw_bw |



Information Sheet 7.2.2

Learning Objective: to introduce Drupal.

- **Drupal**
 - The world's favourite open source content management platform just got better.
 - Drupal 8 is the new standard for creating incredible digital experiences - for small businesses, global enterprises, and everything in between.
 - Site building is the core Drupal competency for site creation.
 - A Themer is the connection between the designer and developer on a project.
 - Developers extend, alter, and enhance Drupal by creating modules.
 - Drupal is a free, open source, content management system (CMS).
 - You should get started with the latest version of Drupal.

The screenshot shows the Drupal 8 dashboard with a dark header containing the 'Drupal™' logo and a blue gear icon. Below the header, a welcome message reads 'Welcome admin. This is your every day Dashboard!'. The dashboard is organized into six main sections arranged in a 2x3 grid:

- Pages**: Administer Pages, add Page (with a triangle icon)
- News**: Administer News, add News (with a news icon)
- Lessons**: Administer Lessons, add Lesson (with a cube icon)
- Users**: Administer Users, add User (with a people icon)
- Files**: Administer Files, Media Files Browser, add File (with a document icon)
- Categories**: Administer News Categories, Administer Tags Categories, add Tags Category (with a tag icon)

- **Video/Presentation**

- Trainees will watch video clips on “Drupal Tutorial for Beginners” and note important instructions and apply on their own work.
 - Video Reference: https://www.youtube.com/watch?v=q0lkEebw_bw

Individual Activity:

- Update a page with contents using Drupal.
- Include your work to your portfolio.
- Share your work in class.
- Your trainer will guide you to carry on this activity.



Self-Check Quiz 7.2.2

State whether the following statements are “True” or “False”:

1. Drupal is the world’s favourite open source content management platform.
2. Site building is the core Drupal competency for site creation.
3. A Themer is the connection between the designer & developer on a project.
4. Developers extend, alter, and enhance Drupal by creating contents.
5. Drupal is a free, open source, content management system (CMS).



Learning Activity 7.2.3

| Learning Activity | Resources/Special Instructions/References |
|---------------------|---|
| Introduce WordPress | <ul style="list-style-type: none"> ▪ Information Sheet: 7.2.3 ▪ Self-Check Quiz: 7.2.3 ▪ Answer Key: 7.2.3 ▪ https://wordpress.com/create/?sgmt=gb&utm_source=adwords&utm_campaign=Google_WPcom_Search_Brand/Desktop_RoW_en&utm_medium=cpc&keyword=%2Bword%20%2Bpress&creative=288247141196&campaignid=655562327&adgroupid=55312602707&matchtype=b&device=c&network=g&cpn=655562327&device=c&pl=&targetid=kwd-302016650075&locationid=9069450&qclid=Cj0KCQjw5s3cBRCAARI_sAB8ZjU2OXGgL3X0wlFH72LYfrBrhfV5-f-CuYQaD5vO33-Pq0pzXykfFazgaAQuZEALw_wcB ▪ https://www.youtube.com/watch?v=u3KEwBhuEfU |

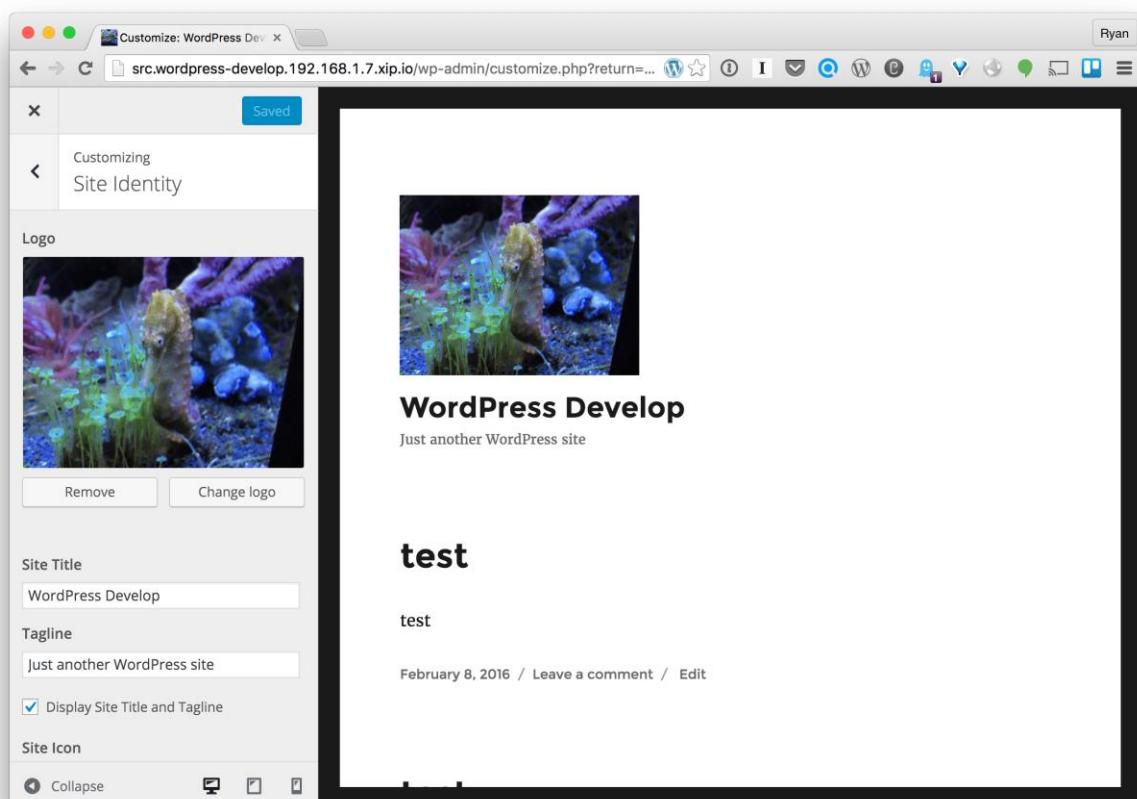


Information Sheet 7.2.3

Learning Objective: to introduce WordPress.

