

# **Diploma in**

# **IT, Networking and Cloud**

## **Module 4**

## **Web Development**

### **Lab Manual**

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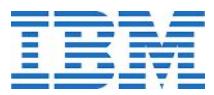
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## Learning Outcomes

After completing this module a student will be able to:

1. Able to understand how the web works.
2. Structuring the Web
3. Scripting and Styling the web
4. Enhancing the web using PHP
5. Understand Java the key language

---

## **Learning Outcome 1 - Able to understand how the web works**

After achieving this learning outcome, a student will be able to understand how the web works. In order to achieve this learning outcome, a student has to complete the following:

1. Create web page content using HTML (HyperText Markup Language) Tags (5 Hrs)
2. Enable Hypertext Transfer Protocol (HTTP) via GET and POST requests (5Hrs)
3. Obtain input from users. (5 Hrs)

---

## Activity 1

**Aim:** Create web page content using HTML (HyperText Markup Language) Tags (5 Hrs)

**Learning outcome:** Able to understand how the web works.

**Duration:** 5 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS.....
2. Text Editors- Notepad++, Sublime Text,etc..
3. Browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<meta charset="utf-8">

<title>Black Goose Bistro</title>

</head>

<!--Body Content Starts-->

<body text="blue">

<!--Heading-->

<h1>Black Goose Bistro</h1>

<hr color="green">
```

<!--Heading-->

## <h2>The Restaurant</h2>

<p>The Black Goose Bistro offers casual lunch and dinner fare in a hip atmosphere. The menu changes regularly to highlight the freshest ingredients.</p>

<!--Heading-->

## <h2>Catering</h2>

You have fun... we'll do the cooking. Black Goose catering can handle events from snacks for bridge club to elegant corporate fundraisers.

<!--Heading-->

## <h2>Location and Hours</h2>

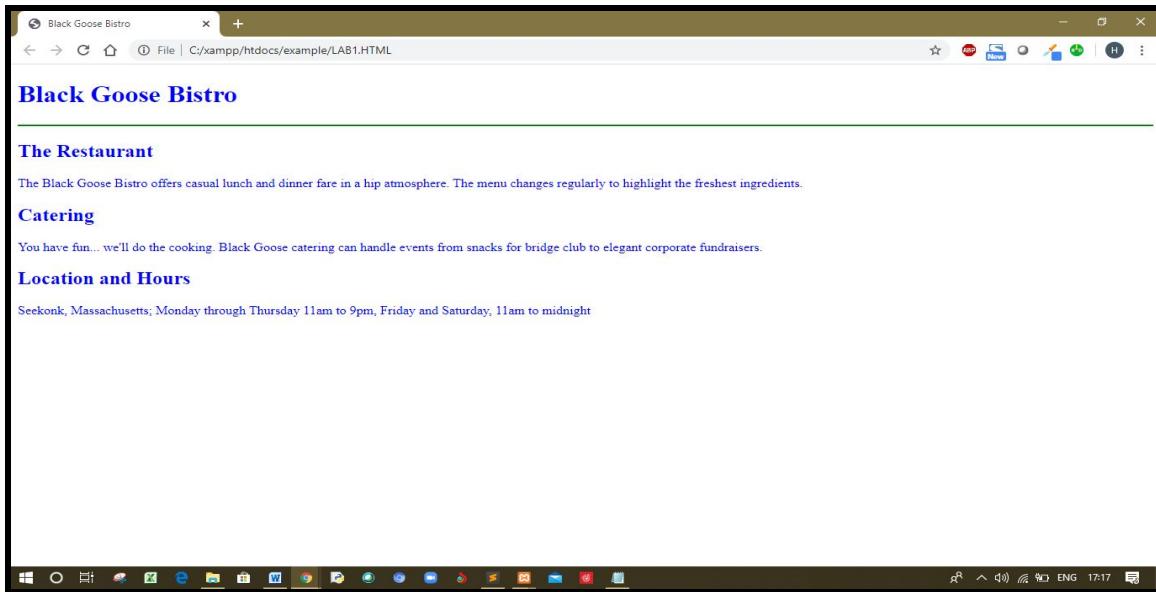
Seekonk, Massachusetts; Monday through Thursday 11am to 9pm, Friday and Saturday, 11am to midnight

</body>

<!--Body Content Ends-->

</html>

**Output/Results snippet:**



## References:

- <https://www.oreilly.com/library/view/learning-web-design/9781449337513/ch04.html>

---

## Activity 2

**Aim:** Enable Hypertext Transfer Protocol (HTTP) via GET and POST requests (5Hrs)

**Learning outcome:** Able to understand how the web works.

**Duration:** 5 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS.....
2. Text Editors- Notepad++, Sublime Text,etc..
3. XAMPP/LAMP Server Setup
4. Browser

**Code/Program/Procedure (with comments):**

**GetPost.Html**

```
<!DOCTYPE html>

<html>
  <head>
    <title>Get </title>
  </head>
  <!--Body content Starts-->
  <body>
    <form action="action_page.php" method="get" target="_blank">
      Name: <input type="text" name="fname" size="20"><br>
      Age: <input type="text" name="age" size="20"><br>
      <!--Click on the submit button, and the input will be sent to a page on the server called
      -->
```

```
"/action_page.php"-->

<input type="submit" value="Submit">

</form>

<p>Click on the submit button, and the input will be sent to a page on the server called
"/action_page.php".</p>

</body>

<!--Body content Ends-->

</html>

<!DOCTYPE html>

<html>

<head>

<title>Post </title>

</head>

<!--Body content Starts-->

<body>

<form action="action_page.php" method="post" target="_blank">

Name: <input type="text" name="fname" size="20"><br>

Age:<input type="text" name="age" size="20"><br>

<!--Click on the submit button, and the form will be submitted using the POST method.-->

<input type="submit" value="Submit">

</form>
```

```
<p>Click on the submit button, and the form will be submitted using the POST method.</p>
</body>
<!--Body content Ends-->
</html>
```

### **action\_page.php**

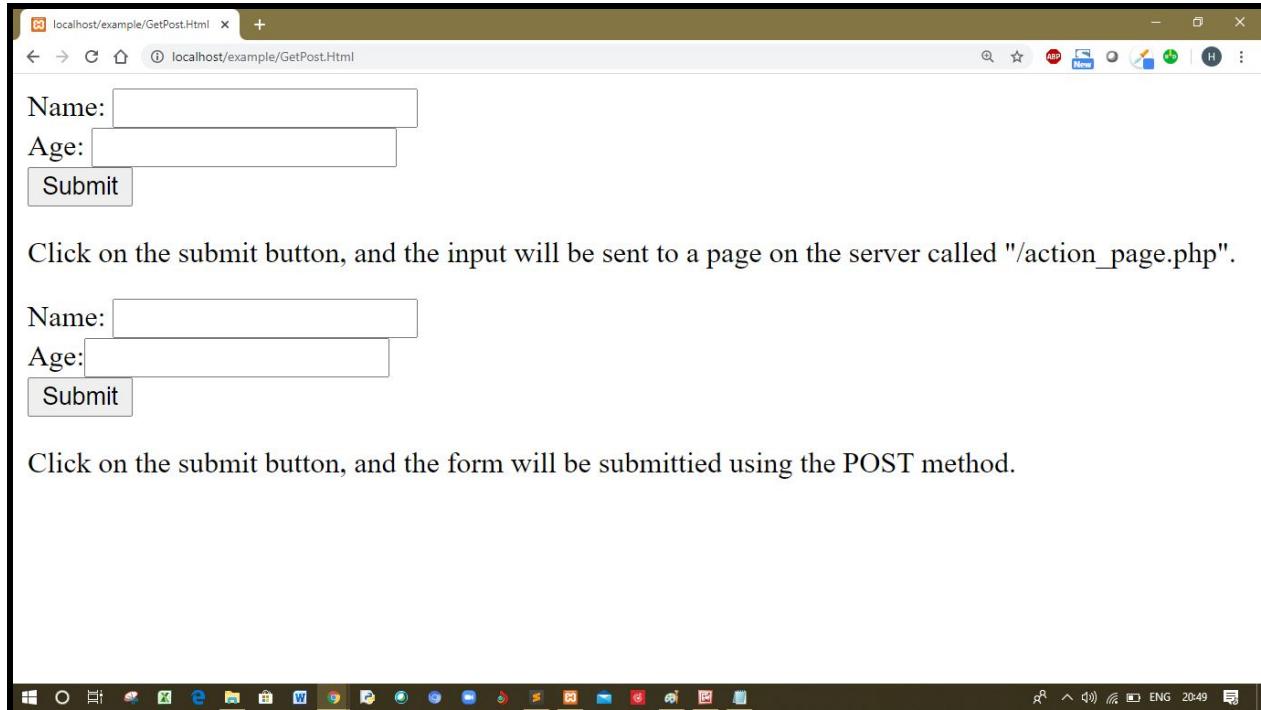
```
<?php
if( isset($_GET["fname"]) && isset($_GET["age"] ))
{
//Display Name and Age in Get Method
echo "Welcome ". $_GET['fname']. "<br />";
echo "You are ". $_GET['age']. " years old.";
exit();
}
?>
```

```
<?php
if( isset($_POST["fname"]) && isset($_POST["age"] ))
{
//Display Name and Age in POST Method
echo "Welcome ". $_POST['fname']. "<br />";
```

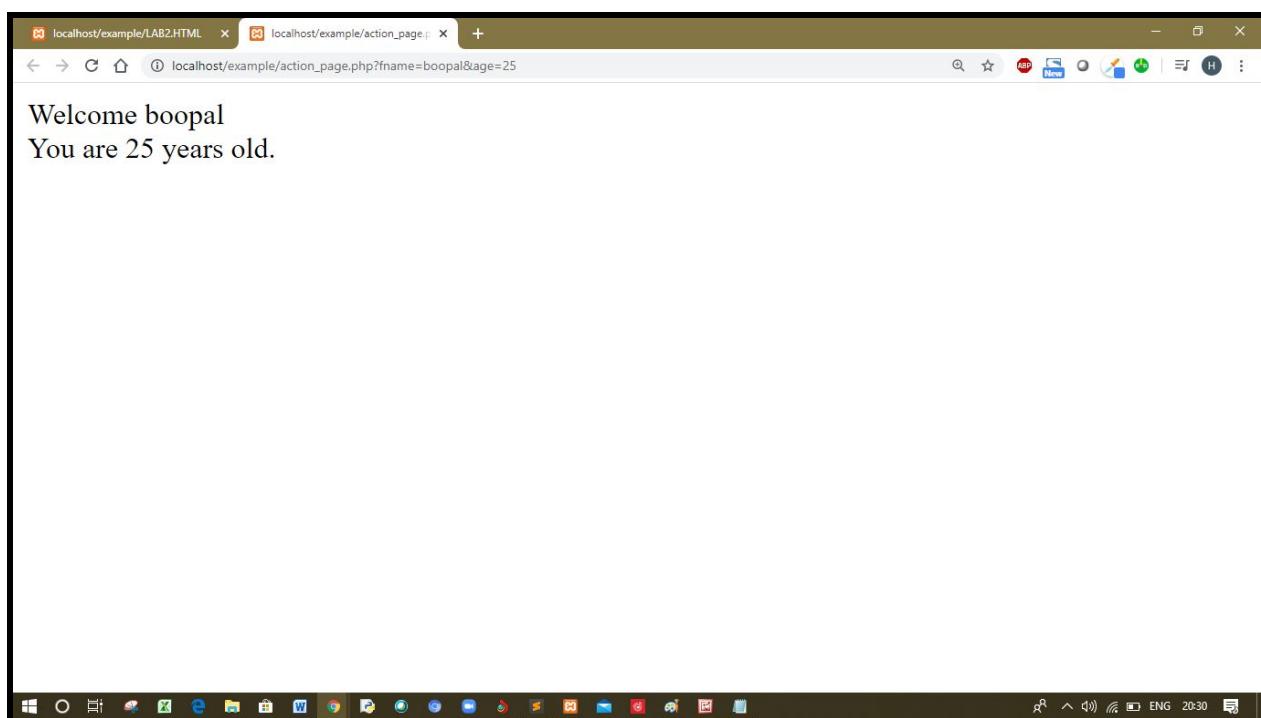
---

```
echo "You are ". $_POST['age']. " years old.";  
exit();  
}  
?>
```

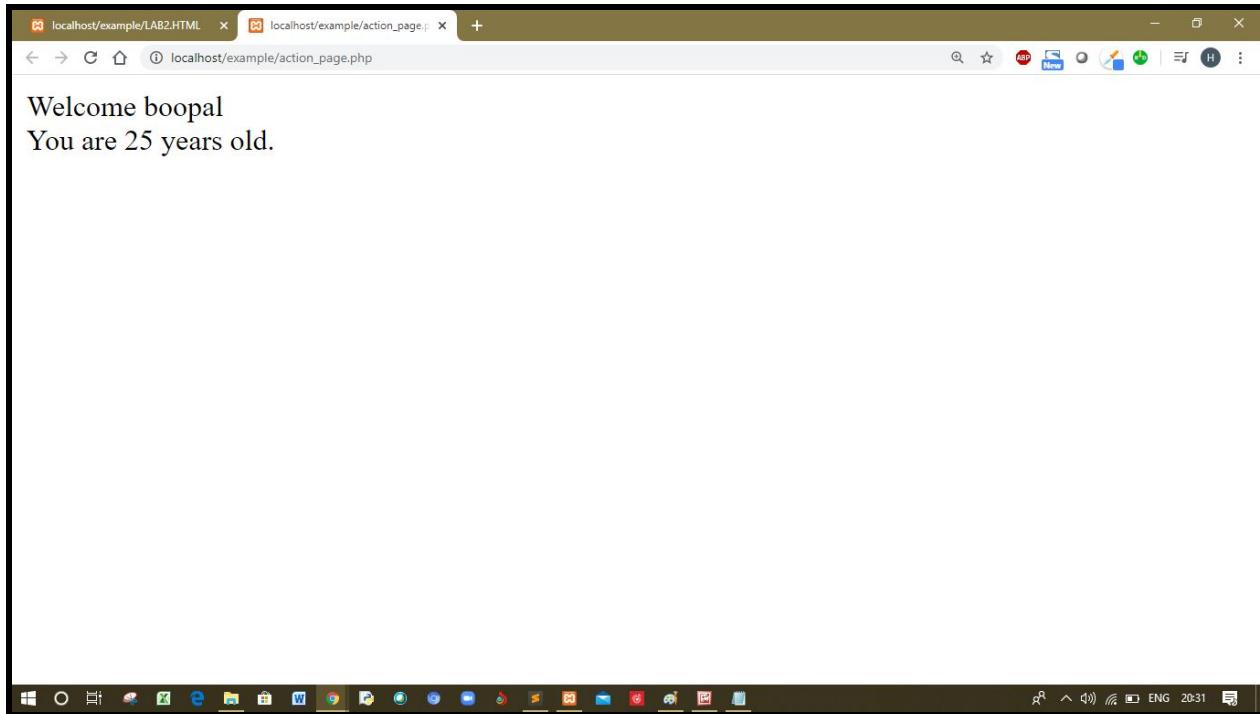
**Output/Results snippet:**



### GET Method URL



## POST Method URL



## References:

- <https://www.guru99.com/php-forms-handling.html>

---

## Activity 3

**Aim:** Obtain input from users. (5 Hrs)

**Learning outcome:** Able to understand how the web works.

**Duration:** 5 hours

### List of Hardware/Software requirements:

1. Windows/Ubuntu OS.....
2. Text Editors- Notepad++, Sublime Text,etc..
3. XAMPP/LAMP Server Setup
4. Browser

### Code/Program/Procedure (with comments):

#### Users.html

```
<html>
  <head>
    <title> Users </title>
  </head>
  <!--Body Content Starts-->
  <body>
    <form action="retrieve.php" method="post">
      Username: <input type="text" name="username" value="" /><br>
      Password: <input type="password" name="password" value= "" /><br>
    <!--If you click the "Submit" button, the form-data will be sent to a page called
    "/retrieve.php"-->
```

```
<input type="submit" name="submit" value="Submit" />

<p>If you click the "Submit" button, the form-data will be sent to a page called
"/retrieve.php".</p>

</form>

</body>

<!--Body Content Ends-->

</html>
```

### **retrieve.php**

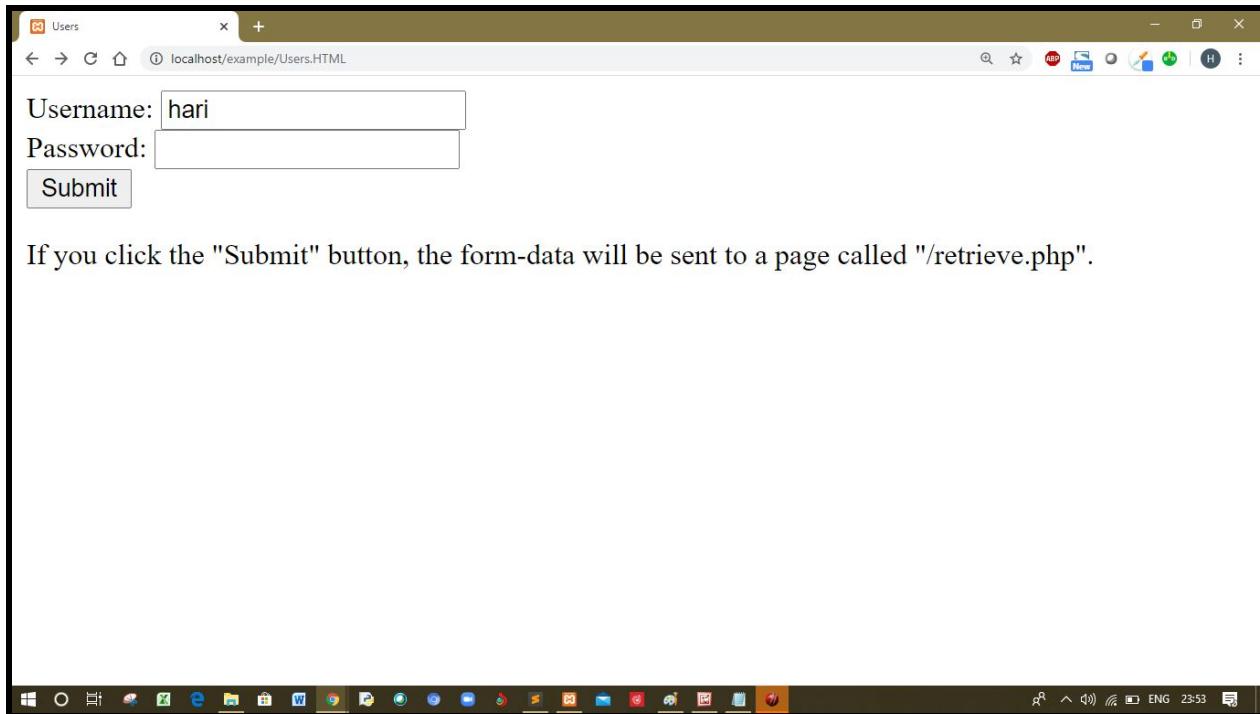
```
<?php

//Display user Details

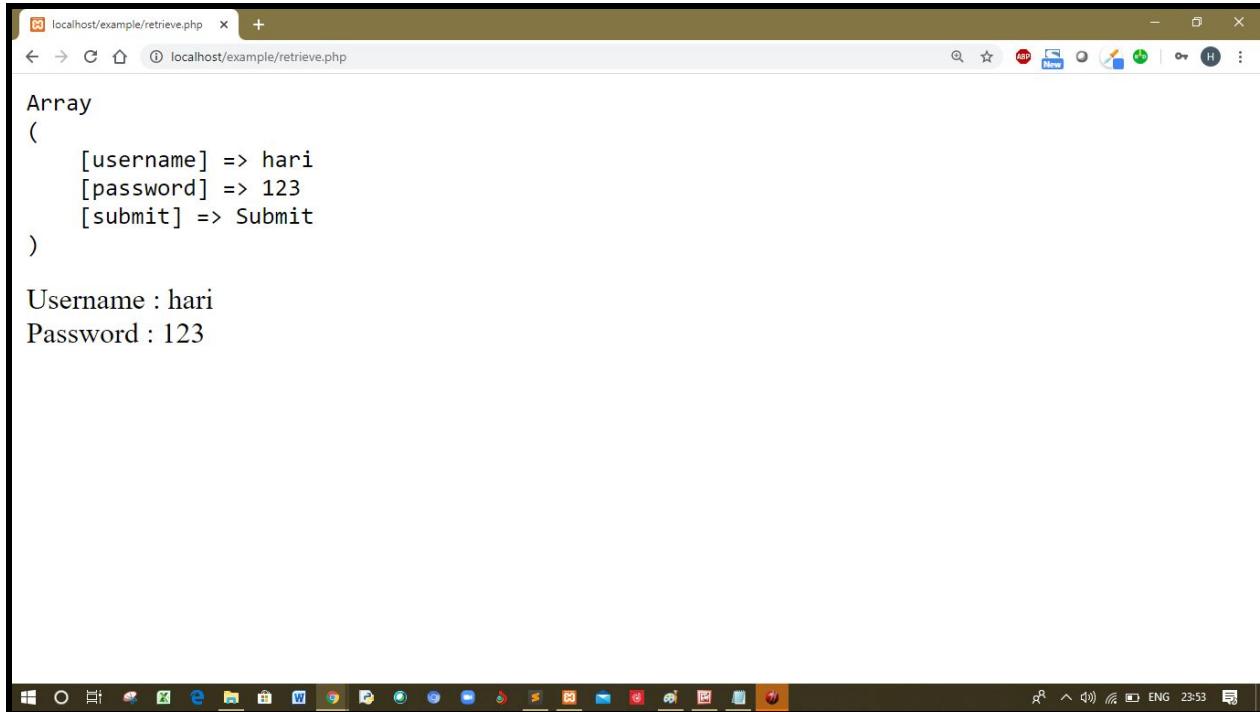
echo "<pre>";
print_r($_POST);
echo "</pre>";
echo "Username : {$_POST['username']}<br>";
echo "Password : {$_POST['password']}";

?>
```

### **Output/Results snippet:**



## Obtain User Details



A screenshot of a Windows desktop environment. In the center is a Microsoft Edge browser window titled "localhost/example/retrieve.php". The page content displays the following PHP code output:

```
Array
(
    [username] => hari
    [password] => 123
    [submit] => Submit
)

Username : hari
Password : 123
```

The desktop taskbar at the bottom shows various pinned icons and the system tray on the right indicates the date and time as "ENG 23:53".

## References:

- <https://www.programming-techniques.com/2012/02/php-tutorial-getting-user-input-in-php-using-html-form.html>

---

## **Learning Outcome 2 - Able to understand structuring the web**

After achieving this learning outcome, a student will be able to understand structuring the web.  
In order to achieve this learning outcome, a student has to complete the following:

1. Divide a webpage into logical sections (1Hr)
2. Set up structure of headings and paragraphs (1Hr)
3. Display computer code with HTML (1Hr)
4. Annotation of images and graphics. (2Hr)
5. Marking abbreviations (1 Hr)
6. Add quotations and citations to web pages (2 Hrs)
7. Embed a webpage within another webpage (2Hrs)
8. Add Flash content within a webpage (3Hrs)
9. Create a data spreadsheet (2 Hrs)
10. Create HTML tables (1Hrs)
11. Optimize HTML table rendering (1Hr)
12. Create collapsible content with HTML (1Hr)
13. Add context menus to a webpage (2Hr)
14. Create dialog boxes with HTML (2Hrs)
15. Add multiple languages into a single webpage (2Hrs)
16. Controlling of HTML line breaking (1Hrs)
17. Mark changes (added and removed text) (2Hrs)
18. Add responsive image to a webpage (3Hrs)
19. Add vector image to a webpage (3Hrs)
20. Add a hit map on top of an image (2Hrs)

---

## Activity 1

**Aim:** Divide a webpage into logical sections (1Hr)

**Learning outcome:** Structuring the web.

**Duration:** 1 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS.....
2. Text Editors- Notepad++, Sublime Text,etc..
3. Browser

**Code/Program/Procedure (with comments):**

**Divide.html**

```
<!DOCTYPE html>

<html>
  <head>
    <meta charset="utf-8">
    <title>My page title</title>
    <link href="https://fonts.googleapis.com/css?family=Open+Sans+Condensed:300|Sonsie+One" rel="stylesheet" type="text/css">
    <link rel="stylesheet" href="style.css">
    <!-- the below three lines are a fix to get HTML5 semantic elements working in old versions of Internet Explorer-->
    <!--[if lt IE 9]>
```

```
<script src="https://cdnjs.cloudflare.com/ajax/libs/html5shiv/3.7.3/html5shiv.js"></script>

<![endif]-->

</head>

<body>

    <!-- Here is our main header that is used across all the pages of our website -->

    <!--Header Starts-->

    <header>

        <h1>Header</h1>

    </header>

    <!--Header Ends-->

    <!--Navigation Menu Starts-->

    <nav>

        <ul>

            <li><a href="#">Home</a></li>

            <li><a href="#">Our team</a></li>

            <li><a href="#">Projects</a></li>

            <li><a href="#">Contact</a></li>

        </ul>

    </nav>

    <!-- A Search form is another common non-linear way to navigate through a website. -->

    <form>

        <input type="search" name="q" placeholder="Search query">

        <input type="submit" value="Go!">


```

```
</form>

</nav>

<!--Navigation Menu Ends-->

<!-- Here is our page's main content -->

<main>

<!-- It contains an article -->

<article>

<h2>Article heading</h2>

<p>Lorem ipsum dolor sit amet, consectetur adipisicing elit. Donec a diam lectus. Set sit amet ipsum mauris. Maecenas congue ligula ac quam viverra nec consectetur ante hendrerit. Donec et mollis dolor. Praesent et diam eget libero egestas mattis sit amet vitae augue. Nam tincidunt congue enim, ut porta lorem lacinia consectetur.</p>

<h3>Subsection</h3>

<p>Donec ut librero sed accu vehicula ultricies a non tortor. Lorem ipsum dolor sit amet, consectetur adipisicing elit. Aenean ut gravida lorem. Ut turpis felis, pulvinar a semper sed, adipiscing id dolor.</p>

<p>Pelientesque auctor nisi id magna consequat sagittis. Curabitur dapibus, enim sit amet elit pharetra tincidunt feugiat nist imperdiet. Ut convallis libero in urna ultrices accumsan. Donec sed odio eros.</p>

<h3>Another subsection</h3>

<p>Donec viverra mi quis quam pulvinar at malesuada arcu rhoncus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. In rutrum accumsan ultricies. Mauris vitae nisi at sem facilisis semper ac in est.</p>

<p>Vivamus fermentum semper porta. Nunc diam velit, adipiscing ut tristique vitae sagittis vel odio. Maecenas convallis ullamcorper ultricies. Curabitur ornare, ligula semper consectetur sagittis, nisi diam iaculis velit, is fringille sem nunc vel mi.</p>
```

```
</article>

<!-- the aside content can also be nested within the main content -->

<aside>
    <h2>Related</h2>
    <ul>
        <li><a href="#">Oh I do like to be beside the seaside</a></li>
        <li><a href="#">Oh I do like to be beside the sea</a></li>
        <li><a href="#">Although in the North of England</a></li>
        <li><a href="#">It never stops raining</a></li>
        <li><a href="#">Oh well...</a></li>
    </ul>
</aside>
</main>

<!-- And here is our main footer that is used across all the pages of our website -->

<footer>
    <p> ©Copyright 2020 All rights Reserved.</p>
</footer>
</body>
</html>
```

**style.css**

```
html, body {  
    margin: 0;  
    padding: 0;  
}  
  
html {  
    font-size: 10px;  
    background-color: #a9a9a9;  
}  
  
body {  
    width: 70%;  
    margin: 0 auto;  
}  
  
/* || typography */  
  
  
h1, h2, h3 {  
    font-family: 'Sonsie One', cursive;  
    color: #2a2a2a;  
}  
  
p, input, li {  
    font-family: 'Open Sans Condensed', sans-serif;  
    color: #2a2a2a;  
}
```

}

```
h1 {  
    font-size: 4rem;  
    text-align: center;  
    color: white;  
    text-shadow: 2px 2px 10px black;  
}
```