- **WordPress**
 - WordPress.com powers beautiful websites for businesses, professionals, and bloggers.

- Creating and managing your website is simple with WordPress.com's powerful platform. Get started in minutes and make changes to your site easily.
 - Register a unique .com, .net, .org, or .me domain and start using it in seconds. You can also map your existing domain name to WordPress.com in a few easy steps.
 - Find a unique style for your site: WordPress.com features hundreds of beautiful themes.
 - Keep your finger on the pulse and learn more about your readers. See where they're from and how they found you, with colourful maps and graphs that beautifully present your stats.
 - You can update your website on the go with mobile apps for iOS and Android.
- **Video/Presentation**
- Trainees will watch video clips on "WordPress: A Simple Beginner's Introduction" and note important instructions and apply on your own work.
 - Video Reference: <https://www.youtube.com/watch?v=u3KEwBhuEfU/>
- **A typical WordPress environment:**



Individual Activity:

- Create a webpage using WordPress.
- Include your work to your portfolio.
- Share your work in class.
- Your trainer will guide you to carry on this activity.



Self-Check Quiz 7.2.3

Write short note on WordPress.



Learning Activity 7.2.4

| Learning Activity | Resources/Special Instructions/References |
|---|---|
| Explain effective use of Joomla/Drupal/ WordPress | <ul style="list-style-type: none">▪ Information Sheet: 7.2.4▪ Self-Check Quiz: 7.2.4▪ Answer Key: 7.2.4▪ https://support.rackspace.com/how-to/cms-comparison-drupal-joomla-and-wordpress/ |



Information Sheet 7.2.4

Learning Objective: to explain effective use of Joomla/Drupal/WordPress.

▪ **Compare Joomla, Drupal and WordPress**

The following chart compares these CMSs in several categories. If you are still not sure which one to use, you can download each of the free platforms and do a trial run to help you decide.

| | Drupal | Joomla | WordPress |
|--------------|---|---|---|
| Homepage | www.drupal.org | www.joomla.org | www.wordpress.org |
| About | Drupal is a powerful, developer-friendly tool for building complex sites. Like most powerful tools, it requires some expertise and experience to operate. | Joomla offers a platform between the developer-oriented, extensive capabilities of Drupal and the user-friendly but more complex site development options that WordPress offers. | WordPress began as an innovative, easy-to-use blogging platform. With an ever-increasing repertoire of themes, plugins, and widgets, this CMS is also widely used for other website formats also. |
| Installation | Drupal installation forum | Joomla installation forum | WordPress installation forum |
| Ease of use | Drupal requires the most technical expertise of the three CMSs. However, it also is capable of producing the most advanced sites. With each release, it is becoming easier to use. If you're unable to commit to learning the software or | Joomla is less complex than Drupal but more complex than WordPress. It has a relatively uncomplicated installation and setup. With a small investment of effort into understanding Joomla's structure and terminology, you have the ability to create fairly complex sites. | Technical experience is not necessary; it's intuitive and easy to get a simple site set up quickly. It's easy to paste text from a Microsoft Word document into a WordPress site, but not into Joomla and Drupal sites. |

| | | | |
|------------------|---|--|--|
| | can't hire someone who knows it, it might not be the best choice. | | |
| Caching plug-ins | Pressflow is a downloadable version of Drupal that comes bundled with popular enhancements in key areas, including performance and scalability. | JotCache offers page caching in the Joomla 1.5, 2.5, and 3.0 search framework, resulting in fast page downloads. It also provides control over what content is cached and what is not. In addition, page caching is supported by the System Cache Plugin that comes with Joomla. | The WP-SuperCache plugin optimizes performance by generating static HTML files from database-driven content for faster load times. |
| Features | Drupal is known for its powerful taxonomy and ability to tag, categorize, and organize complex content. | Joomla is designed to perform as a community platform, with strong social networking features. | Ease of use is a key benefit for experts and novices alike. WordPress is powerful enough for web developers or designers to efficiently build sites for clients; then, with minimal instruction, clients can take over the site management. WordPress is known for an extensive selection of themes. It's user-friendly with great support and tutorials, making it great for non-technical users to quickly deploy fairly simple sites. |
| Best use cases | Drupal is best for complex, advanced, and versatile sites; for sites that require complex data organization; for community platform sites with multiple users; and for online stores. | Joomla enables you to build a site with more content and structure flexibility than WordPress offers, but still with fairly easy, intuitive usage. It supports e-commerce, social networking, and more. | WordPress is ideal for fairly simple web sites, such as everyday blogging and news sites; and for anyone looking for an easy-to-manage site. Add-ons make it easy to expand the functionality of the site. |

Individual Activity:

- Browse and collect information on Joomla, Drupal and WordPress.
- List the cases where they are to use individually.
- Share your work in class.
- Your trainer will guide you to carry on this activity.



Self-Check Quiz 7.2.4

State whether the following statements are “True” or “False”:

1. Drupal requires the most technical expertise.
2. Joomla is less complex than WordPress.
3. WordPress doesn’t require technical experience.
4. Drupal is best for complex, advanced, and versatile sites.
5. Joomla is best for a site with more content and structure flexibility.
6. WordPress is ideal for fairly simple web sites, like daily blogging and news sites;



Learning Activity 7.2.5

| Learning Activity | Resources/Special Instructions/References |
|---------------------------------------|---|
| Apply CMS (Content Management System) | <ul style="list-style-type: none">▪ Information Sheet: 7.2.5▪ Self-Check Quiz: 7.2.5▪ Answer Key: 7.2.5▪ https://fitsmallbusiness.com/what-is-a-content-management-system-cms/ |



Information Sheet 7.2.5

Learning Objective: to applied CMS (Content Management System).

▪ CMS: Content Management System

- Content management system, often abbreviated as **CMS**, is software that helps users create, manage, and modify content on a website without the need for specialized technical knowledge.
- Beyond websites, you can also find content management systems for other functions – like document management.
- With a content management system like WordPress, you can just write your content in an interface that looks a good bit like Microsoft Word:

- On a more technical level, a content management system is made up of two core parts:
 - ✓ **A content management application (CMA)** – this is the part that allows you to actually add and manage content on your site (like you saw above).
 - ✓ **A content delivery application (CDA)** – this is the backend, behind-the-scenes process that takes the content you input in the CMA, stores it properly, and makes it visible to your visitors.
- Together, the two systems make it easy to maintain your website.
- Popular content management systems include:
 - ✓ **WordPress**
 - ✓ **Joomla**
 - ✓ **Drupal**
 - ✓ **Magento (for eCommerce stores)**
 - ✓ **Squarespace**
 - ✓ **Wix**



Job Sheet 7.2.5

| | |
|--------------|---|
| Job Title | Create a page applying CMS. |
| Instructions | <ul style="list-style-type: none"> ▪ Open a content management platform (Drupal, Joomla and WordPress). ▪ Create a webpage with contents. ▪ Apply the content management system to make the page attractive. ▪ Share your work in class for other's feedback. ▪ Add this page to your portfolio. |
| Outcome | You created a page applying CMS. |



Self-Check Quiz 7.2.5

Write correct answer for the following questions:

1. Write short note on content management system (CMS).
2. What is CMA?
3. What is CDA?



REVIEW OF COMPETENCY

Final Checklist

(for the performance criteria of the module Performing Distempering)

| Performance Criteria | Yes | No |
|---|--------------------------|--------------------------|
| 1. Notepad is used. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Effective use of MS FrontPage is displayed. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Macromedia Dream Weaver is introduced. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Web design platform or editor is applied. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Joomla is introduced. | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Drupal is introduced. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. WordPress is introduced. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Effective use of Joomla/ Drupal/ WordPress is explained. | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. CMS (Content Management System) is applied. | <input type="checkbox"/> | <input type="checkbox"/> |

Now I feel ready to undertake my formal competency assessment.

Signed: _____

Date: _____



ANSWER KEYS

ANSWER KEY 7.1.1

1. (a) Notepad is a handy program that a user can type in text quickly and easily. It is not for publishing a book but more of a scratchpad. This is a tutorial on how to use Notepad. To open Notepad click on start > All Programs > accessories > notepad
- (b) Notepad++ is a free (as in "free speech" and also as in "free beer") source code editor and Notepad replacement that supports several languages. Running in the MS Windows environment, its use is governed by GPL License.

ANSWER KEY 7.1.2

1. Code
2. See, Get
3. SharePoint Designer

ANSWER KEY 7.1.3

1. True
2. True
3. False
4. True
5. False

ANSWER KEY 7.1.4

1. VS Code comes with a simple and intuitive layout that maximizes the space provided for the editor while leaving ample room to browse and access the full context of your folder or project. The UI is divided into five areas: Editor, side bar, status bar, activity bar, and panels.

ANSWER KEY 7.2.1

1. Joomla is an open source Content Management System (CMS), which is used to build websites and online applications. It is free and extendable which is separated into front-end templates and back-end templates. Joomla is developed using PHP, Object Oriented Programming, software design patterns and MySQL (used for storing the data).

ANSWER KEY 7.2.2

1. True
2. True
3. True
4. False
5. True

ANSWER KEY 7.2.3

1. WordPress.com powers beautiful websites for businesses, professionals, and bloggers. Creating and managing your website is simple with powerful platform of WordPress. WordPress.com features hundreds of beautiful themes. It is possible to update websites on the go with mobile apps for iOS and Android.

ANSWER KEY 7.2.4

1. True
2. False

3. True
4. True
5. True
6. True

ANSWER KEY 7.2.5

1. Content management system, often abbreviated as **CMS**, is software that helps users create, manage, and modify content on a website without the need for specialized technical knowledge. Beyond websites, you can also find content management systems for other functions – like document management. With a content management system like WordPress, you can just write your content in an interface that looks a good bit like Microsoft Word.
2. A content management application (CMA) – is the part that allows you to actually add and manage content on a website.
3. A content delivery application (CDA) is the backend, behind-the-scenes process that takes the content as input in the CMA, stores it properly, and makes it visible to the visitors.

Module 8: Work with Bootstrap Framework



MODULE CONTENT

Module Descriptor: This module contains information and activities to work with bootstrap framework. It specifically guides with the tasks of understanding responsive website, and working with bootstrap components to develop a responsive website.

Nominal Duration: 48 hours



Learning Outcomes:

Upon completion of the module, the trainee should be able to:

- 8.1 Understand responsive website
- 8.2 Work with bootstrap components to develop a responsive website



Performance Criteria:

1. Responsive website is understood.
2. Advantages of responsive website is described.
3. Advantages of bootstrap in responsive website is described.
4. Bootstrap is installed.
5. Bootstrap basic is described.
6. Thumbnail gallery and tabs are created and activated.
7. Bootstrap components are used to develop a responsive website.
8. Mockup is created and presented.