```
h2 {  
    font-size: 3rem;  
    text-align: center;  
}  
  
h3 {
```

```
    font-size: 2.2rem;  
}  
  
p, li {
```

```
    font-size: 1.6rem;  
    line-height: 1.5;  
}  
  
/* || header layout */
```

```
nav, article, aside, footer {  
    background-color: white;
```

```
padding: 1%;  
}  
  
nav {  
height: 50px;  
background-color: #ff80ff;  
display: flex;  
margin-bottom: 10px;  
}  
  
nav ul {  
padding: 0;  
list-style-type: none;  
flex: 2;  
display: flex;  
}  
  
nav li {  
display: inline;  
text-align: center;  
flex: 1;  
}  
  
nav a {  
display: inline-block;  
font-size: 2rem;
```

```
text-transform: uppercase;  
text-decoration: none;  
color: black;  
}
```

```
nav form {  
flex: 1;  
display: flex;  
align-items: center;  
height: 100%;  
padding: 0 2em;  
}
```

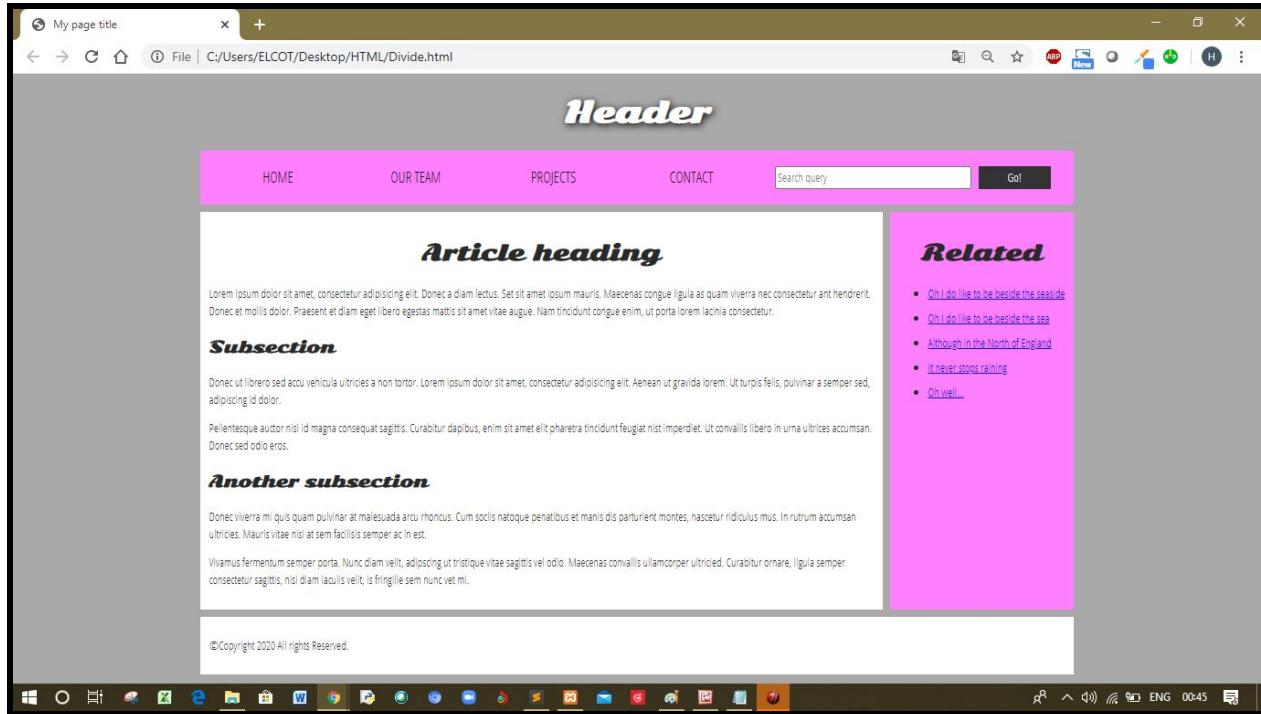
```
input {  
font-size: 1.6rem;  
height: 32px;  
}
```

```
input[type="search"] {  
flex: 3;  
}
```

```
input[type="submit"] {  
flex: 1;  
margin-left: 1rem;  
background: #333;
```

```
border: 0;  
color: white;}  
  
/* || main layout */  
  
main {  
    display: flex;  
}  
  
article {  
    flex: 4;  
}  
  
aside {  
    flex: 1;  
    margin-left: 10px;  
    background-color: #ff80ff;  
}  
  
aside li {  
    padding-bottom: 10px;  
}  
  
footer {  
    margin-top: 10px;  
}
```

**Output/Results snippet:**



## References:

- [https://developer.mozilla.org/enUS/Learn/HTML/Howto/Divide\\_a\\_webpage\\_into\\_logical\\_sections](https://developer.mozilla.org/enUS/Learn/HTML/Howto/Divide_a_webpage_into_logical_sections)

---

## Activity 2

**Aim:** Set up structure of headings and paragraphs (1Hr)

**Learning outcome:** Structuring the web.

**Duration:** 1 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS.....
2. Text Editors- Notepad++, Sublime Text,etc..
3. Browser

**Code/Program/Procedure (with comments):**

```
<html>
  <head>
    <title>Proper Heading and Paragraph</title>
  </head>
  <body>
    <!--Header Starts-->
    <header>
      <h1>Heading 1</h1>
      WEB DEVELOPMENT
    </header>
```

<!--Header Ends-->

```
<nav aria-labelledby="mainnavheader">  
<h2 id="mainnavheader">Navigation Menu</h2>
```

...

```
</nav>
```

<!--Main Content Starts-->

```
<main>
```

<!--Article content Starts-->

```
<article>
```

```
<h2>An inside look at the Heading2</h2>
```

```
<nav aria-labelledby="tocheader">
```

```
<h3 id="tocheader">Table of Contents</h3>
```

...

```
</nav>
```

```
<p>...</p>
```

```
<p>paragraph 1.</p>
```

```
<p>...</p>
```

```
<ul>
```

```
<li>list 1.</li>
```

```
<li>list 2.</li>
```

```
<li>list 3.</li>
```

```
</ul>
```

```
<h3>Cotton Fur</h3>
<p>paragraph 2.</p>
<p>...</p>
<aside aria-labelledby="relatedheader">
<h3 id="relatedheader">Related Articles</h3>
<ul>
<li><a href="#">Related Article Title 1</a></li>
<li><a href="#">Related Article Title 2</a></li>
<li><a href="#">Related Article Title 3</a></li>
</ul>
WEB DEVELOPMENT
</aside>
</article>
<!--Article content Ends-->
<aside aria-labelledby="latestheader">
<h3 id="latestheader">Latest Articles</h3>
<ul>
<li><a href="#">Latest Article Title 1</a></li>
<li><a href="#">Latest Article Title 2</a></li>
<li><a href="#">Latest Article Title 3</a></li>
</ul>
</aside>
```

```
</main>

<!--Main Content Ends-->

<!--Footer Starts-->

<footer>

<p>© paragraph Inc.</p>

</footer>

<!--Footer Ends-->

</body>

</html>
```

**Output/Results snippet:**

## Heading 1

WEB DEVELOPMENT

### Navigation Menu

...

### An inside look at the Heading2

#### Table of Contents

...

...

paragraph 1.

...

- list 1.
- list 2.
- list 3.

#### Cotton Fur

paragraph 2.

...

#### Related Articles

- [Related Article Title 1](#)
- [Related Article Title 2](#)
- [Related Article Title 3](#)

WEB DEVELOPMENT

#### Latest Articles

- [Latest Article Title 1](#)
- [Latest Article Title 2](#)
- [Latest Article Title 3](#)

© paragraph Inc.

# Activity 3

**Aim:** Display computer code with HTML (1Hr)

**Learning outcome:** Structuring the web.

**Duration:** 1 hour

#### List of Hardware/Software requirements:

1. Windows/Ubuntu OS.....
2. Text Editors- Notepad++, Sublime Text,etc..
3. Browser

### Code/Program/Procedure (with comments):

```
<!DOCTYPE html>

<html>
<head>
<title>Code in HTML</title>
<body>
<h2>Computer Code</h2>
<p style="font-weight: bolder;">Some programming code:</p>
<!--Computer Code Starts-->
<code>
x = 5;</br>
y = 6;</br>
z = x + y;
</code>
<!--Computer Code Ends-->
<p style="font-weight: bolder;">C programming code:</p>
<!--Computer Code Starts-->
<pre>
<code>
//C Programming Code
#include<stdio.h>
```

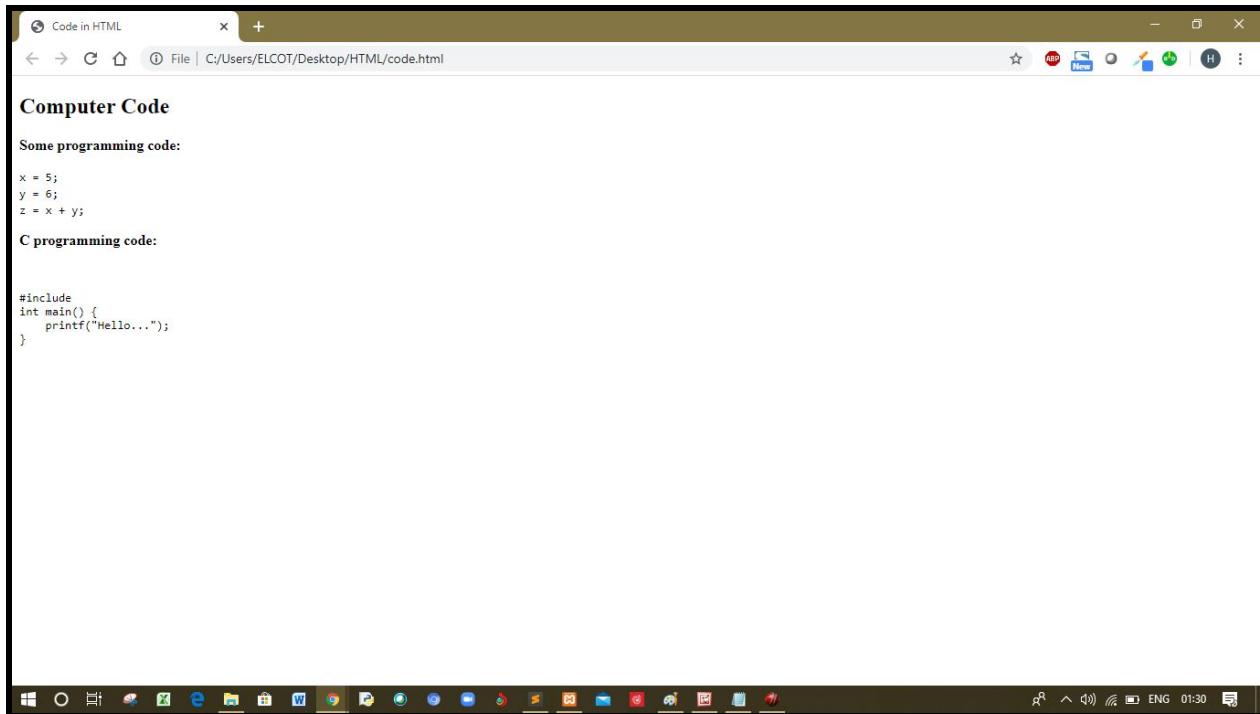
---

```
int main() {  
    printf("Hello... ");  
}  
</code>  
</pre>  
<!--Computer Code Ends-->  
</body>  
</html>
```

**References:**

- <https://www.geeksforgeeks.org/html-computer-code-elements/>

**Output/Results snippet:**



---

## Activity 4

**Aim:** Annotation of images and graphics. (2Hr)

**Learning outcome:** Structuring the web.

**Duration:** 2 hours

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS.....
2. Text Editors- Notepad++, Sublime Text,etc..
3. Browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE HTML>

<html>

<style>

figure{border: 2px solid black; border-style:ridge; }

figcaption{font-family:Arial; padding:10px; background:#fa4b2a; color:#fff; }

</style>

<body>

<!--single Image-->

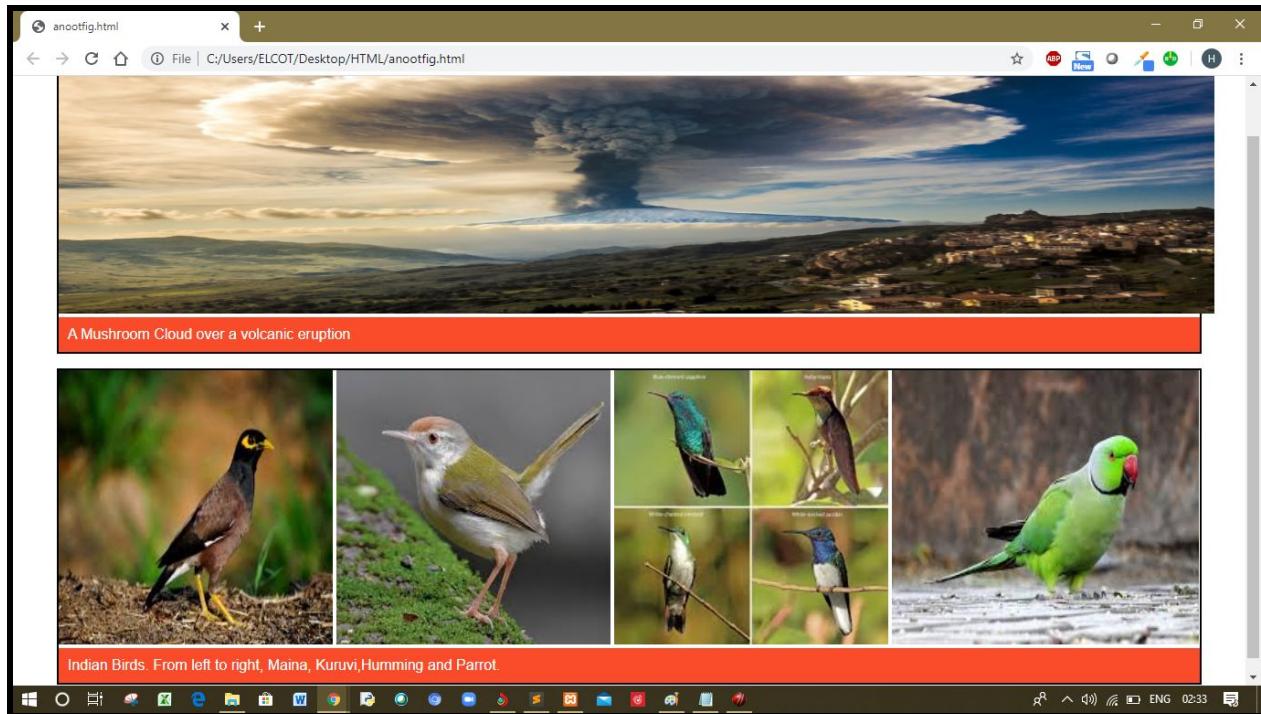
<figure>

 <br>
<figcaption>
A Mushroom Cloud over a volcanic eruption
</figcaption>
</figure>
<!--Multiple Images-->
<figure>




<figcaption>Indian Birds. From left to right, Maina, Kuruvi,Humming and Parrot.</figcaption>
</figure>
</body>
</html>
```

**Output/Results snippet:**



## References:

- [https://developer.mozilla.org/en-US/docs/Learn/HTML/Multimedia\\_and\\_embedding/Images\\_in\\_HTML](https://developer.mozilla.org/en-US/docs/Learn/HTML/Multimedia_and_embedding/Images_in_HTML)

---

## Activity 5

**Aim:** Marking abbreviations (1 Hrs)

**Learning outcome:** Able to Structuring the web.

**Duration:** 1 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS
2. Text Editor- Sublime Text ,Notepad++
3. Browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>
<body>
<p>The <abbr title="World Health Organization">WHO</abbr> was founded in 1948.</p>
</body>
</html>
```

**Output/Results snippet:**



Image1: Marking Abbreviations

## References:

- [https://www.w3schools.com/tags/tag\\_abbr.asp](https://www.w3schools.com/tags/tag_abbr.asp)
- <https://developer.mozilla.org/en-US/docs/Web/HTML/Element/abbr>

---

## Activity 6

**Aim:** Add quotations and citations to web pages (2 Hrs)

**Learning outcome:** Able to Structuring the web.

**Duration:** 2 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS
2. Text Editor- Sublime Text ,Notepad++
3. Browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<body>

<p>Here is a quote from WWF's website:</p>

<blockquote cite="http://www.worldwildlife.org/who/index.html">

For 50 years, WWF has been protecting the future of nature.

The world's leading conservation organization,
WWF works in 100 countries and is supported by
1.2 million members in the United States and
close to 5 million globally.

</blockquote>
```

```
</body>
```

```
</html>
```

### Output/Results snippet:



Here is a quote from WWF's website:

For 50 years, WWF has been protecting the future of nature. The world's leading conservation organization, WWF works in 100 countries and is supported by 1.2 million members in the United States and close to 5 million globally.

Image2: Add quotations and citations to web pages

### References:

- <https://www.geeksforgeeks.org/html-quotations/>
- [https://www.w3schools.com/html/html\\_quotation\\_elements.asp](https://www.w3schools.com/html/html_quotation_elements.asp)

---

## Activity 7

**Aim:** Embed a webpage within another webpage (2Hrs)

**Learning outcome:** Able to Structuring the web.

**Duration:** 2 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS
2. Text Editor- Sublime Text ,Notepad++
3. Browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<body>

<iframe src="https://en.wikipedia.org/wiki/HTML">

<p>Your browser does not support iframes.</p>

</iframe>

</body>

</html>
```

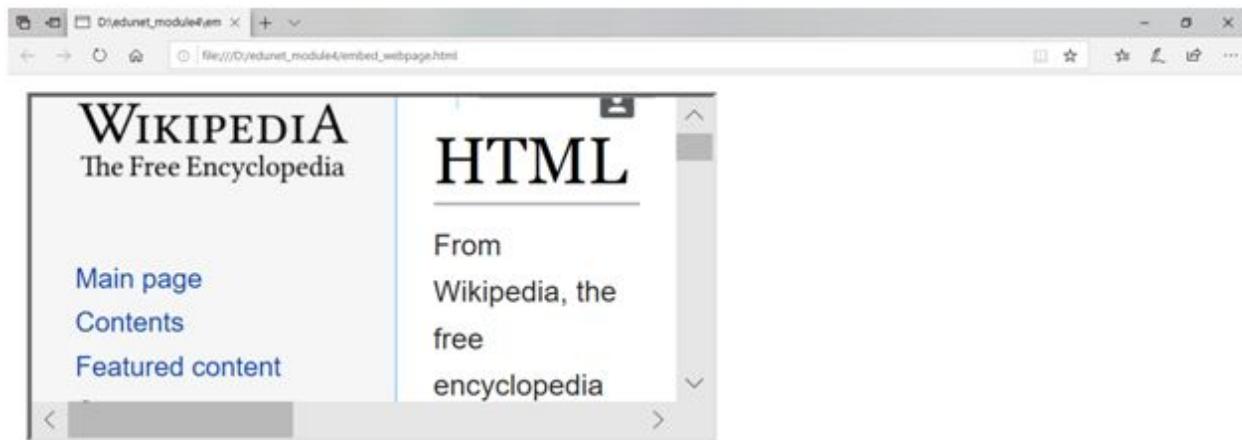
**Output/Results snippet:**

Image3: Embed a webpage within another webpage

**References:**

- <https://atomisystems.com/html5-animation/embedding-html5-project-into-webpage/>
- <https://www.tutorialrepublic.com/html-tutorial/html-iframe.php>

---

## Activity 8

**Aim:** Add Flash content within a webpage (3Hrs)

**Learning outcome:** Able to Structuring the web.

**Duration:** 3 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS
2. Text Editor- Sublime Text ,Notepad++
3. Browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<body>

<embed src="helloworld.swf">

</body>

</html>
```

**Output/Results snippet:**

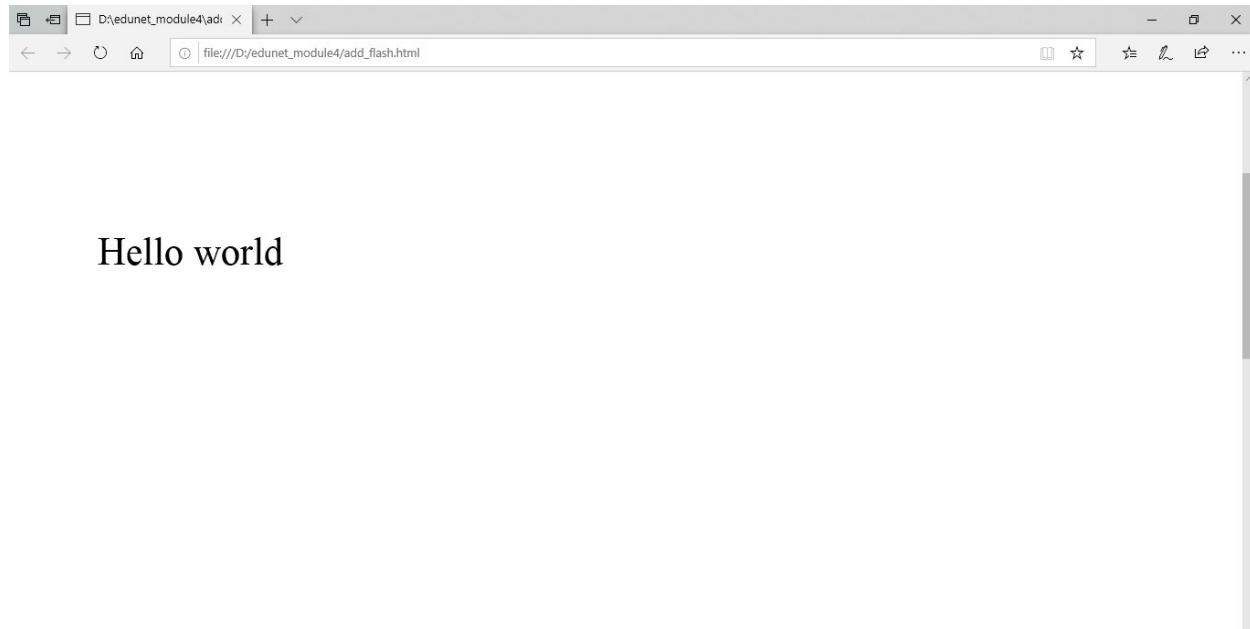


Image4: Add Flash content within a webpage

## References:

- <https://my.bluehost.com/hosting/help/flash-files>
- <https://www.inmotionhosting.com/support/website/inserting-flash-into-html/>

---

## Activity 9

**Aim:** Create a data spreadsheet (2 Hrs)

**Learning outcome:** Able to Structuring the web.

**Duration:** 2 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS
2. Text Editor- Sublime Text ,Notepad++
3. Browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<script type="text/javascript">

function createCSV() {

csvRows = [["label first","details of label 1"], ["label sec","details of label 2"], ["label 3","details of label 3"], ["label 4","details of label 4 and 3"], ["label 5","details of label 5"], ["label 6","details of label 6"], ["label 7","details of label 7"], ["label 8","details of label 8"], ["label 9","details of label 9"]];

var csvString = csvRows.join("%0A");

var a = document.createElement('a');

a.href = 'data:attachment/csv,' + csvString;
```

```
a.target = '_blank';

a.download = 'myFile.csv';

document.body.appendChild(a);

a.click();

}

</script>

<body>

<form action="" method="post">

<input type="button" value="Create" >

</form>

</body>

</html>
```

**Output/Results snippet:**

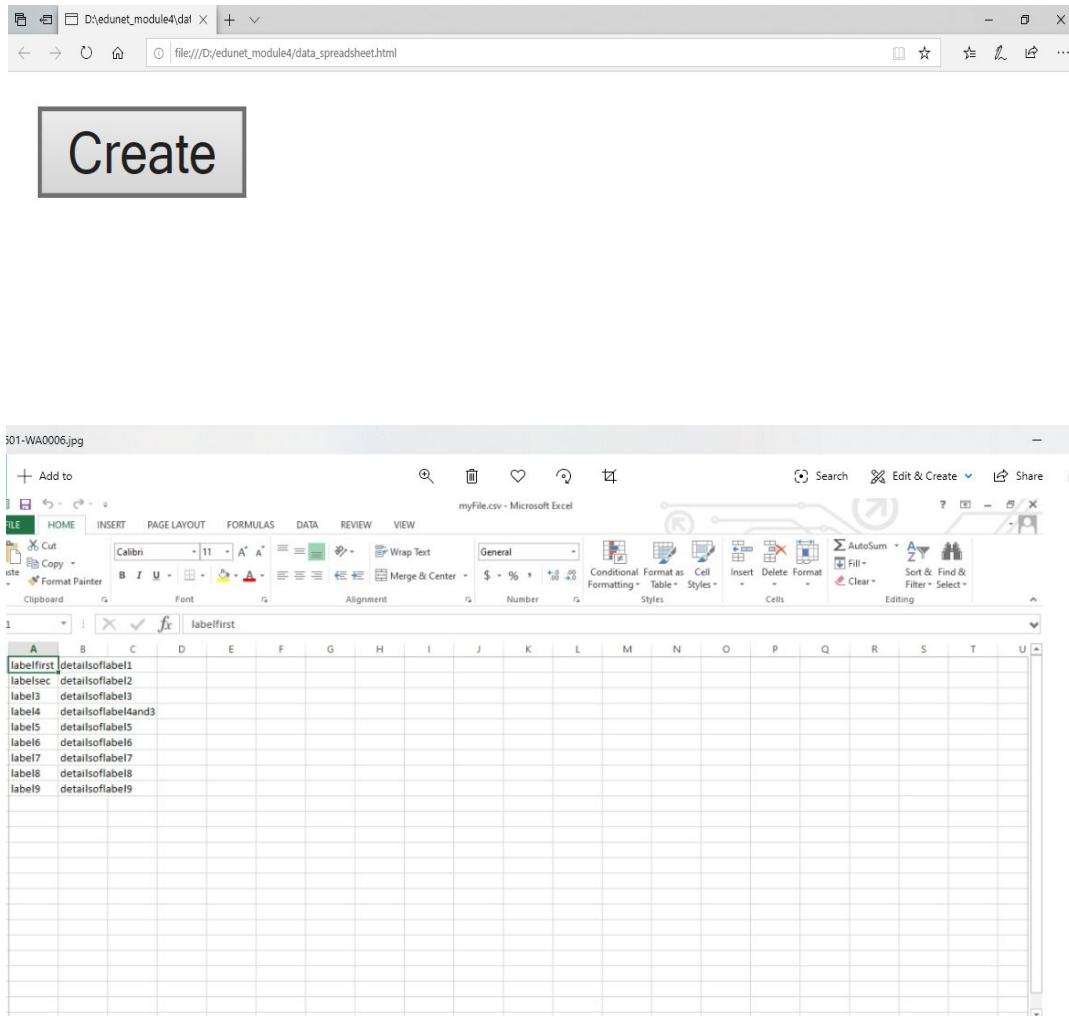


Image5: Create a data spreadsheet

### References:

- <https://www.codeproject.com/Questions/1116401/Insert-data-into-CSV-file-using-javascript>
  - <https://stackoverflow.com/questions/22550858/how-to-write-csv-file-using-javascript>

---

## Activity 10

**Aim:** Create HTML tables (1Hrs)

**Learning outcome:** Able to Structuring the web.

**Duration:** 1 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS
2. Text Editor- Sublime Text ,Notepad++
3. Browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<style>

table {

    font-family: arial, sans-serif;

    border-collapse: collapse;

    width: 100%;

}

td, th {
```

```
border: 1px solid #dddddd;  
text-align: left;  
padding: 8px;  
}
```

```
tr:nth-child(even) {  
background-color: #dddddd;  
}  
</style>  
</head>  
<body>
```

## <h2>HTML Table</h2>

```
<table>  
<tr>  
<th>Company</th>  
<th>Contact</th>  
<th>Country</th>  
</tr>  
<tr>  
<td>Alfreds Futterkiste</td>
```

---

```
<td>Maria Anders</td>
<td>Germany</td>
</tr>
<tr>
    <td>Centro comercial Moctezuma</td>
    <td>Francisco Chang</td>
    <td>Mexico</td>
</tr>
<tr>
    <td>Ernst Handel</td>
    <td>Roland Mendel</td>
    <td>Austria</td>
</tr>
<tr>
    <td>Island Trading</td>
    <td>Helen Bennett</td>
    <td>UK</td>
</tr>
<tr>
    <td>Laughing Bacchus Winecellars</td>
    <td>Yoshi Tannamuri</td>
    <td>Canada</td>
```

```
</tr>
<tr>
<td>Magazzini Alimentari Riuniti</td>
<td>Giovanni Rovelli</td>
<td>Italy</td>
</tr>
</table>

</body>
</html>
```

**Output/Results snippet:**



## HTML Table

Company	Contact	Country
Alfreds Futterkiste	Maria Anders	Germany
Centro comercial Moctezuma	Francisco Chang	Mexico
Ernst Handel	Roland Mendel	Austria
Island Trading	Helen Bennett	UK
Laughing Bacchus Winecellars	Yoshi Tannamuri	Canada
Magazzini Alimentari Riuniti	Giovanni Rovelli	Italy

Image6: HTML Table

## References:

- [https://www.w3schools.com/html/html\\_tables.asp](https://www.w3schools.com/html/html_tables.asp)
- <https://www.tutorialrepublic.com/html-tutorial/html-tables.php>

---

## Activity 11

**Aim:** Optimize HTML table rendering (1Hr)

**Learning outcome:** Able to Structuring the web.

**Duration:** 1 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS
2. Text Editor- Sublime Text ,Notepad++
3. Browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<style>

table, th, td {

border: 1px solid black;