Learning Outcome 8.1 - Understand Responsive Website



Contents:

- Understand responsive website
- Describe advantages of responsive website
- Describe advantages of bootstrap in responsive website



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Operating software, local web server
- Internet
- Notepad application
- MS FrontPage
- Macromedia Dream Weaver
- Stationery
- Instruction sheet/manual



Learning Activity 8.1.1

| Learning Activity | Resources/Special Instructions/References |
|-------------------------------|---|
| Understand responsive website | <ul style="list-style-type: none">▪ Information Sheet: 8.1.1▪ Self-Check Quiz: 8.1.1▪ Answer Key: 8.1.1▪ https://www.w3schools.com/css/css_rwd_intro.asp |

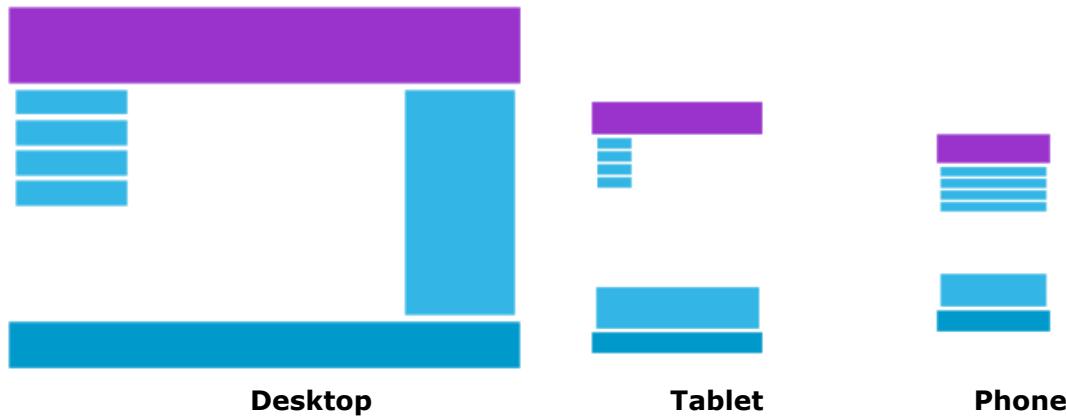


Information Sheet 8.1.1

Learning Objective: to understand responsive website.

Responsive Website:

- It is called responsive web design when you use CSS and HTML to resize, hide, shrink, enlarge, or move the content to make it look good on any screen.
- Responsive web design makes your web page look good on all devices.
- Responsive web design uses only HTML and CSS.
- Responsive web design is not a program or a JavaScript.
- Web pages can be viewed using many different devices: desktops, tablets, and phones. Your web page should look good, and be easy to use, regardless of the device.
- Web pages should not leave out information to fit smaller devices, but rather adapt its content to fit any device:



Individual Activity:

- Search and explain a responsive webpage.
- Share your work in class.
- Your trainer will guide you to carry out this activity.



Self-Check Quiz 8.1.1

What is a responsive website?



Learning Activity 8.1.2

| Learning Activity | Resources/Special Instructions/References |
|---|---|
| Describe advantages of responsive website | <ul style="list-style-type: none">▪ Information Sheet: 8.1.2▪ Self-Check Quiz: 8.1.2▪ Answer Key: 8.1.2▪ https://business.tutsplus.com/articles/advantages-of-responsive-web-design--cms-30703 |



Information Sheet 8.1.2

Learning Objective: to describe advantages of responsive website.

- **Advantages of Responsive Web Design**

There are many responsive web design benefits. It can positively impact your SEO, conversion rates, user experience, and many other aspects of your business that contribute to your growth. Here are the 12 most important responsive web design features and benefits.

1. Improved User Experience
2. An Increase in Mobile Traffic
3. Faster Website Development
4. Easier Maintenance
5. No Duplicate Content Penalty
6. Simpler Website Analytics
7. Better Website Loading Times
8. Lower Bounce Rates
9. Higher Conversion Rates
10. Better SEO
11. More Social Sharing
12. Better Backlinks

Individual Activity:

- The class will divide in 3 to 4 groups.
- Each group will discuss on “advantages of responsive web design”.
- Each group will write three points come out from the discussion.
- Each group will present their findings.
- Your trainer will guide you to complete this activity.



Self-Check Quiz 8.1.2

Write five (5) benefits of responsive webpage.



Learning Activity 8.1.3

| Learning Activity | Resources/Special Instructions/References |
|--|---|
| Describe advantages of bootstrap in responsive website | <ul style="list-style-type: none">▪ Information Sheet: 8.1.3▪ Self-Check Quiz: 8.1.3▪ Answer Key: 8.1.3▪ https://getbootstrap.com/ |



Information Sheet 8.1.3

Learning Objective: to describe advantages of bootstrap in responsive website.

▪ **Bootstrap:**

- Bootstrap is an open source toolkit for developing with HTML, CSS, and JS. Quickly prototype your ideas or build your entire app with our Sass variables and mix ins, responsive grid system, extensive prebuilt components, and powerful plugins built on jQuery.
- It is the most popular HTML, CSS, and JavaScript framework for developing responsive, mobile-first websites.
- Bootstrap is completely free to download and use!

▪ **Bootstrap Example**

```
<div class="jumbotron text-centre">
  <h1>My First Bootstrap Page</h1>
  <p>Resize this responsive page to see the effect!</p>
</div>

<div class="container">
  <div class="row">
    <div class="col-sm-4">
      <h3>Column 1</h3>
      <p>Lorem ipsum dolor..</p>
      <p>Ut enim ad..</p>
    </div>
    <div class="col-sm-4">
      <h3>Column 2</h3>
      <p>Lorem ipsum dolor..</p>
      <p>Ut enim ad..</p>
    </div>
    <div class="col-sm-4">
      <h3>Column 3</h3>
      <p>Lorem ipsum dolor..</p>
      <p>Ut enim ad..</p>
    </div>
  </div>
</div>
```

- Popular Bootstrap classes includes:

Bootstrap CSS Text/Typography
Bootstrap CSS Buttons
Bootstrap CSS Forms
Bootstrap CSS Helpers
Bootstrap CSS Images
Bootstrap CSS Tables

Bootstrap Components Dropdowns
Bootstrap Components Navs
Bootstrap Components Glyph icons
Bootstrap JS Affix
Bootstrap JS Alert
Bootstrap JS Button
Bootstrap JS Carousel
Bootstrap JS Collapse
Bootstrap JS Dropdown
Bootstrap JS Modal
Bootstrap JS Popover
Bootstrap JS Scroll spy
Bootstrap JS Tab
Bootstrap JS Tooltip

- **Advantages of Bootstrap:**

- **Easy to Use**

It is extremely an easy and speedy procedure to begin with Bootstrap. Bootstrap is very adaptable too. You can utilize Bootstrap along with CSS, or LESS, or also with Sass.

- **Responsiveness**

Every year mobile devices persist to grow hugely popular, and the requirement to have a responsive website has become compulsory and important too. As the fluid grid layout amends vigorously to the appropriate screen resolution, thus crafting a mobile-ready site is a smooth and easy task along with Bootstrap. With the use of ready-made classes of Bootstrap, you can recognize the number of spots in the grid system that you would like each column to engage in. Then only you can identify at whichever point you would like your columns to load in horizontal position, instead of vertically to exhibit accurately on mobile appliances.

- **The Speed of the Development**

One of the main benefits of utilizing Bootstrap happens to be the speed of the development. While driving out a new, fresh website or application swiftly, you should certainly reflect upon utilizing Bootstrap. Instead of coding from scratch, Bootstrap lets you to use ready-made coding blocks in order to assist you in setting up. You can blend that along with CSS-Less functionality and cross-browser compatibility that can give way to saving of ample hours of coding. You can even buy ready-made Bootstrap themes and alter them to fit your requirements, for gaining the quickest potential route.

- **Customizable Bootstrap**

The Bootstrap can be customized as per the designs of your project. The web developers can make a choice to select the aspects which are required which can be simply complete by utilizing Bootstrap customize page. You just have to tick off all the aspects that you do not require, such as- Common CSS: typography, code, grid system, tables, buttons, forms, print media styles; Components: input groups, button groups, pager, labels, navs, navbar, badges, pagination; JavaScript components: dropdowns, popovers, modals, tooltips, carousels; Utilities: Responsive utilities, basic utilities. Thus, your custom version of Bootstrap is all set for download process.

- **Consistency**

Few Twitter employees firstly expanded Bootstrap as a framework for boosting the consistency across interior tools. But later the Co-founder Mark Otto after understanding the actual potential released in August 2011 the first open-source version of Bootstrap. He even portrayed how the Bootstrap was enlarged with the use of one core concept- pairing of designers along with developers. Thus, Bootstrap became popular on Twitter.

- **Support**

As Bootstrap holds a big support community, you can be provided with help whenever there comes any problem. The creators always keep the Bootstrap updated. Presently Bootstrap is hosted, expanded, and preserved on the GitHub along with more than 9,000 commits, as well as more than 500 contributors.

- **Packaged JavaScript Components**

Bootstrap approaches with a pack of JavaScript components for including the functionality that crafts it in simple way for operating things, such as tooltips, modal windows, alerts, etc. You can even leave out the writing scripts completely.

- **Simple Integration**

Bootstrap can be simply integrated along with distinct other platforms and frameworks, on existing sites and new ones too. You can also utilize particular elements of Bootstrap along with your current CSS.

- **Grid**

Bootstrap has the capability to utilize a 12-column grid that is responsive. It also upholds offset and nested elements. The grid can be maintained in a responsive mode, or you can simply modify it to a secured layout.

- **Pre-styled Components**

Bootstrap approaches with pre-styled components for alerts, dropdowns, nav bars, etc. Hence, being a feature-rich, Bootstrap provides numerous advantages of using it. Hope you would have understood the above reasons so that you can easily use Bootstrap for making superb web designs for your sites!

Individual Activity:

- Apply bootstrap on a responsive webpage.
- Include the page to your portfolio.
- Share your work in class.
- Your trainer will guide you to carry out this activity.



Self-Check Quiz 8.1.3

Write correct answer for the following questions:

1. What do you understand with “Bootstrap”?
2. Write five advantages of using bootstrap.



Learning Outcome 8.2 – Work with Bootstrap Components to Develop a Responsive Website



Contents:

- Install bootstrap
- Describe bootstrap basic
- Create and activate thumbnail gallery and tabs
- Use bootstrap components to develop a responsive website
- Create and present mock-up



Assessment criteria:



Resources required:

Students/trainees must be provided with the following resources:

- Workplace (simulated or actual)
- Personal computer and peripherals
- Software (system & applications)
- Joomla
- Drupal
- WordPress
- Content Management System (CMS)
- Internet
- Stationery
- Instruction sheet/manual



Learning Activity 8.2.1

| Learning Activity | Resources/Special Instructions/References |
|-------------------|--|
| Install bootstrap | <ul style="list-style-type: none"> ▪ Information Sheet: 8.2.1 ▪ Self-Check Quiz: 8.2.1 ▪ Answer Key: 8.2.1 ▪ https://getbootstrap.com/docs/3.3/getting-started/ |



Information Sheet 8.2.1

Learning Objective: to install bootstrap.

▪ **Bootstrap installation:**

- Bootstrap (currently v3.3.7) has a few easy ways to quickly get started, each one appealing to a different skill level and use case. Read through to see what suits your particular needs.

▪ **Download:**

| Title | In Brief | Download link |
|-------------|--|---|
| Bootstrap | Compiled and minified CSS, JavaScript, and fonts. No docs or original source files are included | https://github.com/twbs/bootstrap/releases/download/v3.3.7/bootstrap-3.3.7-dist.zip |
| Source code | Source Less, JavaScript, and font files, along with docs. Requires a Less compiler and some setup. | https://github.com/twbs/bootstrap/archive/v3.3.7.zip |
| Sass | Bootstrap ported from Less to Sass for easy inclusion in Rails, Compass, or Sass-only projects. | https://github.com/twbs/bootstrap-sass/archive/v3.3.7.tar.gz |