}

</style>

</head>

<body>

<table>
```

```
<tr>
<th>Month</th>
<th>Savings</th>
<th>Savings for holiday!</th>
</tr>

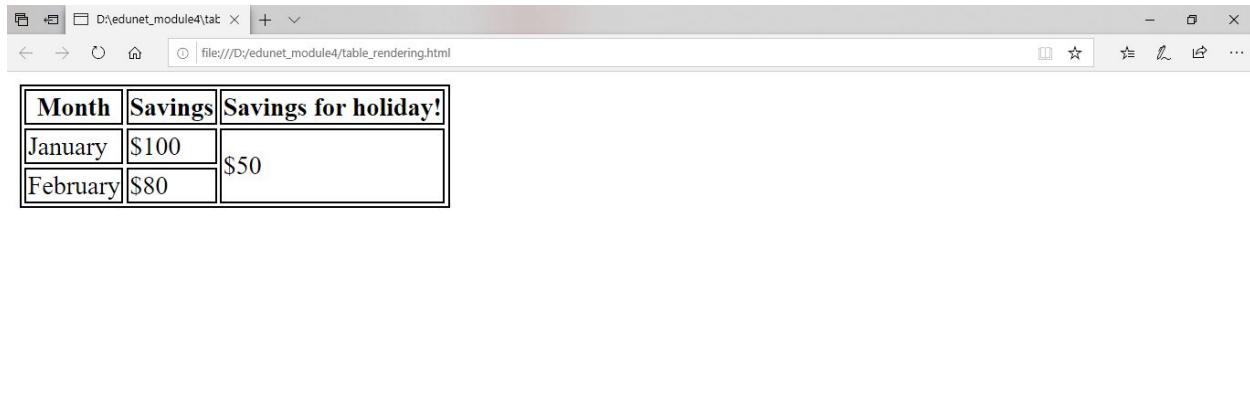
<tr>
<td>January</td>
<td>$100</td>
<td rowspan="2">$50</td>
</tr>

<tr>
<td>February</td>
<td>$80</td>
</tr>

</table>
</body>
</html>
```

**Output/Results snippet:**

---



Month	Savings	Savings for holiday!
January	\$100	
February	\$80	\$50

Image7: Optimize HTML table rendering

## References:

- <https://stackoverflow.com/questions/21531269/optimizing-html-tables>
- <https://seymour.co.za/2017/07/03/html-table/>

---

## Activity 12

**Aim:** Create collapsible content with HTML (1Hr)

**Learning outcome:** Able to Structuring the web.

**Duration:** 1 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS
2. Text Editor- Sublime Text ,Notepad++
3. Browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>
<head>
<meta name="viewport" content="width=device-width, initial-scale=1">
<style>
.collapsible {
background-color: #777;
color: white;
cursor: pointer;
padding: 18px;
width: 100%;
```

```
border: none;  
text-align: left;  
outline: none;  
font-size: 15px;  
}  
.active, .collapsible:hover {  
background-color: #555;  
}  
.content {  
padding: 0 18px;  
display: none;  
overflow: hidden;  
background-color: #f1f1f1;  
}  
</style>  
</head>  
<body>  
<h2>Collapsibles</h2>  
<p>A Collapsible:</p>  
<button class="collapsible">Open Collapsible</button>  
<div class="content">  
<p>Data 1.</p>
```

```
</div>

<p>Collapsible Set:</p>

<button class="collapsible">Open Section 1</button>

<div class="content">

<p>Data 2.</p>

</div>

<button class="collapsible">Open Section 2</button>

<div class="content">

<p>Data 3.</p>

</div>

<button class="collapsible">Open Section 3</button>

<div class="content">

<p>Data 4.</p>

</div>

<script>

var coll = document.getElementsByClassName("collapsible");

var i;

for (i = 0; i < coll.length; i++) {

coll[i].addEventListener("click", function() {

this.classList.toggle("active");

var content = this.nextElementSibling;

if (content.style.display === "block") {
```

```
content.style.display = "none";  
} else {  
    content.style.display = "block";  
}  
});  
}  
  
</script>  
  
</body>  
  
</html>
```

**Output/Results snippet:**



## Collapsibles

A Collapsible:

Open Collapsible

Collapsible Set:

Open Section 1

Open Section 2

Open Section 3

Image8: Create collapsible content with HTML

## References:

<Include at least 1 reference per activity where students can go and explore. Remove this part from your final document.>

- <https://www.w3schools.com/bootstrap/bootstrapCollapse.asp>
- [https://www.w3schools.com/howto/howto\\_js\\_collapsible.asp](https://www.w3schools.com/howto/howto_js_collapsible.asp)

---

## Activity 13

**Aim:** Add context menus to a webpage (2Hr)

**Learning outcome:** Able to Structuring the web.

**Duration:** 2 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS
2. Text Editor- Sublime Text ,Notepad++
3. Browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>
<body>
<p>The <abbr title="World Health Organization">WHO</abbr> was founded in 1948.</p>
</body>
</html>
```

**Output/Results snippet:**



Image 9: Add context menus to a webpage

## References:

- <https://stackoverflow.com/questions/4909167/how-to-add-a-custom-right-click-menu-to-a-webpage>
- [https://www.w3schools.com/jsref/event\\_oncontextmenu.asp](https://www.w3schools.com/jsref/event_oncontextmenu.asp)

---

## Activity 14

**Aim:** Create dialog boxes with HTML (2Hrs)

**Learning outcome:** Able to Structuring the web.

**Duration:** 2 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS
2. Text Editor- Sublime Text ,Notepad++
3. Browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<meta name="viewport" content="width=device-width, initial-scale=1">

<style>

body {font-family: Arial, Helvetica, sans-serif;}

/* The Modal (background) */

.modal {

display: none; /* Hidden by default */

position: fixed; /* Stay in place */

z-index: 1; /* Sit on top */
```

```
padding-top: 100px; /* Location of the box */  
left: 0;  
top: 0;  
width: 100%; /* Full width */  
height: 100%; /* Full height */  
overflow: auto; /* Enable scroll if needed */  
background-color: rgb(0,0,0); /* Fallback color */  
background-color: rgba(0,0,0,0.4); /* Black w/ opacity */  
}  
/* Modal Content */  
.modal-content {  
background-color: #fefefe;  
margin: auto;  
padding: 20px;  
border: 1px solid #888;  
width: 80%;  
}  
/* The Close Button */  
.close {  
color: #aaaaaa;  
float: right;  
font-size: 28px;
```

```
font-weight: bold;  
}  
.close:hover,  
.close:focus {  
color: #000;  
text-decoration: none;  
cursor: pointer;  
}  
</style>  
</head>  
<body>  
<h2>Modal Example</h2>  
<!-- Trigger/Open The Modal -->  
<button id="myBtn">Open Modal</button>  
<!-- The Modal -->  
<div id="myModal" class="modal">  
<!-- Modal content -->  
<div class="modal-content">  
<span class="close">&times;</span>  
<p>Some text in the Modal..</p>  
</div>  
</div>
```

---

```
<script>

// Get the modal

var modal = document.getElementById('myModal');

// Get the button that opens the modal

var btn = document.getElementById("myBtn");

// Get the <span> element that closes the modal

var span = document.getElementsByClassName("close")[0];

// When the user clicks the button, open the modal

btn.onclick = function() {

  modal.style.display = "block";

}

// When the user clicks on <span> (x), close the modal

span.onclick = function() {

  modal.style.display = "none";

}

// When the user clicks anywhere outside of the modal, close it

window.onclick = function(event) {

  if (event.target == modal) {

    modal.style.display = "none";

  }

}

</script>
```

```
</body>
```

```
</html>
```

### Output/Results snippet:

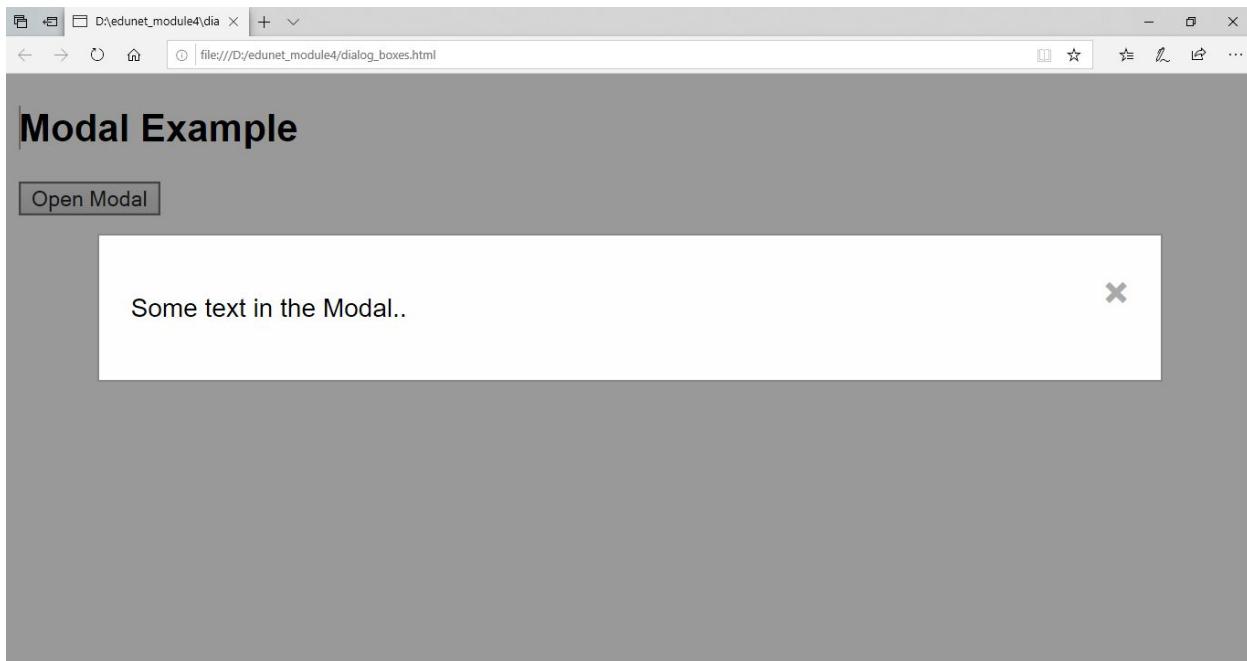


Image10: Create dialog boxes with HTML

### References:

- <https://www.javatpoint.com/html-dialog-tag>
- [https://www.w3schools.com/tags/tag\\_dialog.asp](https://www.w3schools.com/tags/tag_dialog.asp)

---

## Activity 15

**Aim:** Add multiple languages into a single webpage (2Hrs)

**Learning outcome:** Able to Structuring the web.

**Duration:** 2 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS
2. Text Editor- Sublime Text ,Notepad++
3. Browser

**Code/Program/Procedure (with comments):**

```
<!doctype html>

<html lang="en">

<head>

<meta charset="utf-8">

<title>jQuery Language Switcher</title>

<link rel="stylesheet" href="languageswitcher.css">

</head>

<body>

<header>

<h1>jQuery Language Switcher</h1>
```

```
<div id="country-select">  
  <form action="server-side-script.php">  
    <select id="country-options" name="country-options">  
      <option selected="selected" title="http://www.yoursite.com" value="us">United  
        States</option>  
      <option title="http://www.yoursite.co.uk" value="uk">United Kingdom</option>  
      <option title="http://www.yoursite.fr" value="fr">France</option>  
      <option title="http://www.yoursite.de" value="de">Germany</option>  
      <option title="http://www.yoursite.nl" value="nl">Netherlands</option>  
    </select>  
    <input value="Select" type="submit" />  
  </form>  
</div>  
</header>  
<section>  
  <p>For more information, refer to the <a href="/website-language-dropdown-withjquery">original article</a> on graphicpush.</p>  
</section>  
<script src="https://ajax.googleapis.com/ajax/libs/jquery/1.5.0/jquery.min.js"></script>  
<script src="languageswitcher.js"></script>  
</body>  
</html>
```

languageswitcher.css

```
* { margin: 0; padding: 0; }

body {
background: #ccc;
}

header {
display: block;
background: #777;
height: 50px;
position: relative;
min-width: 600px;
}

header h1 {
font: bold 24px Arial, Helvetica, sans-serif;
color: #fff;
position: absolute;
left: 20px;
top: 8px;
}

#country-select {
position: absolute;
```

```
top: 13px;  
right: 0;  
width: 180px;  
}  
  
/* rought form styles for when JS is disabled */  
  
#country-select form {  
width: 180px;  
padding: 0;  
}  
  
#country-select select,  
#country-select input {  
display: inline;  
padding: 0;  
margin: 0;  
}  
  
/* JS-created definition list */  
  
.dropdown dd { position: relative; }  
  
.dropdown a {  
text-decoration: none;  
outline: 0;  
font: 12px Arial, Helvetica, sans-serif;  
display: block;
```

```
width: 130px;  
overflow: hidden;  
}  
.dropdown dt a {  
background: #c45618;  
border: 1px solid #964315;  
padding: 3px 10px 4px 10px;  
-webkit-border-radius: 5px;  
-moz-border-radius: 5px;  
border-radius: 5px;  
color: #fff;  
}  
.dropdown dt a.active {  
background: #db5e18;  
-webkit-border-bottom-left-radius: 0;  
-webkit-border-bottom-right-radius: 0;  
-moz-border-radius-bottomleft: 0;  
-moz-border-radius-bottomright: 0;  
border-bottom-left-radius: 0;  
border-bottom-right-radius: 0;  
border-bottom: 1px dotted #676768;  
-moz-box-shadow: 0 3px 7px rgba(0,0,0,.5);
```

```
-webkit-box-shadow: 0 3px 7px rgba(0,0,0,.5);
box-shadow: 0 3px 7px rgba(0,0,0,.5);
color: #fff;
}

.dropdown dd ul {
background: #814f33;
border: 1px solid #676768;
color: #C5C0B0;
display: none;
position: absolute;
z-index: 999;
top: 0;
left: 0;
padding: 2px 0 5px 0;
list-style: none;
border-top: none;
margin: 0;
-webkit-border-bottom-right-radius: 5px;
-webkit-border-bottom-left-radius: 5px;
-moz-border-radius-bottomright: 5px;
-moz-border-radius-bottomleft: 5px;
border-bottom-right-radius: 5px;
```

```
border-bottom-left-radius: 5px;  
-moz-box-shadow: 0 3px 7px rgba(0,0,0,.5);  
-webkit-box-shadow: 0 3px 7px rgba(0,0,0,.5);  
box-shadow: 0 3px 7px rgba(0,0,0,.5);  
}  
.dropdown dd ul li a {  
padding: 2px 10px;  
}  
.dropdown dd ul li a span,  
.dropdown dt a span {  
float: left;  
width: 16px;  
height: 11px;  
margin: 2px 6px 0 0;  
background-image: url(flags.png);  
background-repeat: no-repeat;  
cursor: pointer;  
}  
.us a span { background-position: 0 0 }  
.uk a span { background-position: -16px 0 }  
.fr a span { background-position: -32px 0 }  
.de a span { background-position: -48px 0 }
```

```
.nl a span { background-position: -64px 0 }

.dropdown dd ul li a em,

.dropdown dt a em {

font-style: normal;

float: left;

width: 100px;

cursor: pointer;

}

.dropdown dd ul li a em {

color: #dbc3b5;

}

.dropdown dd ul li a:hover { background-color: rgba(255,255,255,.1); }

.dropdown dd ul li a:hover em { color: #fff; }

Languageswitcher.js

$(document).ready(function() {

// --- language dropdown --- //

// turn select into dl

createDropDown();

var $dropTrigger = $(".dropdown dt a");

var $languageList = $(".dropdown dd ul");

// open and close list when button is clicked

$dropTrigger.toggle(function() {
```

```
$languageList.slideDown(200);

$dropTrigger.addClass("active");

}, function() {

$languageList.slideUp(200);

$(this).removeAttr("class");

});

// close list when anywhere else on the screen is clicked

$(document).bind('click', function(e) {

var $clicked = $(e.target);

if (! $clicked.parents().hasClass("dropdown"))

$languageList.slideUp(200);

$dropTrigger.removeAttr("class");

});

// when a language is clicked, make the selection and then hide the list

$(".dropdown dd ul li a").click(function() {

var clickedValue = $(this).parent().attr("class");

var clickedTitle = $(this).find("em").html();

$("#target dt").removeClass().addClass(clickedValue);

$("#target dt em").html(clickedTitle);

$languageList.hide();

$dropTrigger.removeAttr("class");

});
```

---

```
});

// actual function to transform select to definition list

function createDropDown(){

var $form = $("div#country-select form");

$form.hide();

var source = $("#country-options");

sourceremoveAttr("autocomplete");

var selected = source.find("option:selected");

var options = $("option", source);

$("#country-select").append('<dl id="target" class="dropdown"></dl>')

$("#target").append('<dt class="' + selected.val() + '"><a href="#"><span

class="flag"></span><em>' + selected.text() + '</em></a></dt>')

$("#target").append('<dd><ul></ul></dd>')

options.each(function(){

$("#target dd ul").append('<li class="' + $(this).val() + '"><a href="' + $(this).attr("title") + '"><span class="flag"></span><em>' + $(this).text() + '</em></a></li>');

});

}
```

## Output/Results snippet:



Image11: Add multiple languages into a single webpage

## References:

- <https://stackoverflow.com/questions/46008760/how-to-build-multiple-language-website-using-pure-html-js-jquery>
- <https://www.freecodecamp.org/forum/t/what-is-the-best-way-to-create-a-multi-language-site/99449>

---

## Activity 16

**Aim:** Controlling of HTML line breaking (1Hrs)

**Learning outcome:** Able to Structuring the web.

**Duration:** 1 hour

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS
2. Text Editor- Sublime Text ,Notepad++
3. Browser

**Code/Program/Procedure (with comments):**

<p> O'er all the hilltops<br>

Is quiet now,<br>

In all the treetops<br>

Hearest thou<br>

Hardly a breath;<br>

The birds are asleep in the trees:<br>

Wait, soon like these<br>

Thou too shalt rest.

</p>

---

## Output/Results snippet:

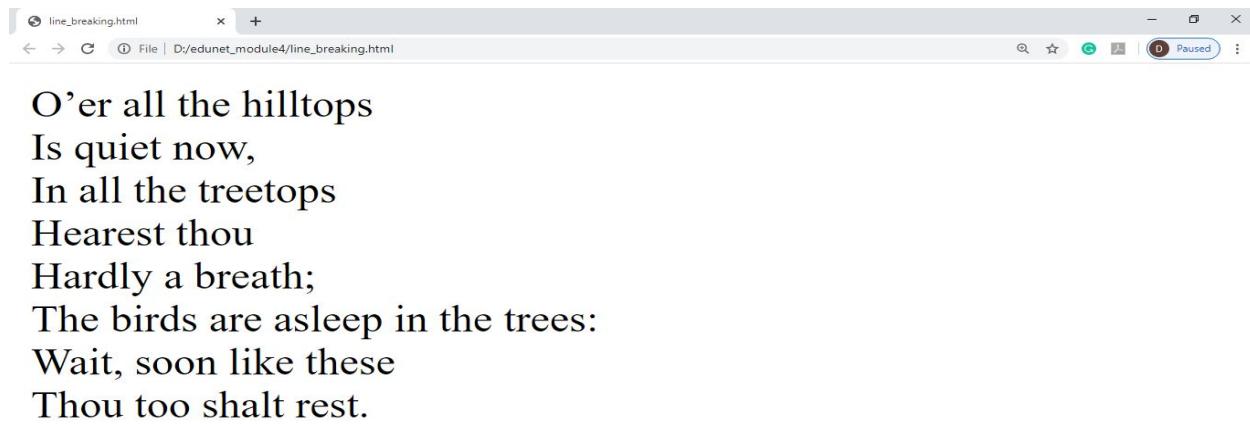


Image12: Controlling of HTML line breaking

## References:

- <https://www.informit.com/articles/article.aspx?p=131028&seqNum=7>
- <https://developer.mozilla.org/en-US/docs/Web/HTML/Element/br>

---

## Activity 17

**Aim:** Mark changes (added and removed text) (2Hrs)

**Learning outcome:** Able to structure the web.

**Duration:** 35 hours

**List of Hardware/Software requirements:**

1. A computer with Windows/Linux/Mac operating system.
2. Any latest browser installed.
3. Any HTML editor (online/pre-installed).

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<body>

<h2>HTML <mark>Marked</mark> Formatting</h2>

<p>The ins element represent inserted (added) text.</p>

<p>My favorite <ins>color</ins> is red.</p>

<p>The del element represents deleted (removed) text.</p>

<p>My favorite color is <del>blue</del> red.</p>

</body>

</html>
```

---

**Output/Results snippet:**

HTML Marked Formatting

The ins element represent inserted (added) text.

My favorite color is red.

The del element represents deleted (removed) text.

My favorite color is blue red.

**References:**

- [https://www.w3schools.com/tags/tag\\_del.asp](https://www.w3schools.com/tags/tag_del.asp)

---

## Activity 18

**Aim:** Add responsive image to a webpage (3Hrs)

**Learning outcome:** Able to structure the web.

**Duration:** 35 hours

**List of Hardware/Software requirements:**

1. A computer with Windows/Linux/Mac operating system.
2. Any latest browser installed.
3. Any HTML editor (online/pre-installed).

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<meta name="viewport" content="width=device-width, initial-scale=1">

<style>

.responsive {           /*creating a class in css and setting rules */

width: 100%;

max-width: 400px;

height: auto;

}

</style>
```

---

```
</head>

<body>

<h2>Responsive Images</h2>

<p>If you want the image to scale both up and down on responsiveness, set the CSS width
property to 100% and height to auto.</p>

<p>Resize the browser window to see the effect.</p>



</body>      <!-- import the image and apply the css class effects -->

</html>
```

### Output/Results snippet:

#### **Responsive Images**

If you want the image to scale both up and down on responsiveness, set the CSS width property to 100% and height to auto.

Resize the browser window to see the effect.



### References:

- [https://www.w3schools.com/howto/howto\\_css\\_image\\_responsive.asp](https://www.w3schools.com/howto/howto_css_image_responsive.asp)

---

## Activity 19

**Aim:** Add vector image to a webpage (3Hrs)

**Learning outcome:** Able to structure the web.

**Duration:** 35 hours

**List of Hardware/Software requirements:**

1. A computer with Windows/Linux/Mac operating system.
2. Any latest browser installed.
3. Any HTML editor (online/pre-installed).

**Code/Program/Procedure (with comments):**

```
<html>
<body>
<svg width="100" height="100">    <!-- <svg> is a container for svg graphics -->
<circle cx="50" cy="50" r="40" stroke="green" stroke-width="4" fill="yellow" />
Sorry, your browser does not support inline SVG.
<!-- if circle is not displayed then this text will show -->
</svg>
</body>
</html>
```

---

**Output/Results snippet:****References:**

- [https://www.w3schools.com/html/html5\\_svg.asp](https://www.w3schools.com/html/html5_svg.asp)

---

## Activity 20

**Aim:** Add a hit map on top of an image (2Hrs)

**Learning outcome:** Able to structure the web.

**Duration:** 35 hours

**List of Hardware/Software requirements:**

1. A computer with Windows/Linux/Mac operating system.
2. Any latest browser installed.
3. Any HTML editor (online/pre-installed).

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<body>

<p>Click on the sun or on one of the planets to watch it closer:</p>



<map name="planetmap">

<area shape="rect" coords="0,0,82,126" alt="Sun" href="sun.htm">

<area shape="circle" coords="90,58,3" alt="Mercury" href="mercur.htm">

<area shape="circle" coords="124,58,8" alt="Venus" href="venus.htm">

</map>

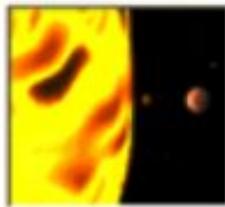
</body>
```

---

</html>

**Output/Results snippet:**

Click on the sun or on one of the planets to watch it closer:



**References:**

- [https://www.w3schools.com/tags/tag\\_map.asp](https://www.w3schools.com/tags/tag_map.asp)

---

## **Learning Outcome 3 - Able to understand Scripting and styling the web**

After achieving this learning outcome, a student will be able to understand structuring the web.  
In order to achieve this learning outcome, a student has to complete the following:

1. Apply CSS within a webpage (2Hrs)
2. Apply CSS to HTML (3 Hrs)
3. Select elements via element name, class or ID (2 Hrs)
4. Select elements via attribute name and content (1 Hrs)
5. Apply pseudo-elements (2 Hrs)
6. Specify colors in CSS (2 Hrs)
7. Debug CSS in the browser (1 Hrs)
8. Style text and customize a list of elements (2Hrs)
9. Add shadows to text (2 Hrs)
10. Size CSS boxes (2Hrs)
11. Control overflowing content (1 Hr)
12. Control the part of a CSS box to draw the background (2 Hrs)
13. Create fancy boxes (also see the Styling boxes module, generally). (2Hrs)
14. Use background-clip to control background image ( 1Hrs)
15. Change the box model completely using box- sizing (2Hrs)
16. Control backgrounds (3 Hrs)
17. Apply control borders(2Hrs)
18. Style an HTML table (3 Hrs)
19. Add shadows to boxes (2 Hrs)
20. Calculate specificity of a CSS selector (3Hrs)
21. Control inheritance in CSS (2 Hrs)
22. Apply filters in CSS (2Hrs)
23. Apply blend modes in CSS (1Hr)
24. Apply CSS multi-column layouts (3Hrs)
25. Apply CSS generated content (2Hrs)

---

## Activity 1

**Aim:** Apply CSS within a webpage (2Hrs)

**Learning outcome:** Able to script and style the web.

**Duration:** 50 hours

**List of Hardware/Software requirements:**

1. A computer with Windows/Linux/Mac operating system.
2. Any latest browser installed.
3. Any HTML editor (online/pre-installed).

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<style>

body {background-color: powderblue;}      /* setting background color for body element */

h1 {color: blue;}                      /* setting color for h1 element */

p {color: red;}                        /* setting color for paragraph element */

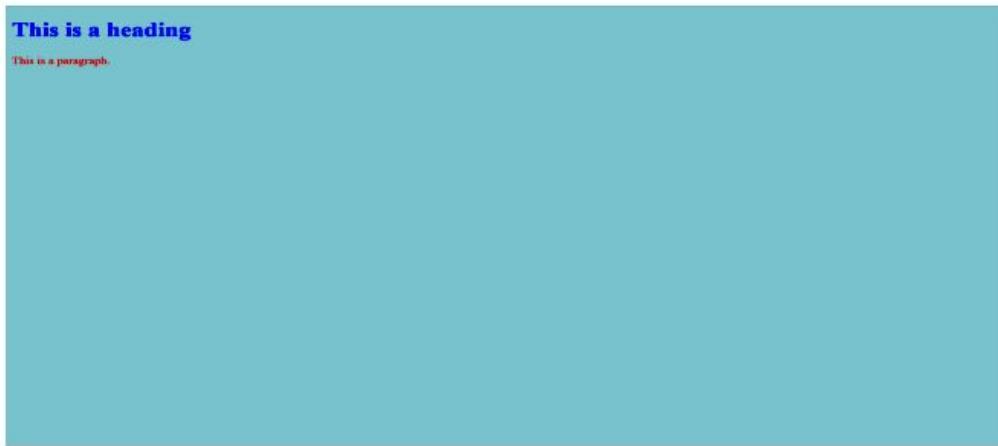
</style>

</head>

<body>

<h1>This is a heading</h1>
```

```
<p>This is a paragraph.</p>
</body>
</html>
```

**Output/Results snippet:****References:**

- [https://www.w3schools.com/html/html\\_css.asp](https://www.w3schools.com/html/html_css.asp)

---

## Activity 2

**Aim:** Apply CSS to HTML

**Learning outcome:** Able to script and style the web.

**Duration:** 50 hours

**List of Hardware/Software requirements:**

1. A computer with Windows/Linux/Mac operating system.
2. Any latest browser installed.
3. Any HTML editor (online/pre-installed).

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<link rel="stylesheet" href="style.css">      <!-- Linking the external .css file to this html doc-->

</head>

<body>

<h1>This is a heading</h1>

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

</body>

</html>
```

## style.css

```
/* here only the css rules are coded and this file need to be imported in html file for use */
```

```
body {  
background-color: powderblue;  
}  
  
h1 {  
color: blue;  
}  
  
p {  
color: red;  
}
```

### Output/Results snippet:



---

## References:

- [https://www.w3schools.com/html/html\\_css.asp](https://www.w3schools.com/html/html_css.asp)

---

## Activity 3

**Aim:** Select elements via element name, class or ID (2 Hrs)

**Learning outcome:** Able to script and style the web.

**Duration:** 50 hours

**List of Hardware/Software requirements:**

1. A computer with Windows/Linux/Mac operating system.
2. Any latest browser installed.
3. Any HTML editor (online/pre-installed).

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<style>

.center {           /* setting the css rules for center class */

text-align: center;

color: red;

}

</style>

</head>

<body>
```

---

```
<h1 class="center">Red and center-aligned heading</h1> /*applying the effect of class center*/
<p class="center">Red and center-aligned paragraph.</p> /*applying the effect of class center*/
</body>
</html>
```

**Output/Results snippet:**

---

**Red and center-aligned heading**

Red and center-aligned paragraph.

**References:**

- [https://www.w3schools.com/css/css\\_selectors.asp](https://www.w3schools.com/css/css_selectors.asp)

---

## Activity 4

**Aim:** Select elements via attribute name and content (1 Hrs)

**Learning outcome:** Able to script and style the web.

**Duration:** 50 hours

**List of Hardware/Software requirements:**

1. A computer with Windows/Linux/Mac operating system.
2. Any latest browser installed.
3. Any HTML editor (online/pre-installed).

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<style>

input[type="text"] {           /* sets the css rule for textbox element*/
    width: 150px;
    display: block;
    margin-bottom: 10px;
    background-color: yellow;
}
```

---

```
input[type="button"] {      /* sets the css rule for button element*/
width: 120px;
margin-left: 35px;
display: block;
}

</style>

</head>

<body>

<form name="input" action="" method="get">

Firstname:<input type="text" name="Name" value="Peter" size="20">

Lastname:<input type="text" name="Name" value="Griffin" size="20">
```

### Output/Results snippet:

---



The screenshot shows a web page with a form. It has two text input fields labeled "Firstname:" and "Lastname:", both containing the value "Peter". Below the inputs is a button labeled "Example Button". The entire form is enclosed in a light gray border.

### References:

- [https://www.w3schools.com/css/css\\_attribute\\_selectors.asp](https://www.w3schools.com/css/css_attribute_selectors.asp)

---

## Activity 5

**Aim:** Apply pseudo-elements (2 Hrs)

**Learning outcome:** Able to script and style the web.

**Duration:** 50 hours

**List of Hardware/Software requirements:**

1. A computer with Windows/Linux/Mac operating system.
2. Any latest browser installed.
3. Any HTML editor (online/pre-installed).

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<style>

p.intro::first-letter {          /* sets the css rule of intro class for its first-letter */

color: #ff0000;

font-size:200%;

}

</style>
```

---

```
</head>

<body>

<p class="intro">This is an introduction.</p>      /*applying the effects of intro class*/

<p>This is a paragraph with some text. A bit more text even.</p>

</body>

</html>
```

**Output/Results snippet:**

---



This is an introduction.

This is a paragraph with some text. A bit more text even.

**References:**

- [https://www.w3schools.com/css/css\\_pseudo\\_elements.asp](https://www.w3schools.com/css/css_pseudo_elements.asp)

---

## Activity 6

**Aim:** Specify colors in CSS (5 Hrs)

**Learning outcome:** Specify colors in CSS.

**Duration:** 2 hour

**List of Hardware/Software requirements:**

- Visual studio code
- Any One web browser

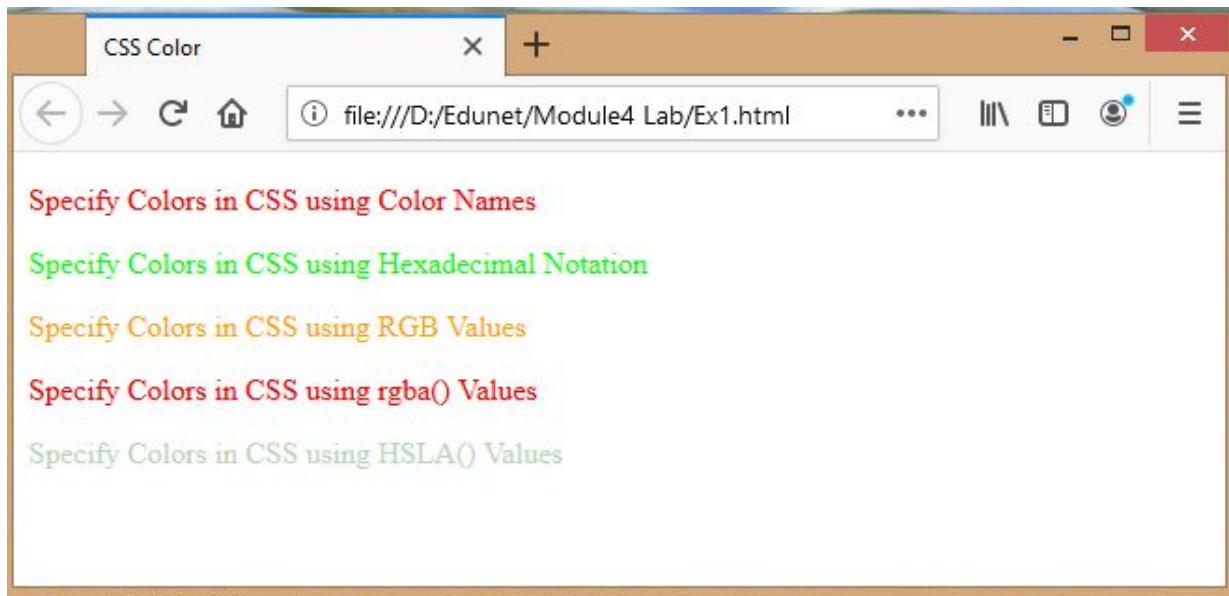
**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="utf-8">
    <title>CSS Color</title>
    <style>
        /* Using Color Name */
        #col {
            color: red;
        }
        /* Using Hexadecimal Color code */
        #hex {
            color: #00ff00;
        }
        /* Using RGB() */
        #rgb {
            color: rgb(255, 165, 0);
        }
        /* Using RGBA() */
        #rgba {
            color: rgba(255, 0, 0, 1);
        }
    </style>
</head>
<body>
    <h1>Hello World</h1>
    <p>This is a sample text.</p>
</body>
</html>
```

---

```
        }
    /* Using HSLA */
    #hsla {
        color: hsla(120, 100%, 25%, 0.3);
    }
</style>
</head>
<body>
<p id="col">Specify Colors in CSS using Color Names</h1>
<p id ="hex">Specify Colors in CSS using Hexadecimal Notation</p>
<p id = "rgb">Specify Colors in CSS using RGB Values</h2>
<p id="rgba">Specify Colors in CSS using rgba() Values</p>
<p id="hsla">Specify Colors in CSS using HSLA() Values</p>
</body>
</html>
```

**Output/Results snippet:**



## References:

- <https://developer.mozilla.org/en-US/docs/Web/CSS>

## Activity 7

**Aim:** Scripting and styling the web (50 Hrs)

**Learning outcome:** Debug CSS in the browser.

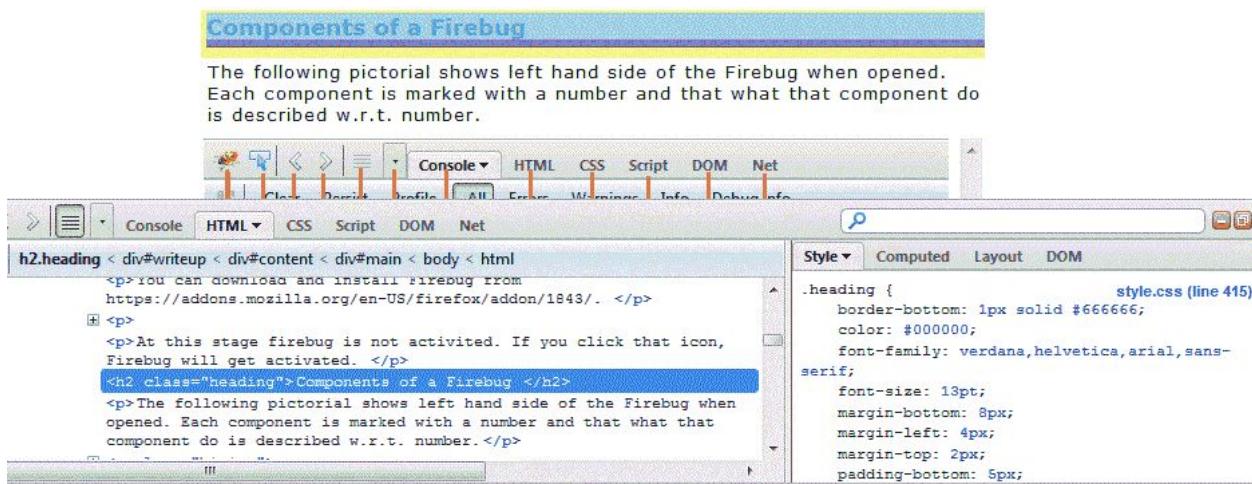
**Duration:** 1 hour

### List of Hardware/Software requirements:

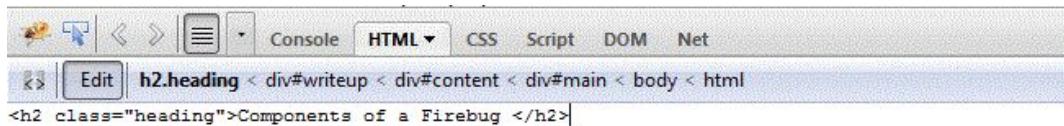
- Visual studio code
- Any One web browser, Mozilla Firefox recommended.

### Code/Program/Procedure (with comments):

- Right click on the element which you want to inspect and click on the **Inspect Element**.



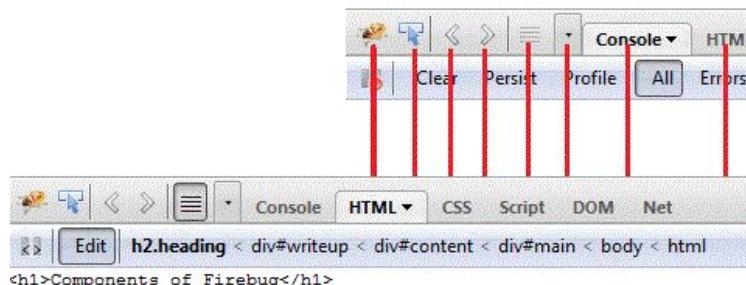
- 
- Click on the **Edit** in the Firebug window now.



- 
- Change the code to <h1>Components of Firebug</h1> .

## Components of Firebug

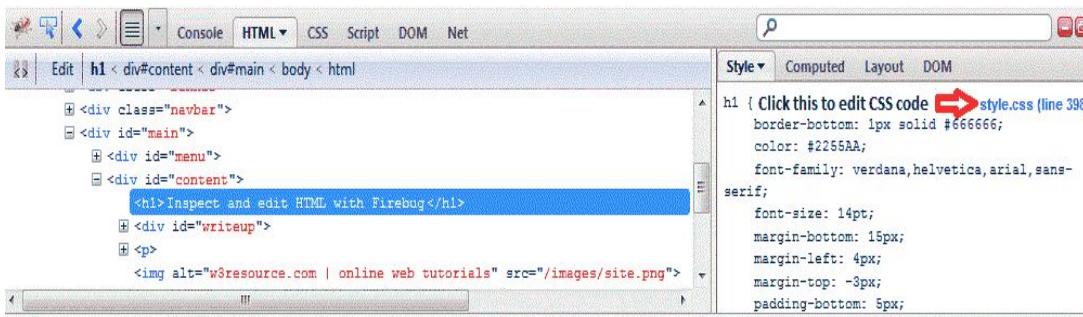
The following pictorial shows left toolbar components of Firebug. Each component is marked with a red vertical line. The function of each component is described w.r.t. number.



As soon as you change the code, you can see the effect live. You can copy the code and then simply paste it replacing the original code and save to make the effect permanent.

## Inspect and edit CSS with Firebug

- Right click on the element which you want to inspect and click on the **Inspect Element**. A then click as shown (scroll the image to right) in the image to open corresponding CSS code.



- Change the color of the heading by changing the code to colour: red;
- You will see the effect live immediately. Now you can simple copy this and replace the original code and save to make the changes permanent



---

### **Output/Results snippet:**

- Edit and save successfully.

### **References:**

- <https://developer.mozilla.org/en-US/docs/Web/CSS>
- [https://developer.mozilla.org/en-US/docs/Tools/Page\\_Inspector/How\\_to/Examine\\_and\\_edit\\_HTML](https://developer.mozilla.org/en-US/docs/Tools/Page_Inspector/How_to/Examine_and_edit_HTML)

---

## Activity 8

**Aim:** Scripting and styling the web (50 Hrs)

**Learning outcome:** Style text and customize a list of elements.

**Duration:** 2 hour

### List of Hardware/Software requirements:

- Visual studio code
- Any One web browser

### Code/Program/Procedure (with comments):

```
<!DOCTYPE html>
<html>

<head>
    <title>CSS Text Color</title>
    <style>
        /* Text Properties*/
        #txt {
            text-align: justify;
            text-indent: 35px;
            text-transform: capitalize;
            letter-spacing: 5px;
            word-spacing: 25px;
            white-space: pre;
            text-shadow: 4px 4px 8px orange;
            font-style: italic;
        }
        /* Unorderd List*/
        ul.unol1 {
            list-style-type: circle;
        }
    </style>
</head>
<body>
    <h1> CSS Text Color </h1>
    <p id="txt"> CSS Text Color </p>
    <ul class="unol1">
        <li> Item 1 </li>
        <li> Item 2 </li>
        <li> Item 3 </li>
    </ul>
</body>
</html>
```

---

```
ul.unol2 {
    list-style-type: square;
}
/* Orderd List */
ol.ol1 {
    list-style-type: upper-roman;
}

ol.ol2 {
    list-style-type: lower-alpha;
}
</style>
</head>

<body>
<p id="txt">
    Hello, this is example of CSS text-align justify type.
    Its like newspaper or book type.
</p>
<p>Example of UnOrdered lists:</p>
<ul class="unol1">
    <li>HTML5</li>
    <li>CSS3</li>
    <li>JAVASCRIPT</li>
</ul>

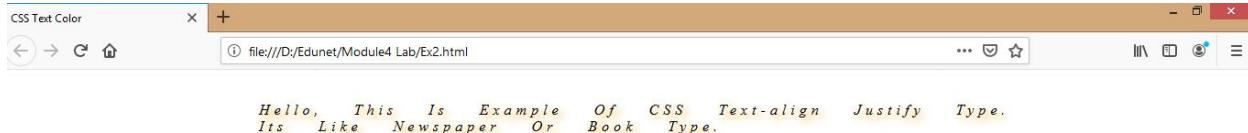
<ul class="unol2">
    <li>Typescript</li>
    <li>Bootstrap</li>
    <li>JQuery</li>
</ul>
<p>Example of ordered lists:</p>
<ol class="ol1">
    <li>C</li>
```

---

```
<li>Java</li>
<li>Python</li>
</ol>
<ol class="ol2">
    <li>Mozilla firefox</li>
    <li>Chromium</li>
    <li>EPIC</li>
</ol>
</body>

</html>
```

**Output/Results snippet:**



Example of UnOrdered lists:

- o HTML5
- o CSS3
- o JAVASCRIPT
- Typescript
- Bootstrap
- JQuery

Example of ordered lists:

- I. C
  - II. Java
  - III. Python
- a. Mozilla firefox
  - b. Chromium
  - c. EPIC

## References:

- <https://developer.mozilla.org/en-US/docs/Web/CSS>

---

## Activity 9

**Aim:** Scripting and styling the web (50 Hrs)

**Learning outcome:** Add shadows to text.

**Duration:** 2 hour

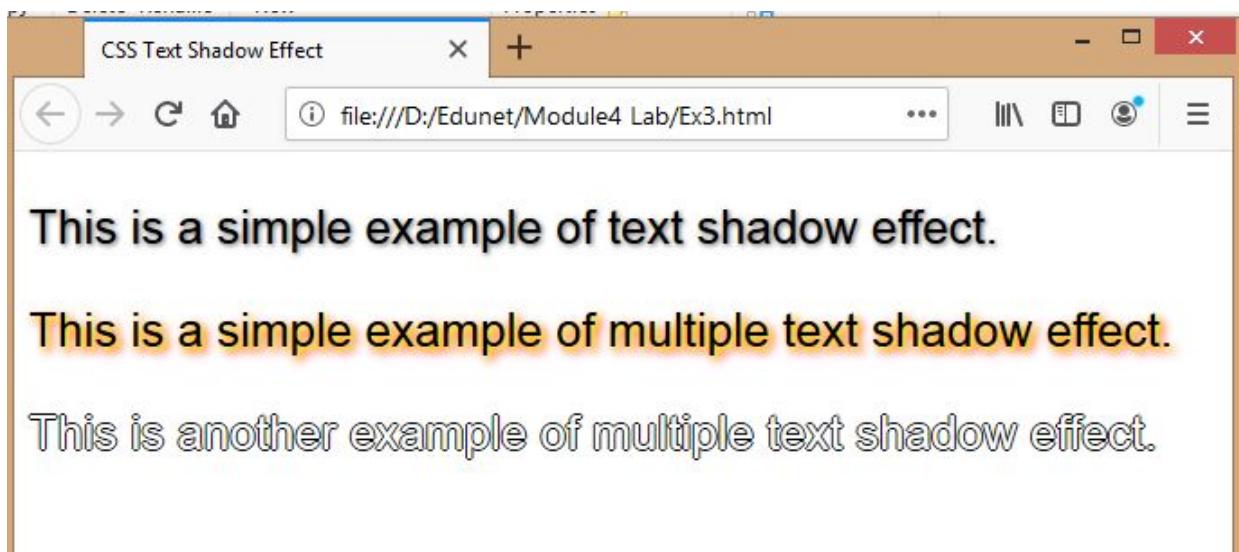
**List of Hardware/Software requirements:**

- Visual studio code
- Any One web browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="utf-8">
<title>CSS Text Shadow Effect</title>
<style>
/* CSS Text Shadow Effect */
p{
    font: 26px sans-serif;
}
p.shadow{
    text-shadow: 1px 1px 2px rgba(0, 0, 0, 0.6);
}
p.shadow-multiple{
    text-shadow: 2px 2px 3px yellow, 3px 3px 5px red;
}
p.shadow-outline{
    color: #fff;
    text-shadow: -1px 0 #000, 0 1px #000, 1px 0 #000, 0 -1px #000;
}
</style>
```

```
</head>
<body>
    <p class="shadow">This is a simple example of text shadow effect.</p>
    <p class="shadow-multiple">This is a simple example of multiple text shadow effect.</p>
    <p class="shadow-outline">this is another example of multiple text shadow effect. </p>
</body>
</html>
```

**Output/Results snippet:****References:**

- <https://developer.mozilla.org/en-US/docs/Web/CSS>

---

## Activity 10

**Aim:** Scripting and styling the web (50 Hrs)

**Learning outcome:** Size CSS boxes.

**Duration:** 2 hour

**List of Hardware/Software requirements:**

- Visual studio code
- Any One web browser

**Code/Program/Procedure (with comments):**

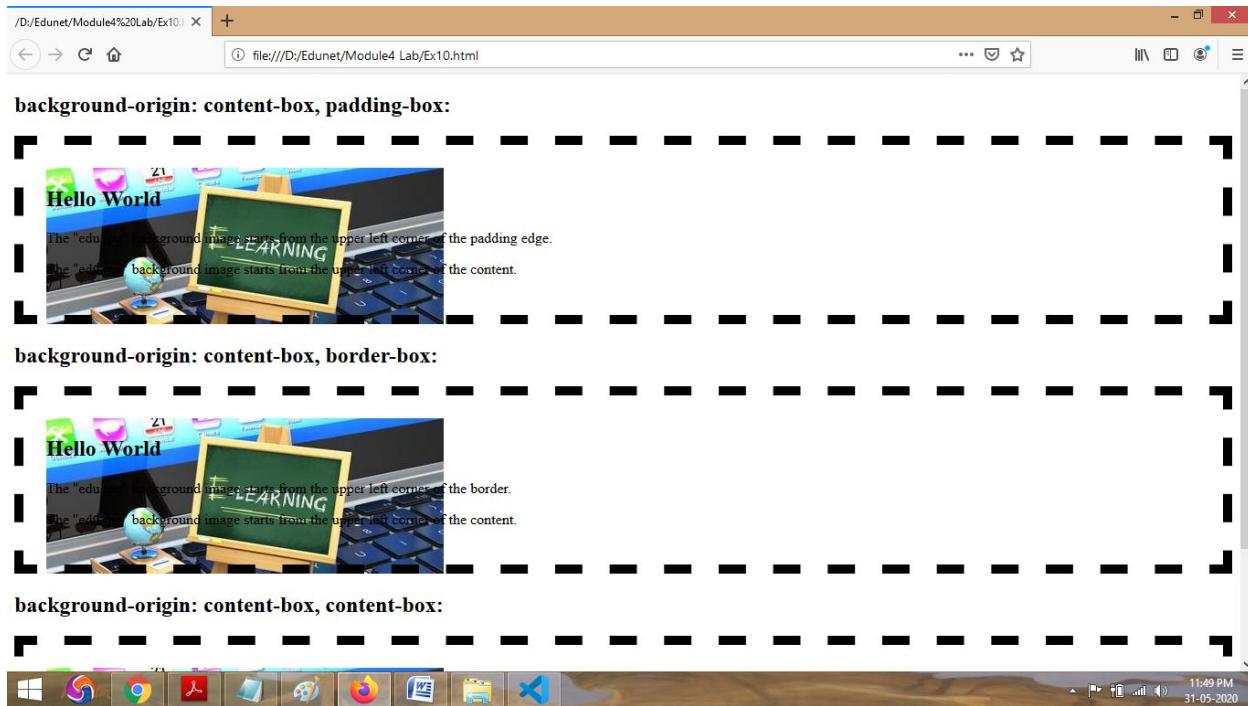
```
<!DOCTYPE html>
<html>
<head>
<style>
/* CSS Box Properties */
#example1 {
    border: 10px dashed black;
    padding: 25px;
    background: url(edu.jpg);
    background-repeat: no-repeat;
    background-origin: content-box, padding-box;
}

#example2 {
    border: 10px dashed black;
    padding: 25px;
    background: url(edu.jpg);
    background-repeat: no-repeat;
    background-origin: content-box, border-box;
}
```

---

```
#example3 {
    border: 10px dashed black;
    padding: 25px;
    background: url(edu.jpg);
    background-repeat: no-repeat;
    background-origin: content-box, content-box;
}
</style>
</head>
<body>
<h2>background-origin: content-box, padding-box:</h2>
<div id="example1">
    <h2>Hello World</h2>
    <p>The "edu.jpg" background image starts from the upper left corner of the padding edge.</p>
    <p>The "edu.jpg" background image starts from the upper left corner of the content.</p>
</div>
<h2>background-origin: content-box, border-box:</h2>
<div id="example2">
    <h2>Hello World</h2>
    <p>The "edu.jpg" background image starts from the upper left corner of the border.</p>
    <p>The "edu.jpg" background image starts from the upper left corner of the content.</p>
</div>
<h2>background-origin: content-box, content-box:</h2>
<div id="example3">
    <h2>Hello World</h2>
    <p>Both background images starts from the upper left corner of the content.</p>
</div>
</body>
</html>
```

## Output/Results snippet:



## References:

- <https://developer.mozilla.org/en-US/docs/Web/CSS>

---

## Activity 11

**Aim:** Scripting and styling the web (50 Hrs)

**Learning outcome:** Control overflowing content.

**Duration:** 1 hour

**List of Hardware/Software requirements:**

- Visual studio code
- Any One web browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>
<html>
<head>
    <style>
/* Overflow – Visible, Hidden, Scroll, Auto */
        #overflow-visible {
            background-color: #cccccc;
            width: 200px;
            height: 50px;
            border: 2px solid red;
            overflow: visible;
        }
        #overflow-hidden {
            background-color: #cccccc;
            width: 200px;
            height: 50px;
            border: 1px solid red;
            overflow: hidden;
        }
        #overflow-scroll {

```

---

```
        background-color: #cccccc;
        width: 200px;
        height: 50px;
        border: 1px solid red;
        overflow: scroll;
    }
    #overflow-auto {
        background-color: #cccccc;
        width: 200px;
        height: 50px;
        border: 1px solid red;
        overflow: auto;
    }
</style>
</head>

<body>

<h2>This is CSS Overflow!</h2>
<p>See the extra content visible out of the element.</p>
<div id="overflow-visible">overflow-visible. </div>
<h2>This is CSS Overflow (hidden)!</h2>
<p>See the extra content out of the element?</p>
<div id="overflow-hidden">overflow-hidden.</div>
<h2>This is CSS Overflow (scroll)!</h2>
<p>See a new scroll bar?</p>
<div id="overflow-scroll">overflow-scroll</div>
<h2>This is CSS Overflow (scroll)!</h2>
<p>See a new vertical scroll bar?</p>
<div id="overflow-auto">overflow-auto</div>
</body>
</html>
```

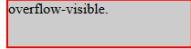
**Output/Results snippet:**



### This is CSS Overflow!

See the extra content visible out of the element.

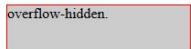
overflow-visible.



### This is CSS Overflow (hidden)!

See the extra content out of the element?

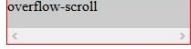
overflow-hidden.



### This is CSS Overflow (scroll)!

See a new scroll bar?

overflow-scroll



### This is CSS Overflow (scroll)!

See a new vertical scroll bar?

overflow-auto



## References:

- <https://developer.mozilla.org/en-US/docs/Web/CSS>

---

## Activity 12

**Aim:** Scripting and styling the web (50 Hrs)

**Learning outcome:** Control the part of a CSS box to draw the background.

**Duration:** 2 hour

**List of Hardware/Software requirements:**

- Visual studio code
- Any One web browser

**Code/Program/Procedure (with comments):**

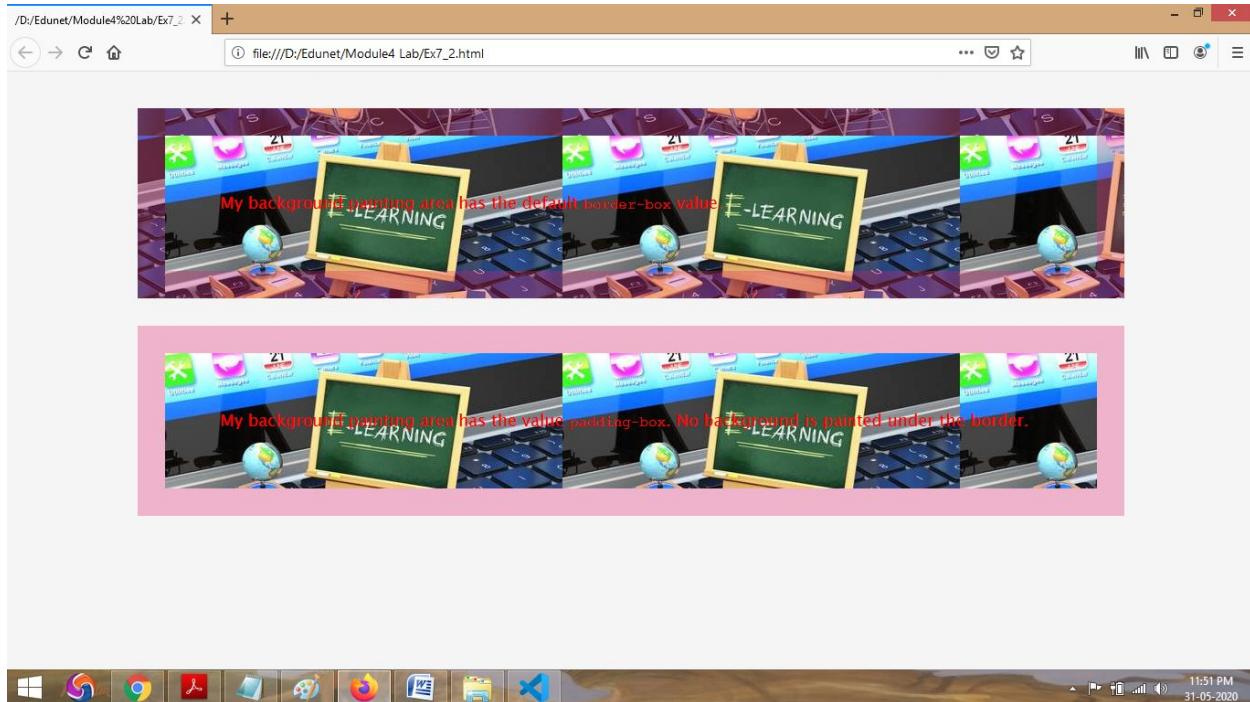
```
<!DOCTYPE html>
<html>
<head>
    <style>
/* CSS Box to draw background */
    body {
        background-color: #F5F5F5;
        color: #555;
        font-size: 1.1em;
        font-family: 'Helvetica Neue', Helvetica, Arial, sans-serif;
    }
    .container {
        margin: 40px auto;
        width: 80%;
    }
    .el {
        padding: 40px;
        margin-bottom: 30px;
        background-color: #0099cc;
        color: white;
    }
</style>

```

---