▪ **Bootstrap CDN**

- The folks over at MaxCDN graciously provide CDN support for Bootstrap's CSS and JavaScript. Just use these Bootstrap CDN links.

```
<!-- Latest compiled and minified CSS --> <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css"
integrity="sha384-BVYiiSIFeK1dGmJRAkycuHAHRg32OmUcww7on3RYdg4Va+PmSTsz/K68vbdEjh4u"
crossorigin="anonymous"> <!-- Optional theme --> <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap-theme.min.css"
integrity="sha384-BVYiiSIFeK1dGmJRAkycuHAHRg32OmUcww7on3RYdg4Va+PmSTsz/K68vbdEjh4u"
crossorigin="anonymous"> <!-- Latest compiled and minified JavaScript --> <script
src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js" integrity="sha384-

```

```
Tc5IQib027qvyjSMfHjOMaLkfuWVxZxUPnCJA7I2mCWNIpG9mGCD8wGNlcPD7Txa"
crossorigin="anonymous"></script>
```

- **Install with Bower**

- You can also install and manage Bootstrap's Less, CSS, JavaScript, and fonts using Bower:

```
$ bower install bootstrap
```

- **Install with npm**

- You can also install Bootstrap using npm:
\$ npm install bootstrap@3
- require('bootstrap') will load all of Bootstrap's jQuery plugins onto the jQuery object.
The bootstrap module itself does not export anything. You can manually load Bootstrap's jQuery plugins individually by loading the /js/*.js files under the package's top-level directory.
- Bootstrap's package .json contains some additional metadata under the following keys:
 - ✓ less - path to Bootstrap's main Less source file
 - ✓ style - path to Bootstrap's non-minified CSS that's been precompiled using the default settings (no customization)

- **Install with Composer**

- You can also install and manage Bootstrap's Less, CSS, JavaScript, and fonts using Composer:

```
▪ $ composer require twbs/bootstrap
```

Individual Activity:

- Install bootstrap on your workstation/computer.
- Test bootstrap on a webpage.
- Share your experience in class.
- Your trainer will guide you to carry on with this activity.

**Self-Check Quiz 8.2.1**

What are the ways to install bootstrap?

**Learning Activity 8.2.2**

| Learning Activity | Resources/Special Instructions/References |
|--------------------------|---|
| Describe bootstrap basic | <ul style="list-style-type: none">▪ Information Sheet: 8.2.2▪ Self-Check Quiz: 8.2.2▪ Answer Key: 8.2.2▪ https://www.toptal.com/front-end/what-is-bootstrap-a-short-tutorial-on-the-what-why-and-how▪ https://www.w3schools.com/bootstrap/default.asp |



Information Sheet 8.2.2

Learning Objective: to describe bootstrap basic.

▪ Bootstrap basics

- Bootstrap is a powerful toolkit - a collection of HTML, CSS, and JavaScript tools for creating and building web pages and web applications. It is a free and open source project, hosted on GitHub, and originally created by (and for) Twitter.
- Bootstrap can be boiled down to three main files:
 - ✓ [**bootstrap.css**](#) – a CSS framework
 - ✓ [**bootstrap.js**](#) – a JavaScript/jQuery framework
 - ✓ [**glyphicon**](#) – a font (an icon font set)
- Additionally, Bootstrap requires jQuery to function. jQuery is an extremely popular and widely used JavaScript library, that both simplifies and adds cross browser compatibility to JavaScript.

▪ Basic Bootstrap HTML Template

- A basic Bootstrap HTML template should look something like this:

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <title>Bootstrap Template</title>
    <link href="css/bootstrap.min.css" rel="stylesheet">
  </head>
  <body>
    <h1>Hello, world!</h1>
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/1.11.2/jquery.min.js"></script>
    <script src="js/bootstrap.min.js"></script>
  </body>
</html>
```

Example:

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <title>Bootstrap Example</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet"
          href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>
  </head>
  <body>

    <div class="jumbotron text-center">
      <h1>My First Bootstrap Page</h1>
      <p>Resize this responsive page to see the effect!</p>
    </div>

    <div class="container">
      <div class="row">
        <div class="col-sm-4">
          <h3>Column 1</h3>
          <p>Lorem ipsum dolor sit amet, consectetur adipisicing elit...</p>
        </div>
```

```

<p>Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris...</p>
</div>
<div class="col-sm-4">
    <h3>Column 2</h3>
    <p>Lorem ipsum dolor sit amet, consectetur adipisicing elit...</p>
    <p>Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris...</p>
</div>
<div class="col-sm-4">
    <h3>Column 3</h3>
    <p>Lorem ipsum dolor sit amet, consectetur adipisicing elit...</p>
    <p>Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris...</p>
</div>
</div>
</div>

</body>
</html>

```

Individual Activity:

- Apply Bootstrap on a webpage.
- Save, test and debug your code.
- Your trainer will guide to complete this activity.



Self-Check Quiz 8.2.2

Fill-in the gaps with appropriate word(s) on the following statements:

1. Bootstrap is a powerful toolkit - a collection of _____, _____, and _____ tools.
2. Bootstrap is a free and open source project, hosted on _____.
3. Bootstrap was originally created for _____.
4. jQuery and Bootstrap both simplify and add cross browser compatibility to _____.



Learning Activity 8.2.3

| Learning Activity | Resources/Special Instructions/References |
|--|---|
| Create and activate thumbnail gallery and tabs | <ul style="list-style-type: none"> ▪ Information Sheet: 8.2.3 ▪ Self-Check Quiz: 8.2.3 ▪ Answer Key: 8.2.3 ▪ https://www.youtube.com/watch?v=xvtS1t6Kpts ▪ https://www.w3schools.com/howto/howto_js_tab_img_gallery.asp |



Information Sheet 8.2.3

Learning Objective: to create and activate thumbnail gallery and tabs.

- **Thumbnail gallery and tabs**
 - Thumbnail gallery will let you to create image galleries.
 - Here you will watch a video lesson on creating responsive thumbnail gallery.