```
        border: 30px solid rgba(224, 30, 108, 0.3);
        background-image: url(edu.jpg);
    }
.el-2 {
    background-clip: padding-box;
}
.el p {
    padding: 20px;
    margin: 0;
    font-size: large;
    font-family: 'Lucida Sans', 'Lucida Sans Regular', 'Lucida Grande', 'Lucida Sans Unicode', Geneva, Verdana, sans-serif;
    color: red;
}
</style>
</head>
<body>
    <div class="container">
        <div class="el el-1">
            <p>
                My background painting area has the default <code>bord
er-box</code> value.
            </p>
        </div>
        <div class="el el-2">
            <p>
                My background painting area has the value <code>paddin
g-box</code>. No background is painted under the
                border.
            </p>
        </div>
    </div>
</body>
</html>
```

## Output/Results snippet:



## References:

- <https://developer.mozilla.org/en-US/docs/Web/CSS>

---

## Activity 13

**Aim:** Scripting and styling the web (50 Hrs)

**Learning outcome:** Create fancy boxes (also see the Styling boxes module, generally).

**Duration:** 2 hour

**List of Hardware/Software requirements:**

- Visual studio code
- Any One web browser

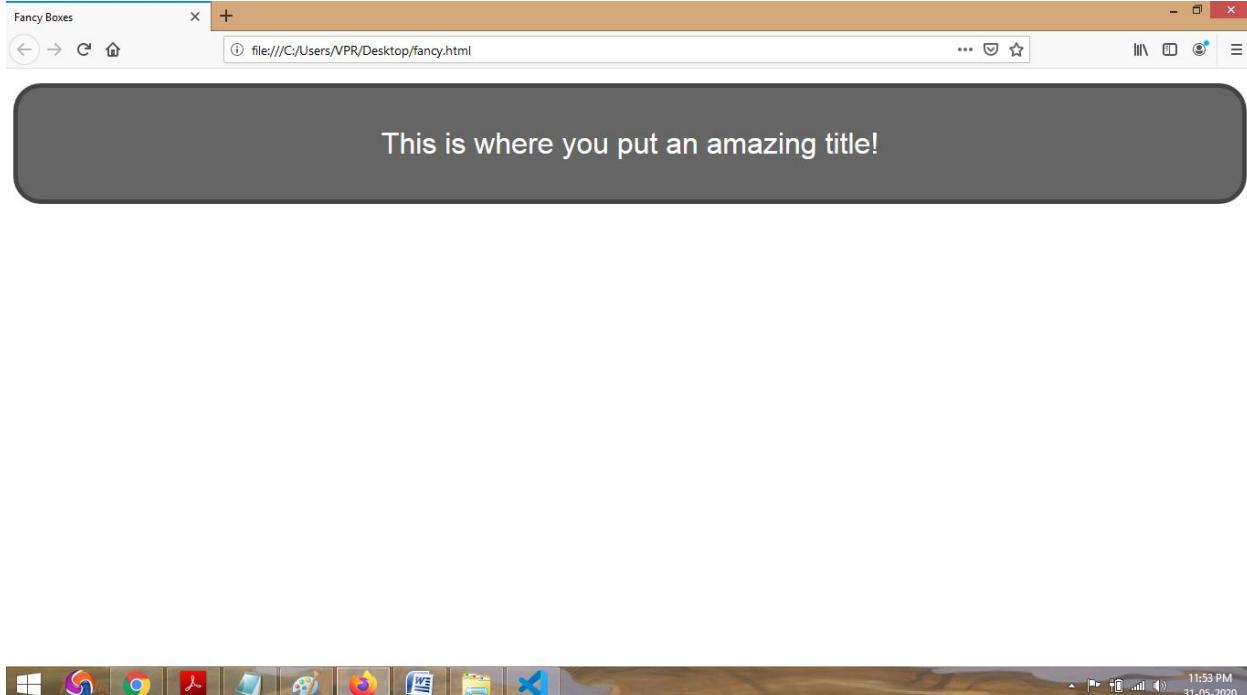
**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>
<head>
    <title>Fancy Boxes</title>
    <style>
        /*fancy-box */
        .fancy-box {
            background: #666;
            color: #fff;
            text-align: center;
            border: 5px solid #444;
            border-radius: 30px 30px 30px 30px;
            padding: 10px;
            margin: 1em 0;
        }
        .fancy-box .fancy-heading {
            font-family: Arial;
            font-size: 32px;
        }
        .fancy-box .fancy-button {
            background: #fff;
            color: #666;
```

---

```
        padding: 1.5em;
    }
</style>
</head>
<body>
    <div class="fancy-box">
        <p class="fancy-heading">This is where you put an amazing titl
e!</p>
    </div>
</body>
</html>
```

**Output/Results snippet:**



## References:

- <https://developer.mozilla.org/en-US/docs/Web/CSS>

---

## Activity 14

**Aim:** Scripting and styling the web (50 Hrs)

**Learning outcome:** Use background-clip to control background image.

**Duration:** 2 hour

**List of Hardware/Software requirements:**

- Visual studio code
- Any One web browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>
<html>
<head>
<style>
/* Background-Clip */
#example1 {
    border: 10px double green;
    padding: 15px;
    background: lightblue;
    background-clip: border-box;
}

#example2 {
    border: 10px dotted rebeccapurple;
    padding: 15px;
    background: lightblue;
    background-clip: padding-box;
}

#example3 {
    border: 10px dotted violet;
```

---

```
padding: 15px;
background: lightblue;
background-clip: content-box;
}
</style>
</head>
<body>

<h1>The background-clip Property</h1>

<p>The background-clip property defines how far the background should extend within an element.</p>

<p>background-clip: border-box (this is default):</p>
<div id="example1">
    <p>The background extends behind the border.</p>
</div>

<p>background-clip: padding-box:</p>
<div id="example2">
    <p>The background extends to the inside edge of the border.</p>
</div>

<p>background-clip: content-box:</p>
<div id="example3">
    <p>The background extends to the edge of the content box.</p>
</div>
<p><strong>Note:</strong> The background-clip property is not supported in Internet Explorer 8 and earlier versions.</p>
</body>
</html>
```

### Output/Results snippet:



## The background-clip Property

The background-clip property defines how far the background should extend within an element.

background-clip: border-box (this is default):

The background extends behind the border.

background-clip: padding-box:

The background extends to the inside edge of the border.

background-clip: content-box:

The background extends to the edge of the content box.

Note: The background-clip property is not supported in Internet Explorer 8 and earlier versions.



## References:

- <https://developer.mozilla.org/en-US/docs/Web/CSS>

---

## Activity 15

**Aim:** Scripting and styling the web (50 Hrs)

**Learning outcome:** Debug CSS in the browser.

**Duration:** 1 hour

**List of Hardware/Software requirements:**

- Visual studio code
- Any One web browser

**Code/Program/Procedure (with comments):**

```
<!doctype html public "-//w3c//dtd html 4.01//en">
<html>

<head>
    <title>box model</title>
    <style type="text/css">
        /* examples of margins, padding, and borders */
        ul {
            background: yellow;
            margin: 12px 12px 12px 12px;
            padding: 3px 3px 3px 3px;
            /* no borders set */
        }
        li {
            color: white;
            /* text color is white */
            background: blue;
            /* content, padding will be blue */
            margin: 12px 12px 12px 12px;
            padding: 12px 0px 12px 12px;
            /* note 0px padding right */
```

```
list-style: none
    /* no glyphs before a list item */
    /* no borders set */
}
li.withborder {
    border-style: dashed;
    border-width: medium;
    /* sets border width on all sides */
    border-color: lime;
}
body {
    margin: 2em
}
/* all margins set to 2em */
body {
    margin: 1em 2em
}
/* top & bottom = 1em, right & left = 2em */
body {
    margin: 1em 2em 3em
}
</style>
</head>
<body>
    <ul>
        <li>first element of list
        <li class="withborder">second element of list is
            a bit longer to illustrate wrapping.
    </ul>
</body>
</html>
```

#### Output/Results snippet:



## References:

- <https://developer.mozilla.org/en-US/docs/Web/CSS>

---

## Activity 16

**Aim:** Scripting and styling the web (50 Hrs)

**Learning outcome:** Control backgrounds.

**Duration:** 3 hours

### List of Hardware/Software requirements:

- Visual studio code
- Any One web browser

### Code/Program/Procedure (with comments):

```
<!DOCTYPE html>
<html>

<head>
    <style>
        /* Control Backgrounds*/
        body {
            background-image: url("edu.jpg");
            height: 100%;
            width: 100%;
            /* Center and scale the image nicely */
            background-position: center;
            background-repeat: no-repeat;
            background-size: cover;
        }

        h1,
        p {
            font-family: cursive;
            font-weight: bolder;
            color: white;
        }
    </style>
</head>
<body>
    <h1>Hello World</h1>
    <p>This is a sample page</p>
</body>

```

---

```
        }

    div.first {
        background: rgba(128, 0, 0, 0.6);
    }
    div.second {
        background: rgba(128, 109, 0, 0.6);
        opacity: 0.6;
    }
</style>
</head>
<body>
    <div class="first">
        <h1>Demo Background Property</h1>
    </div>
    <div class="second">
        <p>This text is not easy to read on this background image.</p>
    </div>
</body>
</html>
```

**Output/Results snippet:**



## References:

- <https://developer.mozilla.org/en-US/docs/Web/CSS>

---

## Activity 17

**Aim:** Apply control borders

**Learning outcome:** Able to understand how the web works.

**Duration: 2 Hours**

**List of Hardware/Software requirements:**

1. HTML Editor : Sublime Text Editor
2. Web Browser : Google Chrome/Mozilla Firefox

**Code/Program/Procedure (with comments):**

```
<html>
<head>
<style>
/* Define look of the table */

table {
border-width: 3px;
background-color: #52E396;
}

tr, td {
padding: 2px;
}

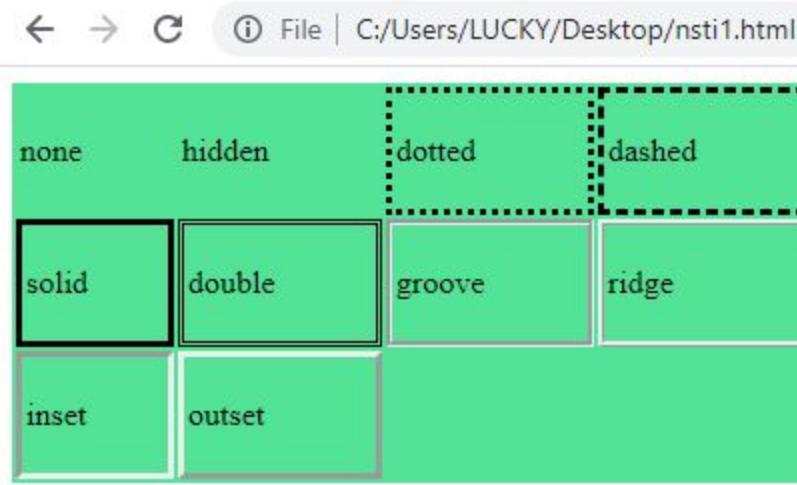
/* border-style example classes */

.b1 {border-style:none;}
.b2 {border-style:hidden;}
.b3 {border-style:dotted;}
.b4 {border-style:dashed;}
```

---

```
.b5 {border-style:solid;}  
.b6 {border-style:double;}  
.b7 {border-style:groove;}  
.b8 {border-style:ridge;}  
.b9 {border-style:inset;}  
.b10 {border-style:outset;}  
</style>  
</head>  
<body>  
<table>  
<tr>  
<td class="b1">none</td>  
<td class="b2">hidden</td>  
<td class="b3">dotted</td>  
<td class="b4">dashed</td>  
</tr>  
<tr>  
<td class="b5">solid</td>  
<td class="b6">double</td>  
<td class="b7">groove</td>  
<td class="b8">ridge</td>  
</tr>  
<tr>  
<td class="b9">inset</td>  
<td class="b10">outset</td>  
</tr>
```

```
</table>  
</body>  
</html>
```

**Output/Results snippet:****References:**

- [https://www.w3schools.com/css/css\\_border.asp](https://www.w3schools.com/css/css_border.asp)
- <https://www.html.am/html-codes/tables/table-border.cfm>
- [https://www.w3schools.com/css/css\\_border.asp](https://www.w3schools.com/css/css_border.asp)

---

## Activity 18

**Aim:** Style an HTML table

**Learning outcome:** Able to understand how the web works.

**Duration:** 3 Hours

**List of Hardware/Software requirements:**

3. HTML Editor : Sublime Text Editor
4. Web Browser : Google Chrome/Mozilla Firefox

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<style>

#customers {

font-family: "Trebuchet MS", Arial, Helvetica, sans-serif;

border-collapse: collapse;

width: 100%;

}

#customers td, #customers th {

border: 1px solid #ddd;

padding: 8px;

}
```

```
#customers tr:nth-child(even){background-color: #f2f2f2;}

#customers tr:hover {background-color: #ddd;}

#customers th {

padding-top: 12px;

padding-bottom: 12px;

text-align: left;

background-color: #4CAF50;

color: white;

}

</style>

</head>

<body>

<table id="customers">

<tr>

<th>Company</th>

<th>Contact</th>

<th>Country</th>

</tr>

<tr>

<td>Alfreds Futterkiste</td>

<td>Maria Anders</td>

<td>Germany</td>
```

</tr>

<tr>

<td>Berglunds snabbköp</td>

<td>Christina Berglund</td>

<td>Sweden</td>

</tr>

<tr>

<td>Centro comercial Moctezuma</td>

<td>Francisco Chang</td>

<td>Mexico</td>

</tr>

<tr>

<td>Ernst Handel</td>

<td>Roland Mendel</td>

<td>Austria</td>

</tr>

<tr>

<td>Island Trading</td>

<td>Helen Bennett</td>

<td>UK</td>

</tr>

<tr>

---

```
<td>Königlich Essen</td>
<td>Philip Cramer</td>
<td>Germany</td>
</tr>

<tr>
<td>Laughing Bacchus Winecellars</td>
<td>Yoshi Tannamuri</td>
<td>Canada</td>
</tr>

<tr>
<td>Magazzini Alimentari Riuniti</td>
<td>Giovanni Rovelli</td>
<td>Italy</td>
</tr>

<tr>
<td>North/South</td>
<td>Simon Crowther</td>
<td>UK</td>
</tr>

<tr>
<td>Paris spécialités</td>
<td>Marie Bertrand</td>
```

&lt;td&gt;France&lt;/td&gt;

&lt;/tr&gt;

&lt;/table&gt;

&lt;/body&gt;

&lt;/html&gt;

### Output/Results snippet:

Company	Contact	Country
Alfreds Futterkiste	Maria Anders	Germany
Berglunds snabbköp	Christina Berglund	Sweden
Centro comercial Moctezuma	Francisco Chang	Mexico
Ernst Handel	Roland Mendel	Austria
Island Trading	Helen Bennett	UK
Königlich Essen	Philip Cramer	Germany
Laughing Bacchus Winecellars	Yoshi Tannamuri	Canada
Magazzini Alimentari Riuniti	Giovanni Rovelli	Italy
North/South	Simon Crowther	UK
París specialités	Marie Bertrand	France

### References:

- [https://www.w3schools.com/css/css\\_table.asp](https://www.w3schools.com/css/css_table.asp)

---

## Activity 19

**Aim:** Add shadows to boxes

**Learning outcome:** Able to understand how the web works.

**Duration: 2 Hours**

**List of Hardware/Software requirements:**

1. HTML Editor : Sublime Text Editor
2. Web Browser : Google Chrome/Mozilla Firefox

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<style>

#example1 {

border: 1px solid;

padding: 10px;

box-shadow: 5px 5px blue, 10px 10px red, 15px 15px green;

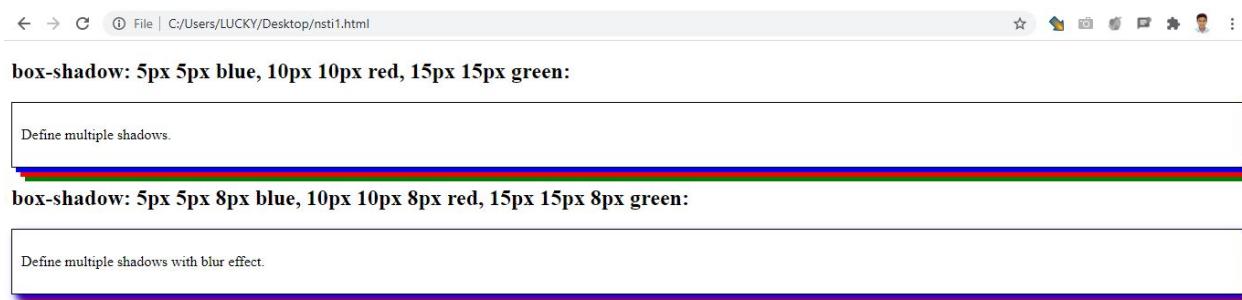
}

#example2 {

border: 1px solid;
```

```
padding: 10px;  
box-shadow: 5px 5px 8px blue, 10px 10px 8px red, 15px 15px 8px green;  
}  
</style>  
</head>  
<body>  
<h2>box-shadow: 5px 5px 8px blue, 10px 10px 8px red, 15px 15px 8px green:</h2>  
<div id="example1">  
<p>Define multiple shadows.</p>  
</div>  
<h2>box-shadow: 5px 5px 8px blue, 10px 10px 8px red, 15px 15px 8px green:</h2>  
<div id="example2">  
<p>Define multiple shadows with blur effect.</p>  
</div>  
</body>  
</html>
```

### Output/Results snippet:



The screenshot shows a web browser window with the following content:

- A toolbar at the top with icons for back, forward, search, and file operations.
- A title bar indicating the file path: C:/Users/LUCKY/Desktop/nsti1.html.
- Two sections of code output:
  - The first section is titled "box-shadow: 5px 5px 8px blue, 10px 10px 8px red, 15px 15px 8px green:" followed by the text "Define multiple shadows." displayed in a blue-bordered box.
  - The second section is titled "box-shadow: 5px 5px 8px blue, 10px 10px 8px red, 15px 15px 8px green:" followed by the text "Define multiple shadows with blur effect." displayed in a blue-bordered box.

---

## References:

- [https://www.w3schools.com/cssref/css3\\_pr\\_box-shadow.asp](https://www.w3schools.com/cssref/css3_pr_box-shadow.asp)
- [https://www.w3schools.com/css/css3\\_shadows.asp](https://www.w3schools.com/css/css3_shadows.asp)

---

## Activity 20

**Aim:** Calculate specificity of a CSS selector

**Learning outcome:** Able to understand how the web works.

**Duration: 3 Hours**

**List of Hardware/Software requirements:**

3. HTML Editor : Sublime Text Editor
4. Web Browser : Google Chrome/Mozilla Firefox

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<style>

/*Element Selector*/

h1

{background-color: yellow;

text-align: center;}

/*Class Selector*/

.center {

background-color: red;

text-align: center;

color: green;
```

```
}
```

```
/*id selector*/
```

```
#header{
```

```
background-color: blue;
```

```
text-align: center;
```

```
color: red;
```

```
font-size:36px;
```

```
}
```

```
</style>
```

```
</head>
```

```
<body>
```

```
<h1>This is heading 1 element selector</h1>
```

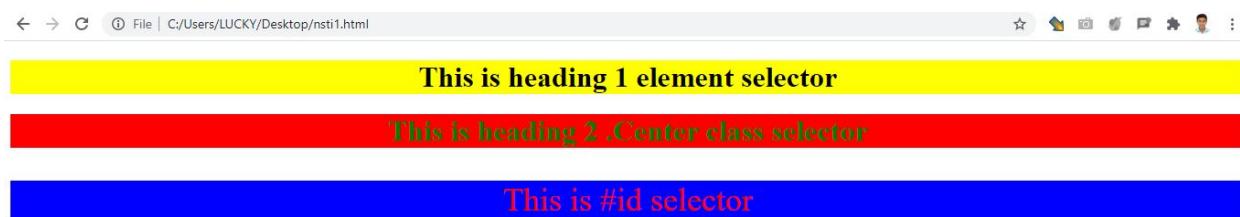
```
<h1 class="center">This is heading 2 .Center class selector</h1>
```

```
<p id="header">This is #id selector</p>
```

```
</body>
```

```
</html>
```

### Output/Results snippet:



### References:

- 
- [https://www.w3schools.com/css/css\\_selectors.asp](https://www.w3schools.com/css/css_selectors.asp)

---

## Activity 21

**Aim:** Control Inheritance in CSS

**Learning outcome:** Able to understand how the web works.

**Duration: 2 Hours**

**List of Hardware/Software requirements:**

1. HTML Editor : Sublime Text Editor
2. Web Browser : Google Chrome/Mozilla Firefox

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<style>

span {

color: blue;

border: 1px solid black;

}

.extra span {

color: inherit;

}

</style>

</head>
```

```
<body>
```

```
<div>
```

Here is <span>a span element</span> which is blue, as span elements are set to be.

```
</div>
```

```
<div class="extra" style="color:green">
```

Here is <span>a span element</span> which is green, because it inherits from its parent.

```
</div>
```

```
<div style="color:red">
```

Here is <span>a span element</span> which is blue, as span elements are set to be.

```
</div>
```

```
</body>
```

```
</html>
```

### Output/Results snippet:



← → ⌂ File | C:/Users/LUCKY/Desktop/nsti1.html

Here is a span element which is blue, as span elements are set to be.  
Here is a span element which is green, because it inherits from its parent.  
Here is a span element which is blue, as span elements are set to be.

### References:

- <https://stackoverflow.com/questions/641217/css-control-inheritance-inheriting-other-control-styles>

---

## Activity 22

### Aim: Apply filters in CSS

**Learning outcome:** Able to understand how the web works.

**Duration:** 2 Hours

### List of Hardware/Software requirements:

1. HTML Editor : Sublime Text Editor
2. Web Browser : Google Chrome/Mozilla Firefox

### Code/Program/Procedure (with comments):

```
<!DOCTYPE html>

<html>
  <head>
    <style>
      img {
        -webkit-filter: grayscale(100%); /* Safari 6.0 - 9.0 */
        filter: grayscale(100%);
      }
    </style>
  </head>
  <body>
    <h1>The filter Property</h1>
    <p>Convert the image to grayscale:</p>
```

---

```
  
<p><strong>Note:</strong> The filter property is not supported in Internet Explorer, Edge  
12, or Safari 5.1 and earlier.</p>  
</body>  
</html>
```

### **Output/Results snippet:**



The screenshot shows a web browser window with the address bar displaying "File | C:/Users/LUCKY/Desktop/nsti1.html". The main content area features a dark gray background with white text. At the top, it says "GET STYLING WITH". Below that is a large "CSS" text followed by a stylized "3" icon. A note at the bottom states: "Note: The filter property is not supported in Internet Explorer, Edge 12, or Safari 5.1 and earlier."

### **References:**

- [https://www.w3schools.com/cssref/css3\\_pr\\_filter.asp](https://www.w3schools.com/cssref/css3_pr_filter.asp)

---

## Activity 23

**Aim:** Apply blend modes in CSS

**Learning outcome:** Able to understand how the web works.

**Duration:** 2 Hours

**List of Hardware/Software requirements:**

1. HTML Editor : Sublime Text Editor
2. Web Browser : Google Chrome/Mozilla Firefox

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<style>

#myDIV {

width: 400px;

height: 400px;

background-repeat: no-repeat, repeat;

background-image: url("img_5terre.jpg"),url("download.png");

background-blend-mode: lighten;

}

</style>

</head>
```

```
<body>
```

```
<h1>The background-blend-mode Property</h1>
```

```
<div id="myDIV"></div>
```

```
<p><b>Note:</b> Edge/Internet Explorer do not support the background-blend-mode  
property.</p>
```

```
</body>
```

```
</html>
```

### Output/Results snippet:



**Note:** Edge/Internet Explorer do not support the background-blend-mode property.

### References:

- [https://www.w3schools.com/cssref/pr\\_background-blend-mode.asp](https://www.w3schools.com/cssref/pr_background-blend-mode.asp)

---

## Activity 24

**Aim:** Apply CSS multi-column layouts

**Learning outcome:** Able to understand how the web works.

**Duration:** 3 Hours

**List of Hardware/Software requirements:**

1. HTML Editor : Sublime Text Editor
2. Web Browser : Google Chrome/Mozilla Firefox

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<style>

.newspaper {

-webkit-column-count: 3; /* Chrome, Safari, Opera */

-moz-column-count: 3; /* Firefox */

column-count: 3;

-webkit-column-gap: 40px; /* Chrome, Safari, Opera */

-moz-column-gap: 40px; /* Firefox */

column-gap: 40px;
```

---

```
-webkit-column-rule-style: solid; /* Chrome, Safari, Opera */  
-moz-column-rule-style: solid; /* Firefox */  
column-rule-style: solid;  
}  
</style>  
</head>
```

```
<body>
```

```
<p><b>Note:</b> Internet Explorer 9, and earlier versions, does not support the  
columnrule-style property.</p>
```

```
<div class="newspaper">
```

HyperText Markup Language (HTML) is a markup language[1] for creating a webpage. Webpages are usually viewed in a web browser. They can include writing, links, pictures, and even sound and video. HTML is used to mark and describe each of these kinds of content so the web browser can display them correctly. HTML can also be used to add meta information to a webpage. Meta information is usually not shown by web browsers and is data about the web page, e.g., the name of the person who created the page. Cascading Style Sheets (CSS) is used to style HTML elements while JavaScript is used to manipulate HTML elements and CSS styles.

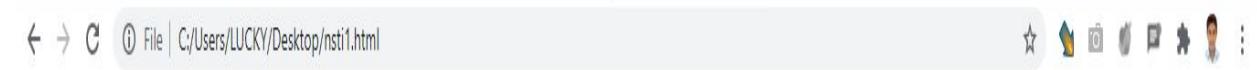
```
</div>
```

```
</body>
```

```
</html>
```

---

### Output/Results snippet:



Note: Internet Explorer 9, and earlier versions, does not support the columnrule-style property.

HyperText Markup Language (HTML) is a markup language<sup>[1]</sup> for creating a webpage. Webpages are usually viewed in a web browser. They can include writing, links, pictures, and even sound and video. HTML is used to mark and describe each of

these kinds of content so the web browser can display them correctly. HTML can also be used to add meta information to a webpage. Meta information is usually not shown by web browsers and is data about the web page, e.g., the name of the

person who created the page. Cascading Style Sheets (CSS) is used to style HTML elements while JavaScript is used to manipulate HTML elements and CSS styles.

### References:

- [https://www.w3schools.com/css/css3\\_multiple\\_columns.asp](https://www.w3schools.com/css/css3_multiple_columns.asp)

---

## Activity 25

**Aim:** Apply CSS generated Content

**Learning outcome:** Able to understand how the web works.

**Duration:** 2 Hours

**List of Hardware/Software requirements:**

1. HTML Editor : Sublime Text Editor
2. Web Browser : Google Chrome/Mozilla Firefox

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>

<head>

<style>

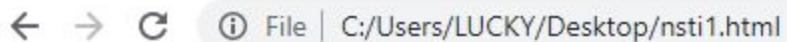
ul {
    list-style: none; /* Remove HTML bullets */
    padding: 0;
    margin: 0; }

li {
    padding-left: 16px; }

li::before {
    content: "•"; /* Insert content that looks like bullets */
```

---

```
padding-right: 8px;  
color: blue; /* Or a color you prefer */ }  
</style>  
</head>  
<body>  
<h1>The content Property</h1>  
<ul>  
<li>Coffee</li>  
<li>Tea</li>  
<li>Coca Cola</li>  
</ul>  
</body>  
</html>
```

**Output/Results snippet:**File | C:/Users/LUCKY/Desktop/nsti1.html

## The content Property

- Coffee
- Tea
- Coca Cola

**References:**

- [https://www.w3schools.com/cssref/pr\\_gen\\_content.asp](https://www.w3schools.com/cssref/pr_gen_content.asp)

---

## **Learning Outcome 4 - Able to understand enhancing the web using PHP**

After achieving this learning outcome, a student will be able to understand enhancing the web using PHP. In order to achieve this learning outcome, a student has to complete the following:

1. Create a form in PHP and apply validations. (5Hrs)
2. Create a date and time from a number of parameters in mktime() (2 Hrs)
3. Create a date and time from the strtotime () function ( 2Hrs)
4. Create more dates/times from strtotime () (1Hr)
5. Output the dates for the next six Saturdays (3Hrs)
6. Output the number of days until 10th of july (2 Hrs)
7. Create and retrieve a cookie ( 5Hrs)
8. Modify a cookie value (2 Hrs)
9. Delete a cookie (1Hrs)
10. Check if cookies are enabled (2Hrs)
11. Select data with MySQLi (Object-oriented) (5Hrs)
12. Select data with MySQLi (Object-oriented) and put result in an HTML table (10 Hrs)
13. Select data with MySQLi (Procedural) (5Hrs)
14. Select data with PDO (+ Prepared statements)(5Hrs)

---

## Activity 1

**Aim:** Create a form in PHP and apply validations. (5 Hrs)

**Learning outcome:** Enhancing the web using PHP.

**Duration:** 5 hours

**List of Hardware/Software requirements:**

1. Laptop/Computer with Linux OS - Ubuntu 18.04 LTS
2. Notepad++, XAMPP

**Code/Program:**

```
<!DOCTYPE HTML>

<html>
<head>
</head>
<body>
<?php

// define variables and set to empty values

$name = $email = $gender = $comment = $website = "";
if($_SERVER["REQUEST_METHOD"] == "POST") {
    $name = test_input($_POST["name"]);
    $email = test_input($_POST["email"]);
    $website = test_input($_POST["website"]);
```