- **Video/Presentation**

- Trainees will watch video clips on “Bootstrap 3 Creating Responsive Thumbnail Gallery” and note important instructions and apply on their own work.
- Video Reference: <https://www.youtube.com/watch?v=xvtS1t6Kpts>

- You will find an example of Tab Gallery on this link:
https://www.w3schools.com/howto/howto_js_tab_img_gallery.asp
- Use the code to develop a Tab-gallery for yourself.

Individual Activity:

- Create a thumbnail gallery for your portal applying Bootstrap.
- Share your work in class.
- Take your trainer's suggestions when required.



Self-Check Quiz 8.2.3

Why thumbnail gallery is created?



Learning Activity 8.2.4

| Learning Activity | Resources/Special Instructions/References |
|--|---|
| Use bootstrap components to develop a responsive website | <ul style="list-style-type: none">▪ Information Sheet: 8.2.4▪ Self-Check Quiz: 8.2.4▪ Answer Key: 8.2.4▪ https://github.com/aichbauer/styled-bootstrap-components▪ https://www.w3schools.com/bootstrap/bootstrap_quiz.asp |



Information Sheet 8.2.4

Learning Objective: to use bootstrap components to develop a responsive website.

- **Bootstrap components:**

- You will find different components while you practice applying bootstraps on webpages.
- Here some bootstrap components made with styled-components are listed.

- Alert Component
- Badge Component
- Base Components
- Breadcrumb Component
- Button Component
- Card Component
- Container Component
- Dropdown Component
- Form Component

- Grid Component
- Jumbotron Component
- Listgroup Component
- Modal Component
- Nav Component
- Navbar Component
- Popover Component
- Table Component
- Tooltip Component



Job Sheet 8.2.4

| | |
|--------------|--|
| Job Title | Create a responsive thumbnail gallery |
| Instructions | <ul style="list-style-type: none"> ▪ When clicked on the thumbnail images the image will be shown on the bellow portion in full view. ▪ Apply Bootstrap. ▪ Make the gallery responsive. ▪ Resource: https://www.w3schools.com/howto/howto_js_tab_img_gallery.asp. |
| Outcome | <ul style="list-style-type: none"> ▪ The layout of the gallery should be like this – <div style="text-align: center;">   </div> |



Learning Activity 8.2.5

| Learning Activity | Resources/Special Instructions/References |
|----------------------------|---|
| Create and present mock-up | <ul style="list-style-type: none"> ▪ Information Sheet: 8.2.5 ▪ Self-Check Quiz: 8.2.5 ▪ Answer Key: 8.2.5 |

- <https://www.cleveroad.com/blog/step-by-step-tutorial-how-to-create-a-website-mockup-avoiding-common-mistakes-and-pitfalls>
- <https://designshack.net/articles/inspiration/best-website-psd-perspective-mockups/>

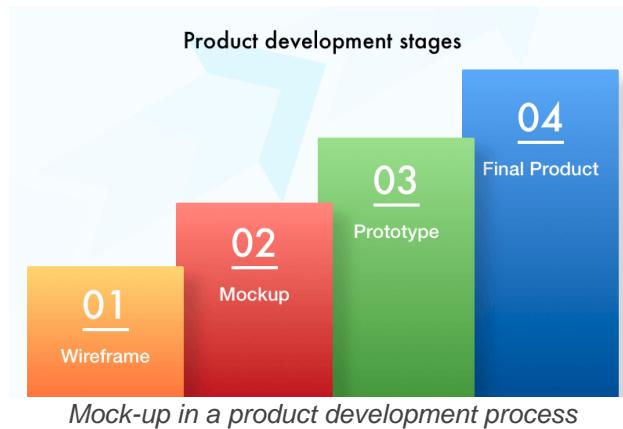


Information Sheet 8.2.5

Learning Objective: to create and present mock-up.

▪ Mock-up

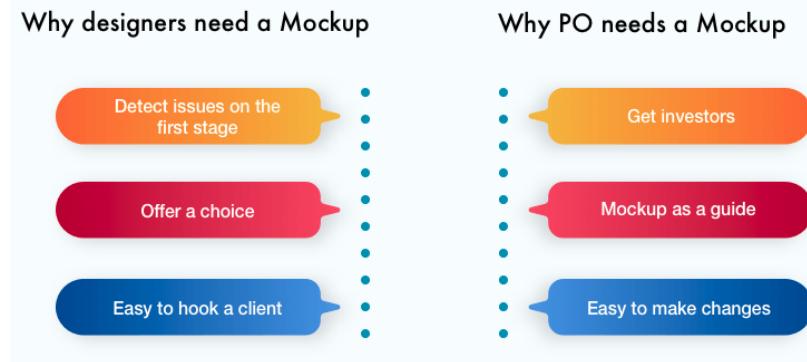
- Unlike a Wireframe, that is basically a simple sketch of a future site, the mock-up is almost a complete design. It displays not only the order of all the components but also the accurate colours, shapes and exact placement of the components, in relation to each other.
- In order not to misunderstand the terms mock-up, Wireframe and a prototype, imagine that they are the steps to a final product.