---

```
$comment = test_input($_POST["comment"]);

$gender = test_input($_POST["gender"]);

}

function test_input($data) { //Function name is test_input

$data = trim($data);

$data = stripslashes($data);

$data = htmlspecialchars($data);

return $data;

}

?>

<h2>PHP Form Validation Example</h2>

<form method="post" action="<?php echo htmlspecialchars($_SERVER["PHP_SELF"]);?>">

Name: <input type="text" name="name">

<br><br>

E-mail: <input type="text" name="email">

<br><br>

Website: <input type="text" name="website">

<br><br>

Comment: <textarea name="comment" rows="5" cols="40"></textarea>

<br><br>

Gender:

<input type="radio" name="gender" value="female">Female
```

---

```
<input type="radio" name="gender" value="male">Male
<input type="radio" name="gender" value="other">Other
<br><br>
<input type="submit" name="submit" value="Submit">
</form>
<?php
echo "<h2>Your Input:</h2>";
echo $name;
echo "<br>";
echo $email;
echo "<br>";
echo $website;
echo "<br>";
echo $comment;
echo "<br>";
echo $gender;
?>
</body>
</html>
```

---

**Output/Results snippet:**

---

**PHP Form Validation Example**Name: E-mail: Website: Comment: Gender:  Female  Male  Other**Your Input:**

## Activity 2

**Aim:** Create a date and time from a number of parameters in mktime() (2 Hrs)

**Learning outcome:** Enhancing the web using PHP..

**Duration:** 2 hours

### **List of Hardware/Software requirements:**

1. Laptop/Computer with Linux OS - Ubuntu 18.04 LTS
2. Notepad++, XAMPP

### **Code/Program:**

```
<?php  
  
// Set the default timezone to use. Available as of PHP 5.1  
  
date_default_timezone_set('UTC');  
  
// Prints: July 1, 2000 is on a Saturday  
  
echo "July 1, 2000 is on a " . date("l", mktime(0, 0, 0, 7, 1, 2000));  
  
// Prints something like: 2006-04-05T01:02:03+00:00  
  
echo date('c', mktime(1, 2, 3, 4, 5, 2006));  
  
?>
```

---

**Output/Results snippet:**

July 1, 2000 is on a Saturday 2006-04-05T01:02:03+00:00

## Activity 3

**Aim:** Create a date and time from the strtotime () function ( 2 Hrs)

**Learning outcome:** Enhancing the web using PHP..

**Duration:** 2 hours

### **List of Hardware/Software requirements:**

1. Laptop/Computer with Linux OS - Ubuntu 18.04 LTS
2. Notepad++, XAMPP

### **Code/Program:**

```
<!DOCTYPE html>

<html>

<body>

<?php

echo date("r", strtotime("now"));

?>

</body>

</html>
```

---

**Output/Results snippet:**

---

Mon, 20 Jul 2020 14:49:28 +0200

## Activity 4

**Aim:** Create more dates/times from strtotime () (1 Hr)

**Learning outcome:** Enhancing the web using PHP..

**Duration:** 1 hour

### **List of Hardware/Software requirements:**

1. Laptop/Computer with Linux OS - Ubuntu 18.04 LTS
2. Notepad++, XAMPP

### **Code/Program:**

```
<!DOCTYPE html>

<html>

<body>

<?php

echo(strtotime("now") . "<br>");

echo(strtotime("3 October 2005") . "<br>");

echo(strtotime("+5 hours") . "<br>");

echo(strtotime("+1 week") . "<br>");

echo(strtotime("+1 week 3 days 7 hours 5 seconds") . "<br>");

echo(strtotime("next Monday") . "<br>");

echo(strtotime("last Sunday"));

?>

</body>
```

---

</html>

---

**Output/Results snippet:**

1595249681  
1128290400  
1595267681  
1595854481  
1596138886  
1595800800  
1595109600

---

## Activity 5

**Aim:** Output the dates for the next six Saturdays (3 Hrs)

**Learning outcome:** Enhancing the web using PHP..

**Duration:** 3 hours

**List of Hardware/Software requirements:**

1. Laptop/Computer with Linux OS - Ubuntu 18.04 LTS
2. Notepad++, XAMPP

**Code/Program:**

```
<!DOCTYPE html>

<html>

<body>

<?php

$startdate=strtotime("Saturday");

$enddate=strtotime("+6 weeks", $startdate);

while ($startdate < $enddate) {

echo date("M d", $startdate) . "<br>";

$startdate = strtotime("+1 week", $startdate);

}

?>

</body>

</html>
```

---

**Output/Results snippet:**

---

Jul 25

Aug 01

Aug 08

Aug 15

Aug 22

Aug 29

---

## Activity 6

**Aim:** Output the number of days until 10th of July (2 Hrs)

**Learning outcome:** Enhancing the web using PHP..

**Duration:** 2 hours

**List of Hardware/Software requirements:**

1. Laptop/Computer with Linux OS - Ubuntu 18.04 LTS
2. Notepad++, XAMPP

**Code/Program:**

```
<!DOCTYPE html>

<html>

<body>

<?php

$d1=strtotime("July 10");

$d2=ceil(($d1-time())/60/60/24);

echo "There are " . $d2 ." days until 10th of July./";

?>

</body>

</html>
```

---

**Output/Results snippet:**

---

There are -10 days until 10th of July.

## Activity 7

**Aim:** Create and retrieve a cookie (5 Hrs)

**Learning outcome:** Enhancing the web using PHP..

**Duration:** 5 hours

### **List of Hardware/Software requirements:**

3. Laptop/Computer with Linux OS - Ubuntu 18.04 LTS
4. Notepad++, XAMPP

### **Code/Program:**

```
<!DOCTYPE html>

<?php

$cookie_name = "user"; // Setting cookie name
$cookie_value = "John Doe"; // Setting cookie value
setcookie($cookie_name, $cookie_value, time() + (86400 * 30), "/"); // 86400 = 1 day
?>

<html>
<body>
<?php
if(!isset($_COOKIE[$cookie_name])) {
echo "Cookie named '" . $cookie_name . "' is not set!";
} else {
echo "Cookie '" . $cookie_name . "' is set!<br>";
}
```

---

```
echo "Value is: " . $_COOKIE[$cookie_name];  
}  
?>  
<p><strong>Note:</strong> You might have to reload the page to see the value of the  
cookie.</p>  
</body>  
</html>
```

---

**Output/Results snippet:**

Cookie 'user' is set!  
Value is: John Doe

**Note:** You might have to reload the page to see the value of the cookie.

---

**References:**

<https://www.tutorialspoint.com/php/index.htm>

<https://www.w3schools.com/php/default.asp>

<https://www.geeksforgeeks.org/php/>

<https://www.javatpoint.com/php-tutorial>

<https://www.educba.com/introduction-to-php/>

---

## Activity 8

**Aim:** Modify a cookie value (2 Hrs)

**Learning outcome:** Enhancing the web using PHP.

**Duration:** 2 hour

**List of Hardware/Software requirements:**

1. Laptop / Desktop
2. Windows 7
3. WAMP Software

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<?php
$cookie_name = "user";

$cookie_value = "Alex Porter"; // New cookie value added

setcookie($cookie_name, $cookie_value, time() + (86400 * 30), "/");

?>

<html>
<body>

<?php
if(!isset($_COOKIE[$cookie_name])) {
echo "Cookie named '" . $cookie_name . "' is not set!";
```

---

```
} else {  
echo "Cookie " . $cookie_name . " is set!<br>";  
echo "Value is: " . $_COOKIE[$cookie_name];  
}  
?>  
<p><strong>Note:</strong> You might have to reload the page to see the new value of the  
cookie.</p>  
</body>  
</html>
```

### **Output/Results snippet:**

Modify Cookie Value

Cookie 'user' is set!

Value is: John Doe

Note: You might have to reload the page to see the new value of the cookie.

### **References:**

- NSTI Practical Lab Manual

---

## Activity 9

**Aim:** Delete a cookie (1 Hr)

**Learning outcome:** Enhancing the web using PHP.

**Duration:** 1 hour

**List of Hardware/Software requirements:**

1. Laptop / Desktop
2. Windows 7
3. WAMP Software

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<?php

// set the expiration date to one hour ago

setcookie("user", "", time() - 3600);

?>

<html>

<body>

<?php

echo "Cookie 'user' is deleted.';

?>

</body>

</html>
```

---

### **Output/Results snippet:**

Delete a Cookie

**Cookie 'user' is deleted.**

### **References:**

- NSTI Practical Lab Manual

---

## Activity 10

**Aim:** Check if cookies are enabled (2Hrs)

**Learning outcome:** Enhancing the web using PHP.

**Duration:** 2 hours

**List of Hardware/Software requirements:**

1. Laptop / Desktop
2. Windows 7
3. WAMP Software

**Code/Program/Procedure (with comments):**

```
<html>

<?php

setcookie("test_cookie", "test", time() + 3600, '/');

?>

<html>

<body>

<?php

if(count($_COOKIE) > 0) { // check the availability of Cookie
    echo "Cookies are enabled.";
} else {
    echo "Cookies are disabled.";
}
```

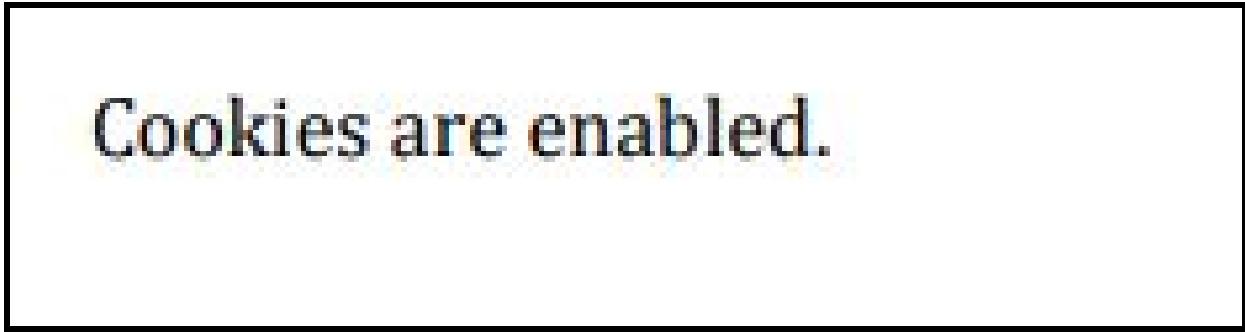
```
?>
```

```
</body>
```

```
</html>
```

**Output/Results snippet:**

Check the Cookie is enable or not



Cookies are enabled.

**References:**

- NSTI Practical Lab Manual

---

## Activity 11

**Aim:** Select data with MySQLi (Object-oriented) (5Hrs)

**Learning outcome:** Enhancing the web using PHP.

**Duration:** 5 hours

**List of Hardware/Software requirements:**

1. Laptop / Desktop
2. Windows 7
3. WAMP Software

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>
<body>
<?php

$servername = "localhost";
$username = "username";
$password = "password";
$dbname = "myDB";

// Create connection

$conn = new mysqli($servername, $username, $password, $dbname);

// Check connection

if ($conn->connect_error) {
```

---

```
die("Connection failed: " . $conn->connect_error);

}

$sql = "SELECT id, firstname, lastname FROM MyGuests";

$result = $conn->query($sql);

if ($result->num_rows > 0) {

    // output data of each row

    while($row = $result->fetch_assoc()) {

        echo "<br> id: " . $row["id"] . " - Name: " . $row["firstname"] . " " . $row["lastname"] .

        "<br>";

    }

} else {

    echo "0 results";

}

$conn->close();

?>

</body>

</html>
```

---

**Output/Results snippet:**

Displaying records

```
id: 1 - Name: John Doe  
  
id: 2 - Name: Mary Moe  
  
id: 3 - Name: Julie Dooley
```

**References:**

- NSTI Practical Lab Manual

---

## Activity 12

**Aim:** Select data with MySQLi (Object-oriented) and put result in an HTML table (10 Hrs)

**Learning outcome:** Enhancing the web using PHP.

**Duration:** 5 hours

**List of Hardware/Software requirements:**

4. Laptop / Desktop
5. Windows 7
6. WAMP Software

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>
<head>
<style>
table, th, td {
border: 1px solid black;
}
</style>
</head>
<body>
<?php
$servername = "localhost";
```

---

```
$username = "username";
$password = "password";
$dbname = "myDB";
// Create connection
$conn = new mysqli($servername, $username, $password, $dbname);
// Check connection
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}
$sql = "SELECT id, firstname, lastname FROM MyGuests";
$result = $conn->query($sql);
if ($result->num_rows > 0) {
    echo "<table><tr><th>ID</th><th>Name</th></tr>";
    // output data of each row
    while($row = $result->fetch_assoc()) {
        echo "<tr><td>" . $row["id"] . "</td><td>" . $row["firstname"] . " " . $row["lastname"] .
        "</td></tr>";
    }
    echo "</table>";
} else {
    echo "0 results";
}
```

```
$conn->close();
```

```
?>
```

```
</body>
```

```
</html>
```

**Output/Results snippet:**

Displaying records in Table

ID	Name
1	John Doe
2	Mary Moe
3	Julie Dooley

**References:**

- NSTI Practical Lab Manual

---

## Activity 13

**Aim:** Select data with MySQLi (Procedural)

**Learning outcome:** Able to understand how the web works.

**Duration:** 5 hours

**List of Hardware/Software requirements:**

1. Windows/Ubuntu OS
2. LAMP/XAMPP Setup
3. Browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

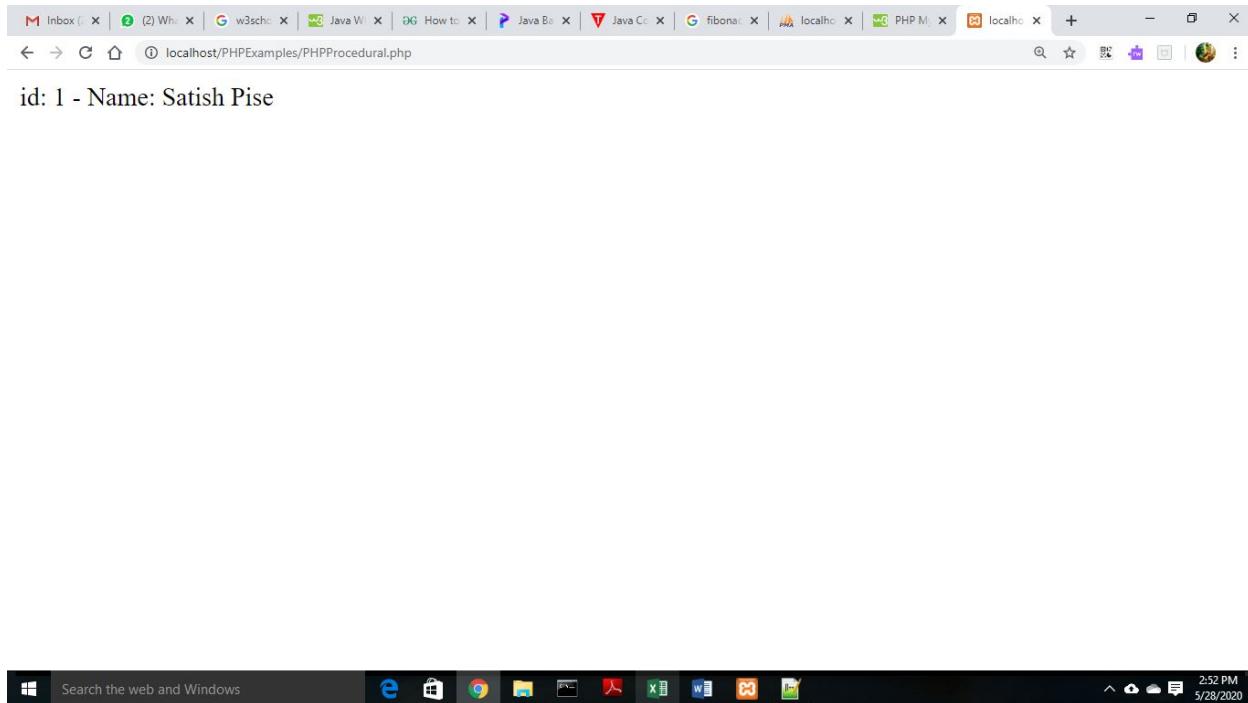
<html>
<body>
<?php
$servername = "localhost";
$username = "root";
$password = "";
$dbname = "myDB";
// Create connection
$conn = mysqli_connect($servername, $username, $password, $dbname);
// Check connection
```

---

```
if (!$conn) {
    die("Connection failed: " . mysqli_connect_error());
}

$sql = "SELECT id, firstname, lastname FROM MyGuests";
$result = mysqli_query($conn, $sql);
if (mysqli_num_rows($result) > 0) {
    // output data of each row
    while($row = mysqli_fetch_assoc($result)) {
        echo "id: " . $row["id"]. " - Name: " . $row["firstname"]. " " . $row["lastname"]. "<br>";
    }
} else {
    echo "0 results";
}
mysqli_close($conn);
?>
</body>
</html>
```

## Output/Results snippet:



## References:

- [https://www.w3schools.com/php/php\\_mysql\\_connect.asp](https://www.w3schools.com/php/php_mysql_connect.asp)
- <https://www.javatpoint.com/php-tutorial>

---

## Activity 14

**Aim:** Select data with PDO (+ Prepared statements)

**Learning outcome:** Able to understand how the web works.

**Duration:** 5 hours

**List of Hardware/Software requirements:**

4. Windows/Ubuntu OS
5. LAMP/XAMPP Setup
6. Browser

**Code/Program/Procedure (with comments):**

```
<!DOCTYPE html>

<html>
<body>
<?php
echo "<table style='border: solid 1px black;'>";
echo "<tr><th>Id</th><th>Firstname</th><th>Lastname</th></tr>";
class TableRows extends RecursiveIteratorIterator {
function __construct($it) {
parent::__construct($it, self::LEAVES_ONLY);
}
function current() {
```

---

```
return "<td style='width: 150px; border: 1px solid black;'>" . parent::current(). "</td>";  
}  
  
function beginChildren() {  
echo "<tr>";  
}  
  
function endChildren() {  
echo "</tr>" . "\n";  
}  
}  
  
$servername = "localhost";  
  
$username = "root";  
  
$password = "";  
  
$dbname = "myDB";  
  
try {  
$conn = new PDO("mysql:host=$servername;dbname=$dbname", $username, $password);  
$conn->setAttribute(PDO::ATTR_ERRMODE, PDO::ERRMODE_EXCEPTION);  
$stmt = $conn->prepare("SELECT id, firstname, lastname FROM MyGuests");  
$stmt->execute();  
// set the resulting array to associative  
$result = $stmt->setFetchMode(PDO::FETCH_ASSOC);  
foreach(new TableRows(new RecursiveArrayIterator($stmt->fetchAll())) as $k=>$v) {  
echo $v;
```

```
}
```

```
}
```

```
catch(PDOException $e) {
```

```
echo "Error: " . $e->getMessage();
```

```
}
```

```
$conn = null;
```

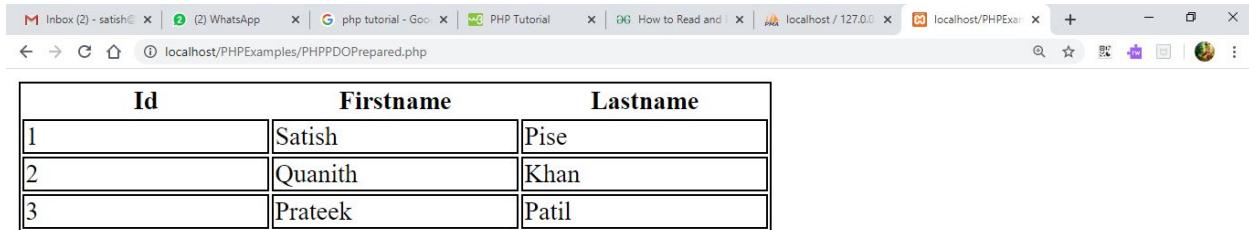
```
echo "</table>";
```

```
?>
```

```
</body>
```

```
</html>
```

### Output/Results snippet:



A screenshot of a Microsoft Edge browser window. The address bar shows the URL `localhost/PHPExamples/PHPPDOPrepared.php`. The main content area displays a table with three rows and three columns. The columns are labeled **Id**, **Firstname**, and **Lastname**. The data is as follows:

<b>Id</b>	<b>Firstname</b>	<b>Lastname</b>
1	Satish	Pise
2	Quanith	Khan
3	Prateek	Patil

### References:

- [https://www.w3schools.com/php/php\\_mysql\\_connect.asp](https://www.w3schools.com/php/php_mysql_connect.asp)
- <https://www.javatpoint.com/php-tutorial>

---

## **Learning Outcome 5 - Able to understand Java: The key language**

After achieving this learning outcome, a student will be able to understand Java: The key language. In order to achieve this learning outcome, a student has to complete the following:

1. Write a Java Programme to print Hello on Screen (2 Hrs)
2. Write a Java Program to find arithmetic Operations (1 Hr)
3. Write a Java Program to find the biggest no. in given three nos. (2Hrs)
4. Write a java program to print Fibonacci series without using recursion and using recursion (2Hrs)
5. Java Program to Solve any Linear Equation in One Variable (3Hrs)
6. Java Program to Find Inverse of a Matrix (3Hrs)
7. Java Program to Perform Encoding of a Message Using Matrix Multiplication (2 Hrs)
8. Write a Java program to sort a numeric array and a string array (2 hrs)
9. Write a Java program to remove a specific element from an array (3Hrs)
10. Write a Java program to get the minimum value of year, month, week, date from the current date of a default calendar (2Hrs)
11. Perform animation in applet (3 Hrs)
12. Write a java program to paint like paint brush in applet (2Hrs)
13. Program to display analog clock in applet (3Hrs)
14. Program to communicate two applets (3Hrs)
15. Write a Java program to convert a hash set to a tree set (2Hrs)
16. Create a runnable jar file in java? (3Hrs)
17. Display image on a button in swing (2Hrs)
18. Program to change the component color by choosing a color from ColorChooser (2Hrs)
19. Program to create a notepad in swing? (3Hrs)
20. Program to inherit Frame class (2Hrs)
21. Program to perform two tasks by two threads (3 Hrs)

---

## Activity 1

**Aim:** Write a Java Programme to print Hello on Screen.

**Learning outcome:** Able to understand how the web works.

**Duration:** 2 hours

**List of Hardware/Software requirements:**

1. JDK Setup
2. Windows/Ubuntu Operation System
3. Notepad Editor

**Code/Program/Procedure (with comments):**

```
class Hello {  
    //Defining main method  
    public static void main(String args[])  
    {  
        //main method body  
        System.out.println("Hello");  
    }  
}
```

---

### Output/Results snippet:



A screenshot of a Windows Command Prompt window titled 'cmd C:\Windows\System32\cmd.exe'. The window contains the following text:  
Hello  
C:\JavaPrograms>javac Hello.java  
C:\JavaPrograms>java Hello  
Hello  
C:\JavaPrograms>

### References:

- <https://www.w3schools.com/java>
- <https://www.javatpoint.com/java-tutorial>

---

## Activity 2

**Aim:** Write a Java Program to find arithmetic Operations.

**Learning outcome:** Able to understand how the web works.

**Duration:** 1 hour

**List of Hardware/Software requirements:**

4. JDK Setup
5. Windows/Ubuntu Operation System
6. Notepad Editor

**Code/Program/Procedure (with comments):**

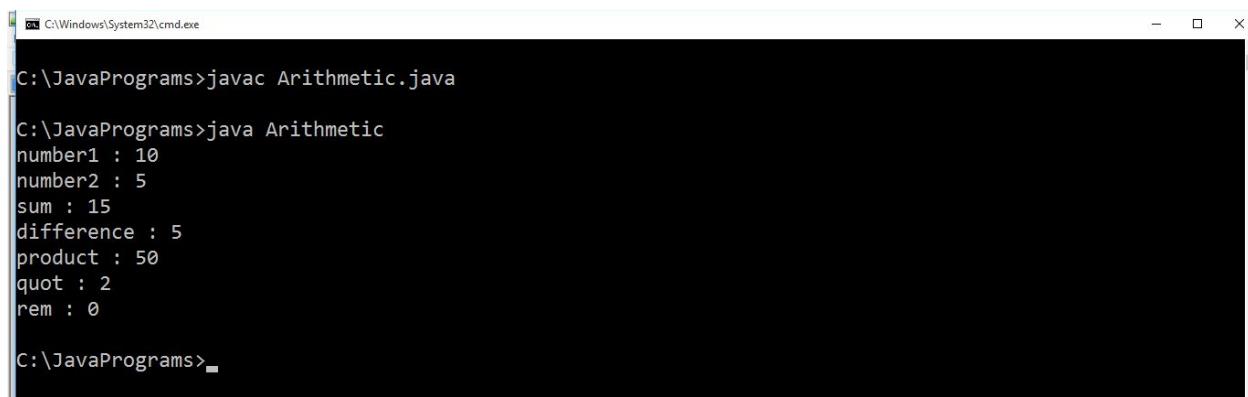
```
public class Arithmetic  
{  
    public static void main(String[] args)  
    {  
        int number1 = 10;  
        int number2 = 5;  
        //calculating number1 + number2;  
        int sum = number1 + number2;  
        //calculating number1 - number2;  
        int difference = number1 - number2;  
        //calculating number1 * number2;  
        int product = number1 * number2;
```

---

```
//calculating number1 / number2;  
int quot = number1 / number2;  
  
//calculating number1 % number2;  
int rem = number1 % number2;  
  
//Displaying the values  
  
System.out.println("number1 : "+number1);  
System.out.println("number2 : "+number2);  
System.out.println("sum : "+sum);  
System.out.println("difference : "+difference);  
System.out.println("product : "+product);  
System.out.println("quot : "+quot);  
System.out.println("rem : "+rem);  
  
}  
}
```

---

## Output/Results snippet:



A screenshot of a Windows Command Prompt window titled 'C:\Windows\System32\cmd.exe'. The window shows the following text:  
C:\JavaPrograms>javac Arithmetic.java  
C:\JavaPrograms>java Arithmetic  
number1 : 10  
number2 : 5  
sum : 15  
difference : 5  
product : 50  
quot : 2  
rem : 0  
C:\JavaPrograms>

## References:

- <https://www.w3schools.com/java>
- <https://www.javatpoint.com/java-tutorial>

---

## Activity 3

**Aim:** Write a Java Program to find biggest no. in given three nos.

**Learning outcome:** Able to understand how the web works.

**Duration:** 2 hours

**List of Hardware/Software requirements:**

7. JDK Setup
8. Windows/Ubuntu Operation System
9. Notepad Editor

**Code/Program/Procedure (with comments):**

```
import java.util.Scanner;  
  
//importing scanner class for input  
  
class Largest  
  
{  
  
public static void main(String args[])  
  
{  
  
//Defining Variables  
  
int x, y, z;  
  
System.out.println("Enter three integers");  
  
Scanner in = new Scanner(System.in);  
  
x = in.nextInt();
```

---

```
y = in.nextInt();

z = in.nextInt();

if (x > y && x > z)

    System.out.println("First number is largest.");

else if (y > x && y > z)

    System.out.println("Second number is largest.");

else if (z > x && z > y)

    System.out.println("Third number :" + z + " is largest");

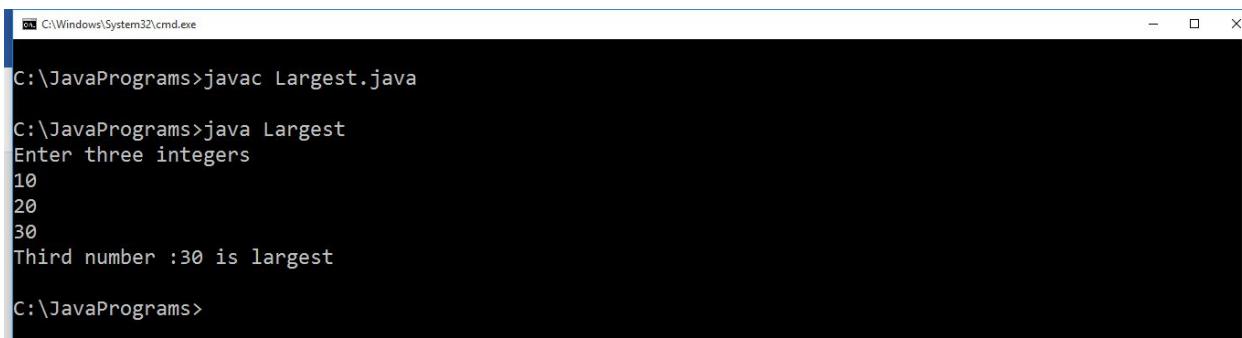
else

    System.out.println("The numbers are not distinct.");

}

}
```

### Output/Results snippet:



The screenshot shows a Windows Command Prompt window titled 'C:\Windows\System32\cmd.exe'. The command 'javac Largest.java' is entered, followed by 'java Largest'. The user is prompted to 'Enter three integers' and inputs '10', '20', and '30'. The output shows that '30' is the largest number.

```
C:\JavaPrograms>javac Largest.java
C:\JavaPrograms>java Largest
Enter three integers
10
20
30
Third number :30 is largest
C:\JavaPrograms>
```

### References:

- 
- <https://www.w3schools.com/java>
  - <https://www.javatpoint.com/java-tutorial>

---

## Activity 4

**Aim:** Write a java program to print Fibonacci series without using recursion and using recursion.

**Learning outcome:** Able to understand how the web works.

**Duration:** 2 hours

**List of Hardware/Software requirements:**

10. JDK Setup
11. Windows/Ubuntu Operation System
12. Notepad Editor

**Code/Program/Procedure (with comments):**

```
class FibonacciSeries  
{  
    static int  
    n1=0,n2=1,n3=0;  
    //Defining function  
    static void printFibonacci(int count)  
    {  
        if(count>0)  
        {  
            n3 = n1 + n2;  
            n1 = n2;  
        }  
    }  
}
```

```
n2 = n3;  
System.out.print(" "+n3);  
printFibonacci(count-1);  
}  
}  
  
public static void main(String args[]){  
int count=10;  
System.out.print(n1+" "+n2);//printing 0 and 1  
printFibonacci(count-2);//n-2 because 2 numbers are already printed  
}  
}
```

### Fibonacci Series using Recursion Method

```
class FibonacciSeriesReccursion  
{  
public static void main(String args[])  
{  
int n1=0,n2=1,n3,i,count=10;  
System.out.print(n1+" "+n2);//printing 0 and 1  
for(i=2;i<count;++i)//loop starts from 2 because 0 and 1 are already printed  
{  
n3=n1+n2;  
System.out.print(" "+n3);  
}
```

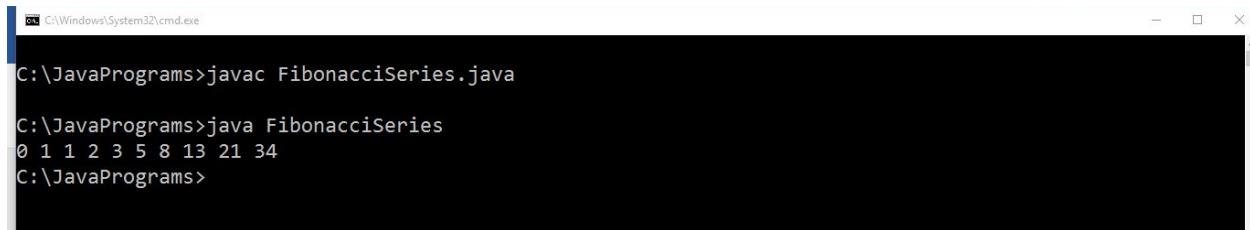
```
n1=n2;
```

```
n2=n3;
```

```
}
```

```
}}
```

### Output/Results snippet:



The screenshot shows a Windows Command Prompt window titled 'C:\Windows\System32\cmd.exe'. The command line shows the user navigating to 'C:\JavaPrograms', compiling a Java program named 'FibonacciSeries.java' with 'javac', and then running it with 'java'. The output of the program, which generates the Fibonacci series starting from 0, is displayed below the command line.

```
C:\JavaPrograms>javac FibonacciSeries.java
C:\JavaPrograms>java FibonacciSeries
0 1 1 2 3 5 8 13 21 34
C:\JavaPrograms>
```

### References:

- <https://www.w3schools.com/java>
- <https://www.javatpoint.com/java-tutorial>

---

## Activity 5

**Aim:** Java Program to Solve any Linear Equation in One Variable

**Learning outcome:** Able to understand how the web works.

**Duration:** 3 hours

**List of Hardware/Software requirements:**

13. JDK Setup
14. Windows/Ubuntu Operation System
15. Notepad Editor

**Code/Program/Procedure (with comments):**

```
// Java program to solve  
// the given equation  
import java.io.*;  
class LinearEquation  
{  
    // Function to solve  
    // the given equation  
    static String solveEquation(String equation)  
    {  
        int n = equation.length(),  
        sign = 1, coeff = 0;
```

```
int total = 0, i = 0;  
  
// Traverse the equation  
  
for (int j = 0; j < n; j++)  
  
{  
    if (equation.charAt(j) == '+' || equation.charAt(j) == '-')  
  
    {  
        if (j > i)  
            total += sign *  
                Integer.parseInt(equation.substring(i, j));  
  
        i = j;  
    }  
  
    // For cases such  
  
    // as: x, -x, +x  
  
    else if (equation.charAt(j) == 'x')  
  
    {  
        if ((i == j) ||  
            equation.charAt(j - 1) == '+')  
            coeff += sign;  
  
        else if (equation.charAt(j - 1) == '-')            coeff -= sign;  
  
        else  
            coeff += sign *
```

---

```
Integer.parseInt(equation.substring(i, j));

i = j + 1;

}

// Flip sign once

// '=' is seen

else if (equation.charAt(j) == '=')

{

if (j > i)

total += sign *

Integer.parseInt(equation.substring(i, j));

sign = -1;

i = j + 1;

}

}

// There may be a

// number left in the end

if (i < n)

total = total +

sign *

Integer.parseInt(equation.substring(i));

// For infinite

// solutions
```

```
if(coeff==0 &&
total == 0)
return "Infinite solutions";
// For no solution
if(coeff==0 &&
total != 0)
return "No solution";
// x = total sum / coeff
// of x '-' sign indicates
// moving numeric value to
// right hand side
int ans = -total / coeff;
return (Integer.toString(ans));
}

// Driver code
public static void main(String args[])
{
String equation = new String("x+5-3+x=6+x-2");
System.out.print("x = " + solveEquation(equation));
}
```

---

### Output/Results snippet:



A screenshot of a Windows Command Prompt window titled 'C:\Windows\System32\cmd.exe'. The window shows the following text:  
C:\JavaPrograms>javac LinearEquation.java  
C:\JavaPrograms>java LinearEquation  
X = 2  
C:\JavaPrograms>

### References:

- <https://www.w3schools.com/java>
- <https://www.javatpoint.com/java-tutorial>

---

## Activity 6

**Aim:** Java Program to Find Inverse of a Matrix

**Learning outcome:** Java: The key language.

**Duration:** 3 hours

**List of Hardware/Software requirements:**

1. Computer System with minimum 1GB RAM
2. OS: Minimum Microsoft Windows 7 or Ubuntu 12
3. JAVA 8 or higher

**Code/Program/Procedure (with comments):**

```
import java.util.Scanner;      //importing Scanner class

public class InverseMatrix {

    public static void main(String args[]) {

        int i, j;          //loop iterator var

        float det, temp;

        float mat[][] = new float[2][2];

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter elements of 2x2 matrix row wise:");

        for(i = 0; i < 2; ++i)          //loop to get values by row

            for(j = 0; j < 2; ++j)      //loop to get values by col

                mat[i][j] = sc.nextFloat();

        det = (mat[0][0] * mat[1][1]) - (mat[0][1] * mat[1][0]);      //determinant calculation
```

---

```
System.out.println("\ndeterminant = " + det);

//inverse calculation logic

temp = mat[0][0];

mat[0][0] = mat[1][1];

mat[1][1] = temp;

mat[0][1] = - mat[0][1];

mat[1][0] = - mat[1][0];

System.out.println("\nInverse of matrix is:");      //displaying output from here

for(i = 0; i < 2; ++i) {

    for(j = 0; j < 2; ++j)

        System.out.print((mat[i][j]/det) + " ");

    System.out.print("\n");

}

}

}
```

**Output/Results snippet:**

---

```
Enter elements of matrix row wise:  
1 2 3  
4 5 6  
  
determinant = -2.0  
  
Inverse of matrix is:  
-2.0 1.0  
1.5 -0.5
```

### References:

- Core Module 4 Web Development Lab

---

## Activity 7

**Aim:** Java Program to Perform Encoding of a Message Using Matrix Multiplication

**Learning outcome:** Java: The key language.

**Duration:** 2 hours

**List of Hardware/Software requirements:**

1. Computer System with minimum 1GB RAM
2. OS: Minimum Microsoft Windows 7 or Ubuntu 12
3. JAVA 8 or higher

**Code/Program/Procedure (with comments):**

```
import java.util.Scanner;           //importing Scanner class

public class EncodingMatrix

{
    public static void main(String args[])
    {
        int n;
        Scanner input = new Scanner(System.in);   //user input
        System.out.println("Enter the base of squared matrices");
        n = input.nextInt();
        int [][] a = new int[n][n];    //declaring 2D array
        int [][] b = new int[n][n];    //declaring 2D array
        int [][] c = new int[n][n];    //declaring 2D array
```

```
System.out.println("Enter the elements of matrix to be encoded: ");

for(int i=0; i<n; i++)
    for(int j=0; j<n; j++)
        a[i][j] = input.nextInt();

for(int i=0; i<n; i++)
    for(int j=0; j<n; j++)
        b[i][j] = i+j;

for (int i = 0; i < n; i++)          //deep nesting for loops for encoding
{
    for (int j = 0; j < n; j++)
    {
        for (int k = 0; k < n; k++)
        {
            c[i][j] = c[i][j] + a[i][k] * b[k][j];
        }
    }
}

System.out.println("The Encoded matrix is:");

for(int i=0; i<n; i++)          //deep nesting for loops for displaying
{
    for(int j=0; j<n; j++)
    {
```

---

```
System.out.print(c[i][j] + " ");      //display values with space seperation
}
System.out.println();
}
input.close();      //closing input stream
}
}
```

**Output/Results snippet:**

```
Enter the base of squared matrices
2
Enter the elements of matrix to be encoded:
1 5
3 9
The Encoded matrix is:
5 11
9 21
```

**References:**

- Core Module 4 Web Development Lab

---

## Activity 8

**Aim:** Write a Java program to sort a numeric array and a string array

**Learning outcome:** Java: The key language.

**Duration:** 2 hours

**List of Hardware/Software requirements:**

1. Computer System with minimum 1GB RAM
2. OS: Minimum Microsoft Windows 7 or Ubuntu 12
3. JAVA 8 or higher

**Code/Program/Procedure (with comments):**

```
import java.util.Arrays;           //Array class imported

public class NumericStringArray {

    public static void main(String[] args){

        int[] my_array1 = {           //pre-defined array elements for Numeric data
            1789, 2035, 1899, 1456, 2013,
            1458, 2458, 1254, 1472, 2365,
            1456, 2165, 1457, 2456};

        String[] my_array2 = {           //pre-defined array elements for String data
            "Java",
            "Python",
            "PHP",
            "C#"};
```

---

```
"C Programming",
"C++"
};

System.out.println("Original numeric array : "+Arrays.toString(my_array1));

Arrays.sort(my_array1);           //Sorting by function Arrays_sort()

System.out.println("Sorted numeric array : "+Arrays.toString(my_array1));

System.out.println("Original string array : "+Arrays.toString(my_array2));

Arrays.sort(my_array2);           //Sorting by function Arrays_sort()

System.out.println("Sorted string array : "+Arrays.toString(my_array2));

}
}
```

**Output/Results snippet:**

```
Original numeric array : [1789, 2035, 1899, 1456, 2013, 1458, 2458, 1254, 1472
, 2365, 1456, 2165, 1457, 2456]
Sorted numeric array : [1254, 1456, 1456, 1457, 1458, 1472, 1789, 1899, 2013,
2035, 2165, 2365, 2456, 2458]
Original string array : [Java, Python, PHP, C#, C Programming, C++]
Sorted string array : [C Programming, C#, C++, Java, PHP, Python]
```

**References:**

- Core Module 4 Web Development Lab

## Activity 9

**Aim:** Write a Java program to remove a specific element from an array

**Learning outcome:** Java: The key language.

**Duration:** 3 hours

**List of Hardware/Software requirements:**

1. Computer System with minimum 1GB RAM
2. OS: Minimum Microsoft Windows 7 or Ubuntu 12
3. JAVA 8 or higher

**Code/Program/Procedure (with comments):**

```
import java.util.Scanner;           //Scanner class imported to receive input from user

public class Delete

{
    public static void main(String[] args)

    {
        int n, x, flag = 1, loc = 0;

        Scanner s = new Scanner(System.in);

        System.out.print("Enter no. of elements you want in array:");

        n = s.nextInt();           //user input initiated

        int a[] = new int[n];

        System.out.println("Enter all the elements:");

        for (int i = 0; i < n; i++)      //loop to take multiple values input
```

---

```
{  
    a[i] = s.nextInt();           //user input saved  
}  
  
System.out.print("Enter the element you want to delete:");  
  
x = s.nextInt();  
  
for (int i = 0; i < n; i++)      //checking for value match  
  
{  
    if(a[i] == x)  
    {  
        flag = 1;  
        loc = i;  
        break;          //break if value match found  
    }  
    else  
    {  
        flag = 0;          //set flag as '0' if not found  
    }  
}  
  
if(flag == 1)  
  
{  
    for(int i = loc+1; i < n; i++)  
    {
```

---

```
a[i-1] = a[i];           //deletion by shifting
}

System.out.print("After Deleting:");

for (int i = 0; i < n-2; i++)           //display after deletion

{
    System.out.print(a[i]+",");
}

System.out.print(a[n-2]);

}
else           //if not found, display error

{
    System.out.println("Element not found");
}

}
```

**Output/Results snippet:**

```
Enter no. of elements you want in array:5
Enter all the elements:
3
5
8
1
9
Enter the element you want to delete:8
After Deleting:3,5,1,9
```

---

## References:

- Core Module 4 Web Development Lab

---

## Activity 10

**Aim:** Write a Java program to get the minimum value of year, month, week, date from the current date of a default calendar

**Learning outcome:** Java: The key language.

**Duration:** 2 hours

**List of Hardware/Software requirements:**

1. Computer System with minimum 1GB RAM
2. OS: Minimum Microsoft Windows 7 or Ubuntu 12
3. JAVA 8 or higher

**Code/Program/Procedure (with comments):**

```
import java.util.*;          //util class import for calendar

public class Calender {

    public static void main(String[] args)

    {

        // Create a default calendar

        Calendar cal = Calendar.getInstance();

        System.out.println();

        System.out.println("\nCurrent Date and Time:" + cal.getTime()); //get Time info

        //select year, month, week, date from calendar object

        int actualMaxYear = cal.getActualMinimum(Calendar.YEAR);

        int actualMaxMonth = cal.getActualMinimum(Calendar.MONTH);

        int actualMaxWeek = cal.getActualMinimum(Calendar.WEEK_OF_YEAR);
```

---

```
int actualMaxDate = cal.getActualMinimum(Calendar.DATE);

//display values obtained

System.out.println("Actual Minimum Year: "+actualMaxYear);

System.out.println("Actual Minimum Month: "+actualMaxMonth);

System.out.println("Actual Minimum Week of Year: "+actualMaxWeek);

System.out.println("Actual Minimum Date: "+actualMaxDate+"\n");

System.out.println();

}

}
```

**Output/Results snippet:**

```
Current Date and Time:Mon Jun 01 08:40:58 IST 2020
Actual Minimum Year: 1
Actual Minimum Month: 0
Actual Minimum Week of Year: 1
Actual Minimum Date: 1
```

**References:**

- Core Module 4 Web Development Lab

---

## Activity 11

**Aim:** Perform animation in applet

**Learning outcome:** Java: The key language.

**Duration:** 3 hours

**List of Hardware/Software requirements:**

1. Computer System with minimum 1GB RAM
2. OS: Minimum Microsoft Windows 7 or Ubuntu 12
3. JAVA 8 or higher

**Code/Program/Procedure (with comments):**

**Animation.java**

```
import java.awt.*;          //import abstract windows toolkit classes
import java.applet.*;        //import applet classes

public class Animation extends Applet {

    Image picture;

    public void init() {
        picture = getImage(getDocumentBase(), "flower.jpg");      //reading image from directory
    }

    public void paint(Graphics g) {           //initiating graphics class parameters
        for(int i=0;i<500;i++){
            g.drawImage(picture, i, 30, this);      //looping till all pixels shifted
        }
    }

    try{Thread.sleep(100);}catch(Exception e){}           //allow delay
}
```

```
    }  
}  
}
```

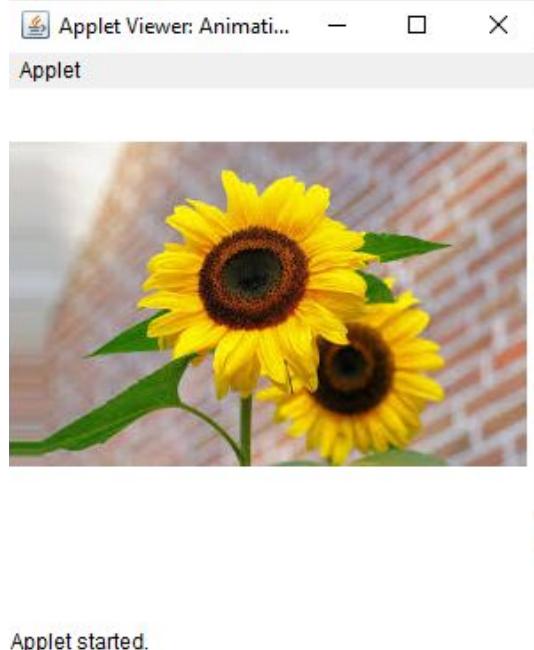
### **Animation.html**

```
<html>  
<body>  
<applet code="Animation.class" width="300" height="300">  
</applet>  
</body>  
</html>
```

### **flower.jpg (example image)**



### **Output/Results snippet:**



### References:

- Core Module 4 Web Development Lab

---

## Activity 12

**Aim:** Write a java program to paint like paint brush in applet

**Learning outcome:** Java: The key language.

**Duration:** 2 hours

**List of Hardware/Software requirements:**

1. Computer System with minimum 1GB RAM
2. OS: Minimum Microsoft Windows 7 or Ubuntu 12
3. JAVA 8 or higher

**Code/Program/Procedure (with comments):**

**PaintBrush.java**

```
// import required java libraries

import java.awt.*;
import java.awt.event.*;
import java.applet.Applet;

public class PaintBrush extends Applet implements MouseListener, MouseMotionListener,
ActionListener

{

// component declarations

Button blackButton;
Button redButton;
Button greenButton;
Button blueButton;
```

```
Button penButton;  
Button lineButton;  
Button eraserButton;  
Button clearButton;  
Button squareButton;  
Button ovalButton;  
Button fillSquareButton;  
Button fillOvalButton;  
Label colourTitle;  
Label colourDisplay;  
Label toolTitle;  
Label toolDisplay;  
// required variables to store settings  
Color currentColour;  
int toolType;  
// variables to store interim coordinates  
int oldX = -1;  
int oldY = -1;  
public void init()  
{  
// create all the buttons  
blackButton = new Button("Black");
```

```
redButton = new Button("Red");
greenButton = new Button("Green");
blueButton = new Button("Blue");
penButton = new Button("Pen");
lineButton = new Button("Line");
eraserButton = new Button("Eraser");
clearButton = new Button("Clear");
squareButton = new Button("Square");
ovalButton = new Button("Oval");
fillSquareButton = new Button("F Square");
fillOvalButton = new Button("F Oval");
// add action listeners for all the buttons
blackButton.addActionListener(this);
redButton.addActionListener(this);
greenButton.addActionListener(this);
blueButton.addActionListener(this);
penButton.addActionListener(this);
lineButton.addActionListener(this);
eraserButton.addActionListener(this);
clearButton.addActionListener(this);
squareButton.addActionListener(this);
ovalButton.addActionListener(this);
```

```
fillSquareButton.addActionListener(this);

fillOvalButton.addActionListener(this);

// create the button bar panel

Panel buttonPanel = new Panel();

buttonPanel.setLayout(new GridLayout(6, 2));

buttonPanel.add(blackButton);

buttonPanel.add(redButton);

buttonPanel.add(greenButton);

buttonPanel.add(blueButton);

buttonPanel.add(penButton);

buttonPanel.add(lineButton);

buttonPanel.add(eraserButton);

buttonPanel.add(clearButton);

buttonPanel.add(squareButton);

buttonPanel.add(ovalButton);

buttonPanel.add(fillSquareButton);

buttonPanel.add(fillOvalButton);

// create the status bar panel

colourTitle = new Label("Colour: ");

currentColour = Color.black;

colourDisplay = new Label("Black");

toolTitle = new Label(" Selected Tool: ");
```

```
toolType = 0;

toolDisplay = new Label("Pen (Scribble)");

Panel statusPanel = new Panel();

statusPanel.setLayout(new FlowLayout(FlowLayout.CENTER));

statusPanel.add(colourTitle);

statusPanel.add(colourDisplay);

statusPanel.add(toolTitle);

statusPanel.add(toolDisplay);

// arrange final panels in a border layout

this.setLayout(new BorderLayout());

this.add(buttonPanel, BorderLayout.WEST);

this.add(statusPanel, BorderLayout.NORTH);

// add mouse listeners to applet

this.addMouseListener(this);

this.addMouseMotionListener(this);

}

// event handling for when an action occurs (in this case, whenever

// a button is pressed)

public void actionPerformed(ActionEvent e)

{

// get the local graphics page to draw on

Graphics page = this.getGraphics();
```

```
// red button pressed: set the current colour to red  
// and update the status display  
  
if (e.getSource().equals(redButton))  
{  
    currentColour = Color.red;  
    colourDisplay.setText("Red");  
}  
  
// blue button pressed: set the current colour to blue  
// and update the status display  
  
if (e.getSource().equals(blueButton))  
{  
    currentColour = Color.blue;  
    colourDisplay.setText("Blue");  
}  
  
// green button pressed: set the current colour to green  
// and update the status display  
  
if (e.getSource().equals(greenButton))  
{  
    currentColour = Color.green;  
    colourDisplay.setText("Green");  
}  
  
// black button pressed: set the current colour to black
```

```
// and update the status display

if (e.getSource().equals(blackButton))

{

currentColour = Color.black;

colourDisplay.setText("Black");

}

// pen button pressed: set the selected tool to '0'

// and update the status display

if (e.getSource().equals(penButton))

{

toolType = 0;

toolDisplay.setText("Pen (Scribble)");

}

// eraser button pressed: set the selected tool to '1'

// and update the status display

if (e.getSource().equals(eraserButton))

{

toolType = 1;

toolDisplay.setText("Eraser");

}

// square button pressed: set the selected tool to '2'

// and update the status display
```

```
if (e.getSource().equals(squareButton))  
{  
    toolType = 2;  
    toolDisplay.setText("Square");  
}  
  
// oval button pressed: set the selected tool to '3'  
// and update the status display  
  
if (e.getSource().equals(ovalButton))  
{  
    toolType = 3;  
    toolDisplay.setText("Oval");  
}  
  
// filled square button pressed: set the selected tool to '4'  
// and update the status display  
  
if (e.getSource().equals(fillSquareButton))  
{  
    toolType = 4;  
    toolDisplay.setText("Filled Square");  
}  
  
// filled oval button pressed: set the selected tool to '5'  
// and update the status display  
  
if (e.getSource().equals(fillOvalButton))
```

```
{  
toolType = 5;  
toolDisplay.setText("Filled Oval");  
}  
  
// clear button pressed: get the size of the applet and draw  
// a clearing rectangle over it, to clear the screen  
  
if (e.getSource().equals(clearButton))  
{  
Dimension size = this.getSize();  
page.clearRect(0, 0, size.width, size.height);  
}  
  
// line button pressed: set the selected tool to '6'  
// and update the status display  
  
if (e.getSource().equals(lineButton))  
{  
toolType = 6;  
toolDisplay.setText("Line");  
}  
}  
  
// event handling for when the mouse button is first pressed  
  
public void mousePressed(MouseEvent e)  
{
```

```
// store the coordinates for future reference

oldX = e.getX();
oldY = e.getY();
}

// event handling for when the mouse is dragged with the button
// held down

public void mouseDragged(MouseEvent e)

{
    Graphics page = this.getGraphics();

    // scribble tool: draw a line from the old coordinates to the
    // new ones

    if (toolType == 0)

    {
        page.setColor(currentColour);

        page.drawLine(oldX, oldY, e.getX(), e.getY());

        oldX = e.getX();
        oldY = e.getY();
    }

    // eraser tool: clear a small rectangles' worth at the specified
    // coordinate

    if (toolType == 1)
    {
```

```
page.clearRect(e.getX(), e.getY(), 10, 10);

page.setColor(currentColour);

}

}

// resolve method: used to swap two numbers around so the
// smaller is always in element 0, and the larger in element
// 1, of the returned array

public int[] resolve(int newC, int oldC)

{
    int start, end;

    if (newC < oldC)

    {
        start = newC;
        end = oldC;
    }

    else

    {
        start = oldC;
        end = newC;
    }

    int[] blah = {start, end};

    return blah;
}
```

---

```
}

// event handling for when the mouse button is released

public void mouseReleased(MouseEvent e)

{

// get the applet's Graphics page

Graphics page = this.getGraphics();

// resolve the coordinates so that the smaller of the x and y

// coordinates can be picked out easily

int newX = e.getX();

int newY = e.getY();

int[] x = resolve(newX, oldX);

int[] y = resolve(newY, oldY);

// tool type 2: draw a rectangle

if (toolType == 2)

{

page.setColor(currentColour);

page.drawRect(x[0], y[0], (x[1] - x[0]), (y[1] - y[0]));

}

// tool type 3: draw an oval

if (toolType == 3)

{

page.setColor(currentColour);
```

```
page.drawOval(x[0], y[0], (x[1] - x[0]), (y[1] - y[0]));  
}  
  
// tool type 4: draw a filled rectangle  
  
if (toolType == 4)  
{  
  
page.setColor(currentColour);  
  
page.fillRect(x[0], y[0], (x[1] - x[0]), (y[1] - y[0]));  
}  
  
// tool type 5: draw a filled oval  
  
if (toolType == 5)  
{  
  
page.setColor(currentColour);  
  
page.fillOval(x[0], y[0], (x[1] - x[0]), (y[1] - y[0]));  
}  
  
// tool type 6: draw the line  
  
if (toolType == 6)  
{  
  
page.setColor(currentColour);  
  
page.drawLine(oldX, oldY, newX, newY);  
}  
}  
  
// unused methods from listener interfaces
```

```
public void mouseEntered(MouseEvent e) {}

public void mouseExited(MouseEvent e) {}

public void mouseMoved(MouseEvent e) {}

public void mouseClicked(MouseEvent e) {}

}
```

### **PaintBrush.html**

```
<html>

<body>

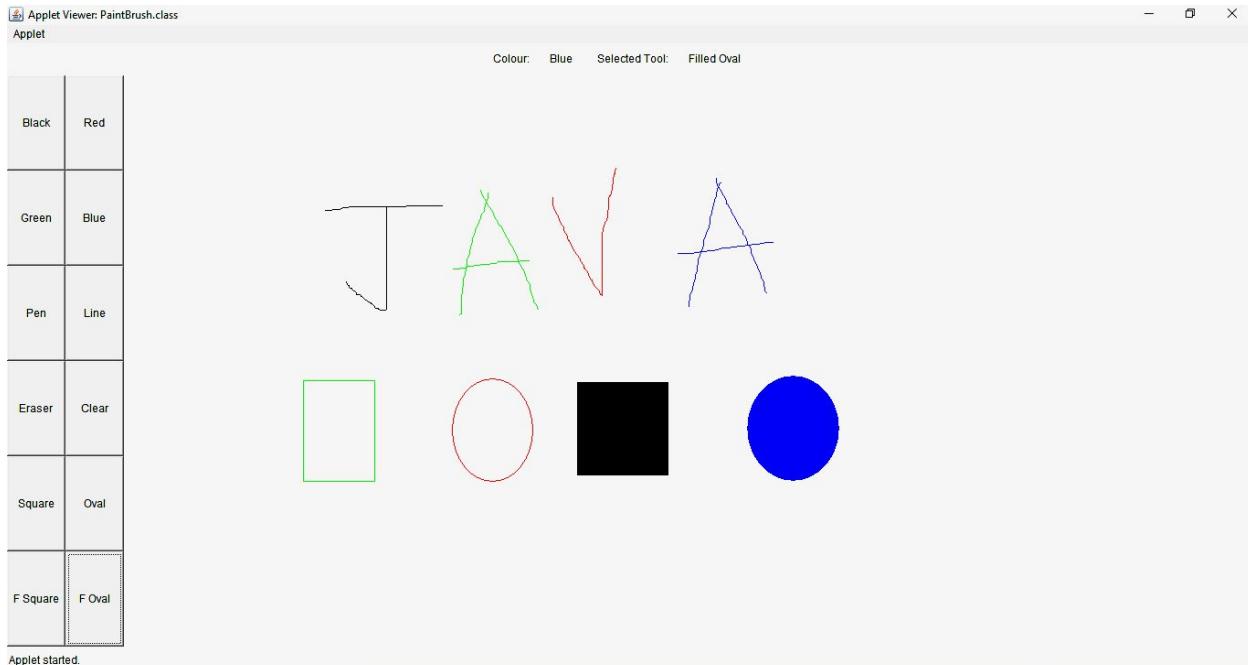
<applet code="PaintBrush.class" width="300" height="300">