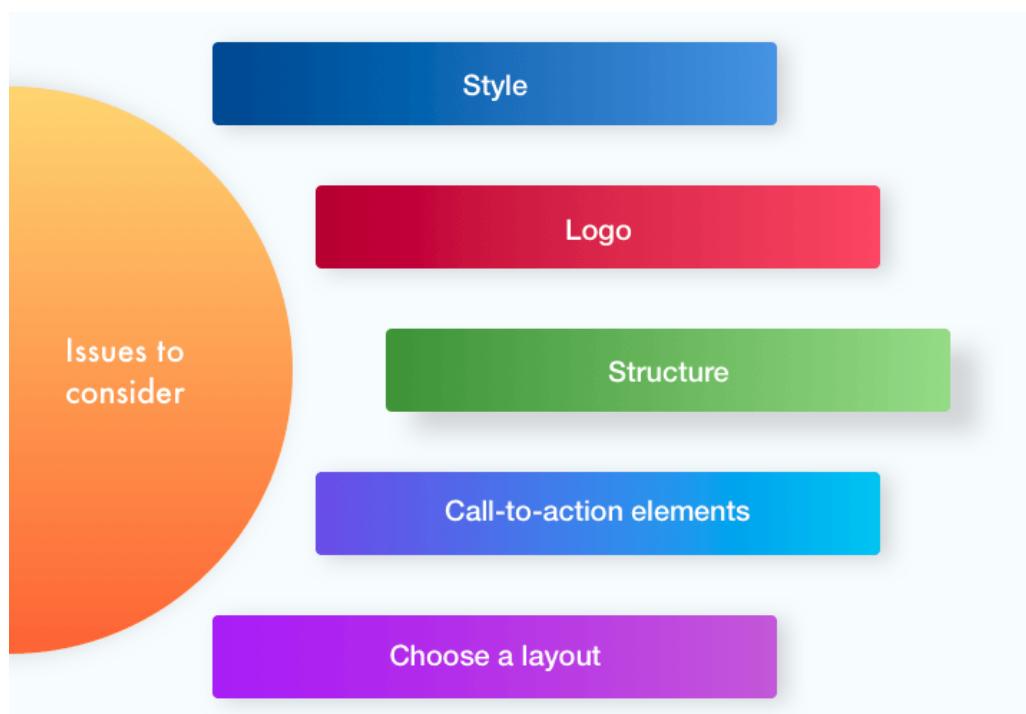
- The first step is a Wireframe, it reflects only the elements that you need to have on your site and their places on a page. The Wireframe can be easily made by hand.
- The second step is a **web page mock-up**. Here you have to choose the style, colour pallet, shape and design of all the components. Working on a mock-up, you can check how ergonomic the design is, as well as the overall view of a page.
- A prototype is a clickable working product, which you can test. In plain English, it's a ready-made product but with a minimal functionality set.
- Prototype is needed as proof of the concept, especially if you work with captious investors. If you want to persuade them that your idea is really brilliant, show them a prototype.

▪ Advantages:

- It is advantageous to both designers and project owners (PO). Following figure is self-explanatory.



- **How to:**
 - To design a website mock-up that would fill all the functionality and make criteria more convenient, we need to gather lots of various information about the future product:
 - ✓ What is the idea of the website, what features will it include?
 - ✓ What services will the site provide?
 - ✓ Who are the users of the future product?
 - ✓ What is the average age of a user, what sphere the site covers?
 - ✓ Information and the form the site will present it. What sort of content is the site going to include?
 - This data is needed not only for developers but for designers too. The designers would also appreciate if the customer shows them some similar web portals, to grasp the overall idea of the project.
 - After this information has been gathered, the design team starts planning. The more they plan, the better it is for the development process. As a well-considered **created mock-ups for website** reduces the cost of the product development.
- **Steps to website Mock-ups**
 - There are some common rules which all designers should obey if they want to make simple website Mock-up design that will attract, hold and direct user's attention.



- **Example:**
 - You will find example of mock ups on the following link–
<https://designshack.net/articles/inspiration/best-website-psd-perspective-mockups/>

Individual Activity:

- Create a mock-up of your portfolio.
- Share your work in class and get feedback from class to improve it.
- Your trainer will guide you to carry on this activity.



Self-Check Quiz 8.2.5

Write correct answer for the following questions:

1. Write short note on mock-up.
2. What is prototype?



REVIEW OF COMPETENCY

Final Checklist

(for the performance criteria of the module Performing Distempering)

| Performance Criteria | Yes | No |
|---|--------------------------|--------------------------|
| 1. Responsive website is understood. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Advantages of responsive website is described. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Advantages of bootstrap in responsive website is described. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Bootstrap is installed. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Bootstrap basic is described. | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Thumbnail gallery and tabs are created and activated. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Bootstrap components are used to develop a responsive website. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Mock-up is created and presented. | <input type="checkbox"/> | <input type="checkbox"/> |

Now I feel ready to undertake my formal competency assessment.

Signed: _____

Date: _____



ANSWER KEYS

ANSWER KEY 8.1.1

It is called responsive web design when you use CSS and HTML to resize, hide, shrink, enlarge, or move the content to make it look good on any screen. Responsive web design makes your web page look good on all devices.

ANSWER KEY 8.1.2

1. Improved User Experience
2. An Increase in Mobile Traffic
3. Faster Website Development
4. Easier Maintenance
5. No Duplicate Content Penalty

ANSWER KEY 8.1.3

1. Bootstrap is an open source toolkit for developing with HTML, CSS, and JS. Quickly prototype your ideas or build your entire app with our Sass variables and mixins, responsive grid system, extensive prebuilt components, and powerful plugins built on jQuery. It is the most popular HTML, CSS, and JavaScript framework for developing responsive, mobile-first websites.
2. (a) Easy to use
(b) Responsiveness
(c) Speed of the development
(d) Customizable bootstrap
(e) Consistency

ANSWER KEY 8.2.1

1. Ways to install bootstrap are:
 - Download bootstrap, source code or SASS
 - Using Bootstrap CDN link from MaxCDN
 - Install with Bower
 - Install with npm
 - Install with Composer

ANSWER KEY 8.2.2

1. HTML, CSS
2. GitHub
3. Twitter
4. JavaScript

ANSWER KEY 8.2.3

Thumbnail gallery will let you to create image galleries.

ANSWER KEY 8.2.5

1. The Mock-up is almost a complete design. It displays the order of all the components with the accurate colours, shapes and exact placement of the components, in relation to each other. Working on a mock-up, you can check how ergonomic the design is, as well as the overall view of a page.
2. A prototype is a clickable working product, which you can test. In plain English, it is a ready-made product but with a minimal functionality set. Prototype is needed as proof of the concept, especially if you work with captious investors.