</applet>

</body>

</html>
```

### **Output/Results snippet:**



## References:

- Core Module 4 Web Development Lab

---

## Activity 13

**Aim:** Program to display analog clock in applet

**Learning outcome:** Java: The key language.

**Duration:** 3 hours

**List of Hardware/Software requirements:**

1. Computer System with minimum 1GB RAM
2. OS: Minimum Microsoft Windows 7 or Ubuntu 12
3. JAVA 8 or higher

**Code/Program/Procedure (with comments):**

**AnalogClock.java**

```
import java.applet.*;          //importing classes for applet, aws and util  
import java.awt.*;  
import java.util.*;  
import java.text.*;  
  
public class AnalogClock extends Applet implements Runnable {  
  
    //declaring all variables  
  
    int width, height;  
  
    Thread t = null;  
  
    boolean threadSuspended;    //thread var  
  
    int hours=0, minutes=0, seconds=0;  
  
    String timeString = "";
```

---

```
public void init() {      //starting applet
    width = getSize().width;
    height = getSize().height;
    setBackground( Color.black );
}

public void start() {      //starting applet thread
    if( t == null ) {
        t = new Thread( this );
        t.setPriority( Thread.MIN_PRIORITY );      //priority set to minimum
        threadSuspended = false;
        t.start();
    }
    else {
        if( threadSuspended ) {
            threadSuspended = false;
            synchronized( this ) {      //sync thread operation
                notify();
            }
        }
    }
}

public void stop() {
```

---

```
threadSuspended = true;

}

public void run() {           //running thread over applets

    try {

        while (true) {

            //finding time dimensions of hour, mins, seconds

            Calendar cal = Calendar.getInstance();

            hours = cal.get( Calendar.HOUR_OF_DAY );

            if ( hours > 12 ) hours -= 12;

            minutes = cal.get( Calendar.MINUTE );

            seconds = cal.get( Calendar.SECOND );

            SimpleDateFormat formatter

            = new SimpleDateFormat( "hh:mm:ss", Locale.getDefault() );

            Date date = cal.getTime();

            timeString = formatter.format( date );

            // Now the thread checks to see if it should suspend itself

            if ( threadSuspended ) {

                synchronized( this ) {

                    while ( threadSuspended ) {

                        wait();

                    }

                }
            }
        }
    }
}
```

---

```
    }

repaint();           //repainting applet window output after each thread loop iteration

t.sleep( 1000 ); // interval specified in milliseconds

}

}

catch (Exception e) { }

}

void drawHand( double angle, int radius, Graphics g ) { //drawing hands

    angle -= 0.5 * Math.PI;

    int x = (int)( radius*Math.cos(angle) );

    int y = (int)( radius*Math.sin(angle) );

    g.drawLine( width/2, height/2, width/2 + x, height/2 + y );

}

void drawWedge( double angle, int radius, Graphics g ) { //drawing wedge

    angle -= 0.5 * Math.PI;

    int x = (int)( radius*Math.cos(angle) );

    int y = (int)( radius*Math.sin(angle) );

    angle += 2*Math.PI/3;

    int x2 = (int)( 5*Math.cos(angle) );

    int y2 = (int)( 5*Math.sin(angle) );

    angle += 2*Math.PI/3;

    int x3 = (int)( 5*Math.cos(angle) );
```

---

```
int y3 = (int)( 5*Math.sin(angle) );

g.drawLine( width/2+x2, height/2+y2, width/2 + x, height/2 + y );
g.drawLine( width/2+x3, height/2+y3, width/2 + x, height/2 + y );
g.drawLine( width/2+x2, height/2+y2, width/2 + x3, height/2 + y3 );

}

public void paint( Graphics g ) {      //paint all graphics

    g.setColor( Color.gray );      //set color

    drawWedge( 2*Math.PI * hours / 12, width/5, g );
    drawWedge( 2*Math.PI * minutes / 60, width/3, g );
    drawHand( 2*Math.PI * seconds / 60, width/2, g );

    g.setColor( Color.white );
    g.drawString( timeString, 10, height-10 );
}

}
```

### AnalogClock.html

```
<html>

<body>

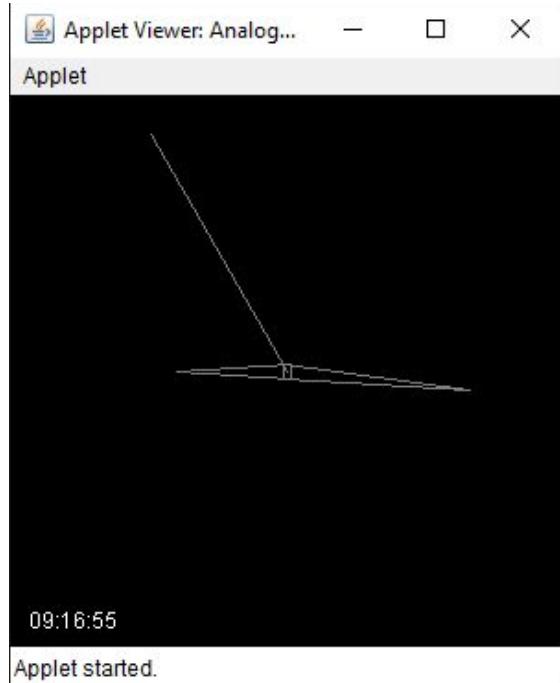
<applet code="AnalogClock.class" width="300" height="300">

</applet>

</body>

</html>
```

### Output/Results snippet:



### References:

- Core Module 4 Web Development Lab

---

## Activity 14

**Aim:** Program to communicate two applets (3 Hrs)

**Learning outcome:** Java: The key language.

**Duration:** 3 hour

**List of Hardware/Software requirements:**

- Windows / Linux OS
- Installed jdk 1.5 or above
- Editor Notepad++

**Code/Program/Procedure (with comments):**

ContextApplet.java

```
//import all the predefined library

import java.applet.*;
import java.awt.*;
import java.awt.event.*;

//create a class and inherit fromApplet class

public class ContextApplet extends Applet implements ActionListener{

//Button class object

Button b;

public void init(){
```

```
b=new Button("Click");
b.setBounds(50,50,60,50);
add(b);
b.addActionListener(this);

}

//Function of action Listener

public void actionPerformed(ActionEvent e){
AppletContext ctx=getAppletContext();
Applet a=ctx.getApplet("app2");
a.setBackground(Color.yellow);
}
}
```

First.java

```
//import all the predefined library

import javax.swing.*;

//create a class

public class First{

//create a constructor

First(){

JFrame f=new JFrame();
JButton b=new JButton("click");
```

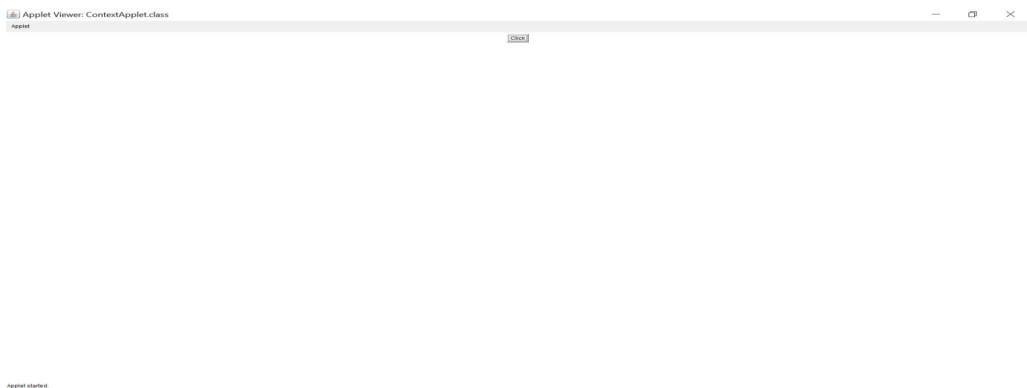
```
b.setBounds(130,100,100, 40);  
f.add(b);  
f.setSize(300,400);  
f.setLayout(null);  
f.setVisible(true);  
f.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);  
}  
  
public static void main(String[] args) {  
    //calling the constructor  
    new First();  
}
```

```
//HTML pages for applets  
  
ContextApplet.html  
  
<html>  
  
<body>  
  
<applet code="ContextApplet.class" width="150" height="150" name="app1">  
</applet>  
  
<applet code="First.class" width="150" height="150" name="app2">  
</applet>  
  
</body>
```

---

</html>

### Output/Results snippet:



### References:

- <https://codingbat.com/java/Logic-1>
- <https://javarevisited.blogspot.com/2017/07/top-50-javascript-programs-from-coding-Interviews.html>

---

## Activity 15

**Aim:** Write a Java program to convert a hash set to a tree set

**Learning outcome:** Java: The key language.

**Duration:** 2 hour

**List of Hardware/Software requirements:**

- Windows / Linux OS
- Installed jdk 1.5 or above
- Editor Notepad++

**Code/Program/Procedure (with comments):**

```
//import all the predefined library

import java.util.HashSet;
import java.util.TreeSet;
import java.util.Set;

//create a class

class ConvertHashSettoTreeSet{

public static void main(String[] args) {

// Create a HashSet

HashSet<String> hset = new HashSet<String>();

//add elements to HashSet

hset.add("Element1");
```

---

```
hset.add("Element2");
hset.add("Element3");
hset.add("Element4");

// Displaying HashSet elements

System.out.println("HashSet contains: "+ hset);

// Creating a TreeSet of HashSet elements

Set<String> tset = new TreeSet<String>(hset);

// Displaying TreeSet elements

System.out.println("TreeSet contains: ");

for(String temp : tset){

    System.out.println(temp);

}

}

}

}
```

**Output/Results snippet:**

```
siddharth@siddharth-HP-Notebook: ~/Desktop
File Edit View Search Terminal Help
siddharth@siddharth-HP-Notebook:~/Desktop$ javac Test.java
siddharth@siddharth-HP-Notebook:~/Desktop$ java ConvertHashSetToTreeSet
HashSet contains: [Element4, Element3, Element2, Element1]
TreeSet contains:
Element1
Element2
Element3
Element4
siddharth@siddharth-HP-Notebook:~/Desktop$
```

## References:

- <https://codingbat.com/java/Logic-1>
- <https://javarevisited.blogspot.com/2017/07/top-50-java-programs-from-coding-Interviews.html>

---

## Activity 16

**Aim:** Create runnable jar file in java (3 Hrs)

**Learning outcome:** Java: The key language.

**Duration:** 3 hour

**List of Hardware/Software requirements:**

- Windows / Linux OS
- Installed jdk 1.5 or above
- Editor Notepad++

**Code/Program/Procedure (with comments):**

First.java

//import all the predefined library

import javax.swing.\*;

//create a class

public class First{

//create a constructor

First(){

JFrame f=new JFrame();

JButton b=new JButton("click");

b.setBounds(130,100,100, 40);

f.add(b);

---

```
f.setSize(300,400);
f.setLayout(null);
f.setVisible(true);
f.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
}

public static void main(String[] args) {
//calling the constructor
new First();
}
}

myfile.mf

Main-Class: First
```

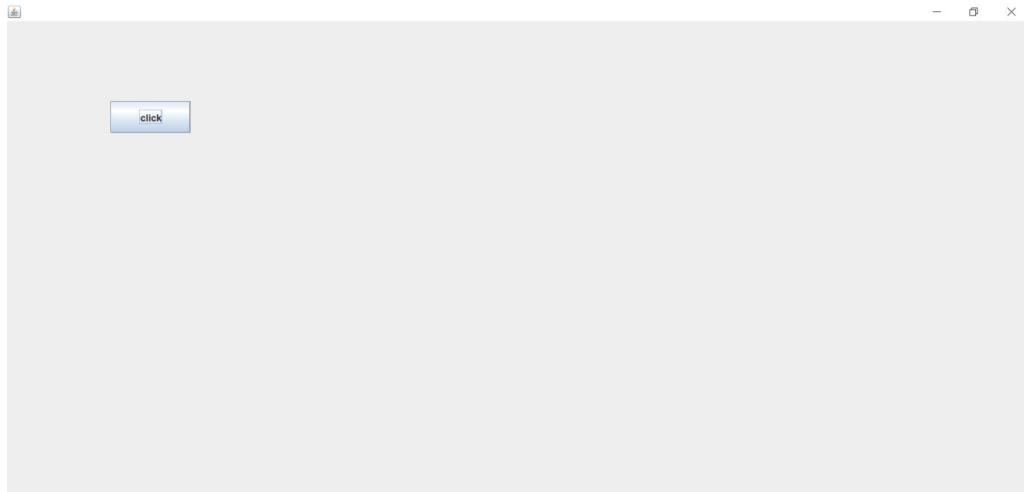
**Output/Results snippet:**

```
javac First.java
```

```
jar -cvmf myfile.mf myjar.jar First.class
```

Now it will create the executable jar file.

If you double click on it, it will call the main method of the First class.



## References:

- <https://codingbat.com/java/Logic-1>
- <https://javarevisited.blogspot.com/2017/07/top-50-java-programs-from-coding-Interviews.html>

---

## Activity 17

**Aim:** Display image on a button in swing (2 Hrs)

**Learning outcome:** Java: The key language.

**Duration:** 2 hour

**List of Hardware/Software requirements:**

- Windows / Linux OS
- Installed jdk 1.5 or above
- Editor Notepad++

**Code/Program/Procedure (with comments):**

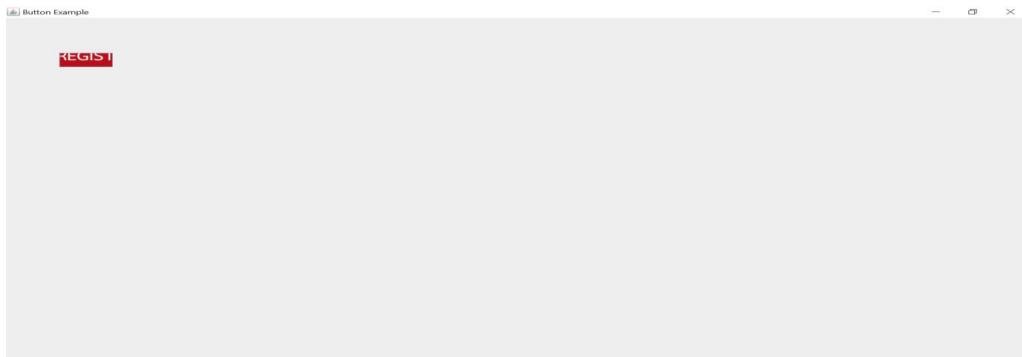
```
//import all the predefined library  
  
import javax.swing.*;  
  
//create class  
  
public class ButtonExample{  
  
    //constructor of class  
  
    ButtonExample(){  
  
        JFrame f=new JFrame("Button Example");  
  
        JButton b=new JButton(new ImageIcon("button.jpg"));  
  
        b.setBounds(100,100,100, 40);  
  
        f.add(b);  
  
        f.setSize(300,400);
```

---

```
f.setLayout(null);
f.setVisible(true);
f.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
}

public static void main(String[] args) {
    //invoking constructor
    new ButtonExample();
}
}
```

### Output/Results snippet:



### References:

- <https://codingbat.com/java/Logic-1>
- <https://javarevisited.blogspot.com/2017/07/top-50-java-programs-from-coding-Interviews.html>

---

## Activity 18

**Aim:** Program to change the component color by choosing a color from ColorChooser (2 Hrs)

**Learning outcome:** Java: The key language.

**Duration:** 2 hour

**List of Hardware/Software requirements:**

- Windows / Linux OS
- Installed jdk 1.5 or above
- Editor Notepad++

**Code/Program/Procedure (with comments):**

```
//import all the predefined library

import java.awt.event.*;
import java.awt.*;
import javax.swing.*;

//create a class and inherit from JFrame class

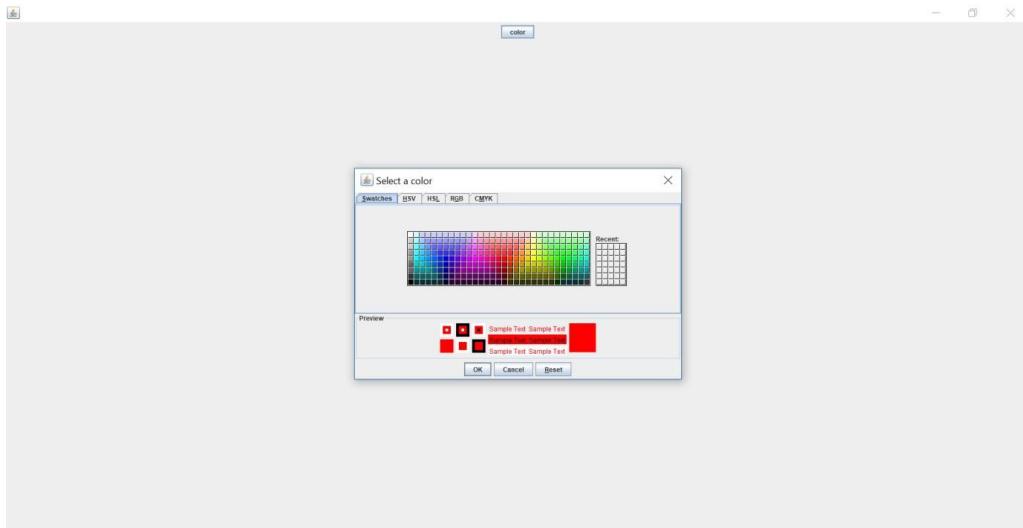
public class ColorChooserExample extends JFrame implements ActionListener {

    JButton b;
    Container c;

    ColorChooserExample(){
        c=getContentPane();
```

```
c.setLayout(new FlowLayout());  
  
b=new JButton("color");  
  
b.addActionListener(this);  
  
c.add(b);  
  
}  
  
//click event of the button  
  
public void actionPerformed(ActionEvent e) {  
  
Color initialcolor=Color.RED;  
  
//Color Dialog Box  
  
Color color=JColorChooser.showDialog(this,"Select a color",initialcolor);  
  
c.setBackground(color);  
  
}  
  
public static void main(String[] args) {  
  
ColorChooserExample ch=new ColorChooserExample();  
  
ch.setSize(400,400);  
  
ch.setVisible(true);  
  
ch.setDefaultCloseOperation(EXIT_ON_CLOSE);  
  
}  
  
}
```

**Output/Results snippet:**



## References:

- <https://codingbat.com/java/Logic-1>
- <https://javarevisited.blogspot.com/2017/07/top-50-java-programs-from-coding-Interviews.html>

---

## Activity 19

**Aim:** Program to create a notepad in swing (3 Hrs)

**Learning outcome:** Java: The key language.

**Duration:** 3 hour

**List of Hardware/Software requirements:**

- Windows / Linux OS
- Installed jdk 1.5 or above
- Editor Notepad++

**Code/Program/Procedure (with comments):**

Main.java

```
//import all the predefined library and create the main class  
import javax.swing.JFrame;  
  
public class Main {  
  
    public static void main(String args[]){  
  
        JFrame frame = new Grid();  
  
        frame.setTitle("Notepad");  
  
        frame.setVisible(true);  
  
        frame.setSize(1280, 720);  
  
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);  
  
        frame.setResizable(true);
```

---

```
frame.setLocationRelativeTo(null);

}

}

//import all the predefined library and create the Grid class for layout

Grid.java

import java.awt.Menu;

import java.awtMenuBar;

import java.awtMenuItem;

import java.awt.event.ActionEvent;

import java.awt.event.ActionListener;

import java.io.BufferedWriter;

import java.io.FileReader;

import java.io.FileWriter;

import java.util.Scanner;

import javax.swing.JFileChooser;

import javax.swing.JFrame;

import javax.swing.JTextArea;

public class Grid extends JFrame{

int fileToOpen;

int fileToSave;

JFileChooser fileOpen;

JFileChooser fileSave;
```

---

```
Grid(){ //constructor of grid
MenuBar menuBar = new MenuBar();
MenuItem menutem = new MenuItem();
final JTextArea textArea = new JTextArea();
setMenuBar(menuBar);
Menu file = new Menu("File");
menuBar.add(file);
MenuItem newOption = new MenuItem("New");
MenuItem open = new MenuItem("Open");
MenuItem save = new MenuItem("Save");
MenuItem close = new MenuItem("Exit");
file.add(newOption);
file.add(open);
file.add(save);
file.add(close);
getContentPane().add(textArea);
newOption.addActionListener(new ActionListener(){
public void actionPerformed(ActionEvent e){
textArea.setText("");
}
});
open.addActionListener(new ActionListener(){

```

---

```
public void actionPerformed(ActionEvent e){  
    openFile();  
    if(fileToOpen == JFileChooser.APPROVE_OPTION){  
        textArea.setText("");  
        try{  
            Scanner scan = new Scanner(new FileReader(fileOpen.getSelectedFile().getPath()));  
            while (scan.hasNext())  
                textArea.append(scan.nextLine());  
        } catch (Exception ex){  
            System.out.println(ex.getMessage());  
        }  
    }  
}  
});  
save.addActionListener(new ActionListener(){  
    public void actionPerformed(ActionEvent e){  
        saveFile();  
        if(fileToSave == JFileChooser.APPROVE_OPTION){  
            try {  
                BufferedWriter  
                out=new  
                BufferedWriter(new
```

---

```
FileWriter(fileSave.getSelectedFile().getPath()));

out.write(textArea.getText());

out.close();

} catch (Exception ex) {

System.out.println(ex.getMessage());

}

}

}

}

});

close.addActionListener(new ActionListener(){

public void actionPerformed(ActionEvent e){

System.exit(0);

}

});

}

public void openFile(){

JFileChooser open = new JFileChooser();

int option = open.showOpenDialog(this);

fileToOpen = option;

fileOpen = open;

}

public void saveFile(){


```

---

```
JFileChooser save = new JFileChooser();
int option = save.showOpenDialog(this);
fileToSave = option;
fileSave = save;
}
}
```

**Output/Results snippet:****References:**

- <https://codingbat.com/java/Logic-1>
- <https://javarevisited.blogspot.com/2017/07/top-50-java-programs-from-coding-Interviews.html>

---

## Activity 20

**Aim:** Program to inherit Frame class (2 Hrs)

**Learning outcome:** Java: The key language.

**Duration:** 2 hour

**List of Hardware/Software requirements:**

- Windows / Linux OS
- Installed jdk 1.5 or above
- Editor Notepad++

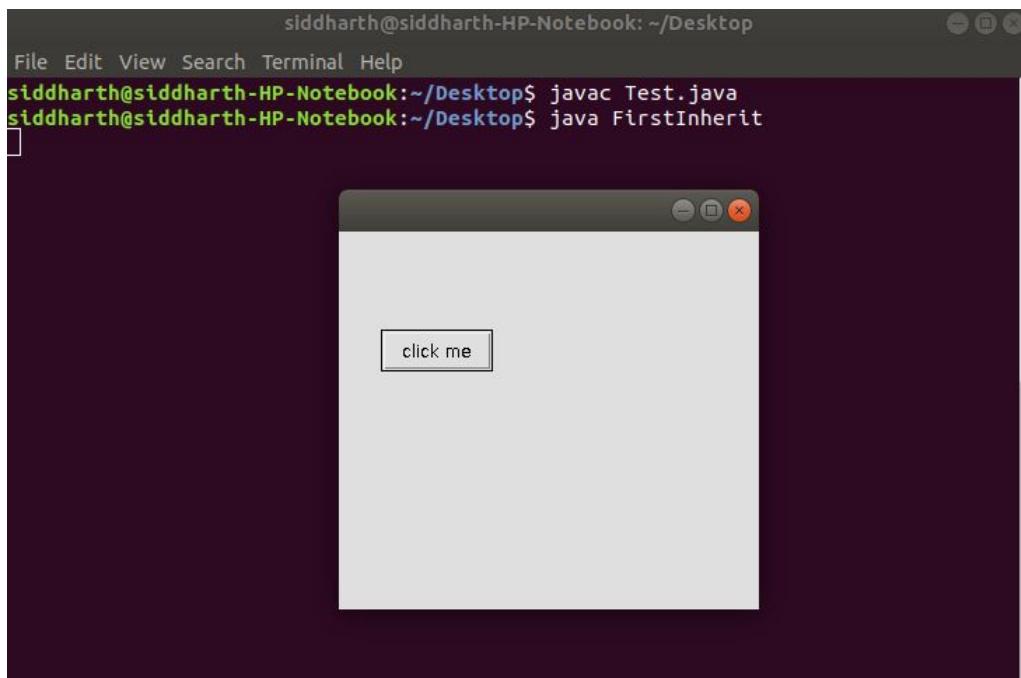
**Code/Program/Procedure (with comments):**

```
import java.awt.*;  
  
class FirstInherit extends Frame{  
  
FirstInherit(){  
  
Button b=new Button("click me");  
  
b.setBounds(30,100,80,30);  
// setting button position  
  
add(b);  
//adding button into frame  
  
setSize(300,300);  
//frame size 300 width and 300 height  
  
setLayout(null);  
//no layout manager  
  
setVisible(true);  
//now frame will be visible, by default not visible  
  
}  
  
public static void main(String args[]){
```

---

```
FirstInherit f=new FirstInherit();  
}  
}
```

### Output/Results snippet:



### References:

- <https://codingbat.com/java/Logic-1>
- <https://javarevisited.blogspot.com/2017/07/top-50-java-programs-from-coding-Interviews.html>

---

## Activity 21

**Aim:** Program to perform two tasks by two threads (3 Hrs)

**Learning outcome:** Java: The key language.

**Duration:** 3 hour

**List of Hardware/Software requirements:**

- Windows / Linux OS
- Installed jdk 1.5 or above
- Editor Notepad++

**Code/Program/Procedure (with comments):**

```
class TestMultitasking4{  
    public static void main(String args[]){  
        //Create a thread  
        Thread t1=new Thread(){  
            //Override the run method  
            public void run(){  
                System.out.println("task one");  
            }  
        };  
        //Create a thread  
        Thread t2=new Thread(){  
            //Override the run method  
            public void run(){  
                System.out.println("task two");  
            }  
        };  
        t1.start();  
        t2.start();  
    }  
}
```

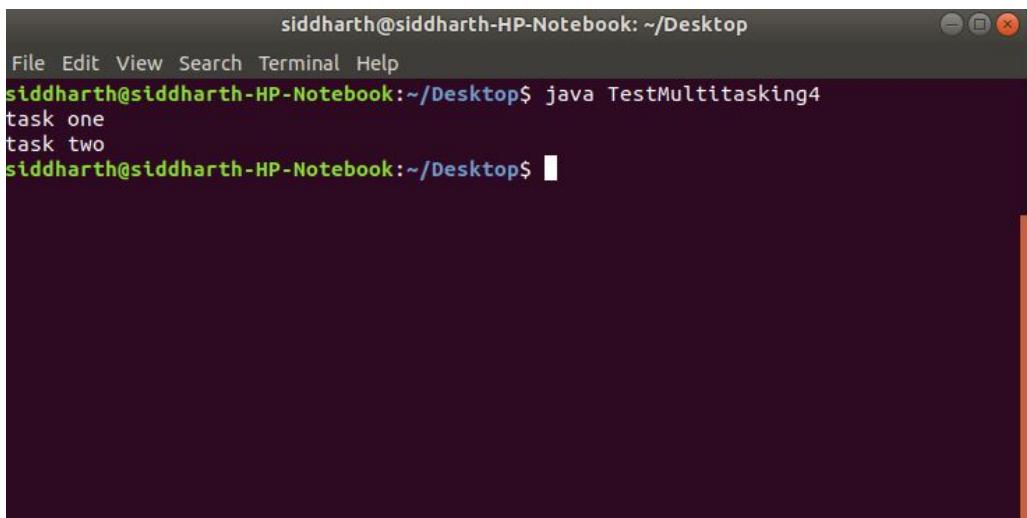
---

```
public void run(){ //Override the run method
    System.out.println("task two");
}
};

//Invoke the threads
t1.start();
t2.start();
}

}
```

### Output/Results snippet:



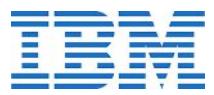
A screenshot of a terminal window titled "siddharth@siddharth-HP-Notebook: ~/Desktop". The window has a dark background and light-colored text. It shows the command "java TestMultitasking4" being run, followed by the output "task one" and "task two". The terminal window has standard Linux-style window controls at the top right.

```
siddharth@siddharth-HP-Notebook: ~/Desktop
File Edit View Search Terminal Help
siddharth@siddharth-HP-Notebook:~/Desktop$ java TestMultitasking4
task one
task two
siddharth@siddharth-HP-Notebook:~/Desktop$ █
```

---

## References:

- <https://codingbat.com/java/Logic-1>
- <https://javarevisited.blogspot.com/2017/07/top-50-java-programs-from-coding-Interviews.html>



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**EoF**