Node.JS

and

Web Development

This Notes is currently incomplete

(We are still developing it)

Coding Vidyalaya

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Cover image story: The world of web is an interconnected world. So, we chose an image of net, that seems like interconnected.

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1 HTML

HTML stands for Hyper Text Markup Language. It is not a real programming language per se, but it is used to write structure of the web pages. HTML elements are represented <>.

The minimal structure of a HTML web page is:

```
<!doctype html>
<html>
</html>
```

How to Write HTML?

- Create a file with .html extension on your system. Example: av.html
- Open the file in any code editor such as VS Code or notepad
- Write code in format specified
- Open the HTML file in browser and you should see the magic.

Classroom assignment: Create and run a minimal HTML file called empty.html

Basics

In HTML, everything is enclosed in a tag. Example:

```
<head>
</head>
```

Think if tag as a command to browser.The command is only valid within start and end tag.

Now, lets look at the structure of a proper HTML file.

```
<!doctype html>
<html>
  <head>
    write head contents here
  </head>
  <body>
    write body contents here
  </body>
</html>
```

Tags

Since HTML is all about tags, lets learn the most prominent tags in detail

Head tag

<head> tag include meta-data about the html page. This meta-data is useful for browsers for rendering web pages. Head tag also includes link and title tag. Example:

```
<head> meta data </head>
```

Body tag

Body Tag includes bulk data of the page. Content of the body tag is rendered in the viewport. Example:

```
<body> Bulk Data</body>
```

It should be noted that, we need CSS to style web pages.

Class assignment: Write an HTML code for displaying "Alia is genius" (alia.html)

Solution:

```
<!--alia.html-->
<!doctype html>
<html>
  <body>
    Alia is genious
  </body>
</html>
```

Now, you must be having a bit of idea as to how HTML works. Let's improve on this HTML code a bit.

```
<!--alia-2.html-->
<!doctype html>
<html>
  <head>
    <title>Talking about Alia</title>
  </head>
  <body>
    <p> Alia is genius </p>
  </body>
</html>
```

You might have noticed that we have added a few new tags in the HTML provided.

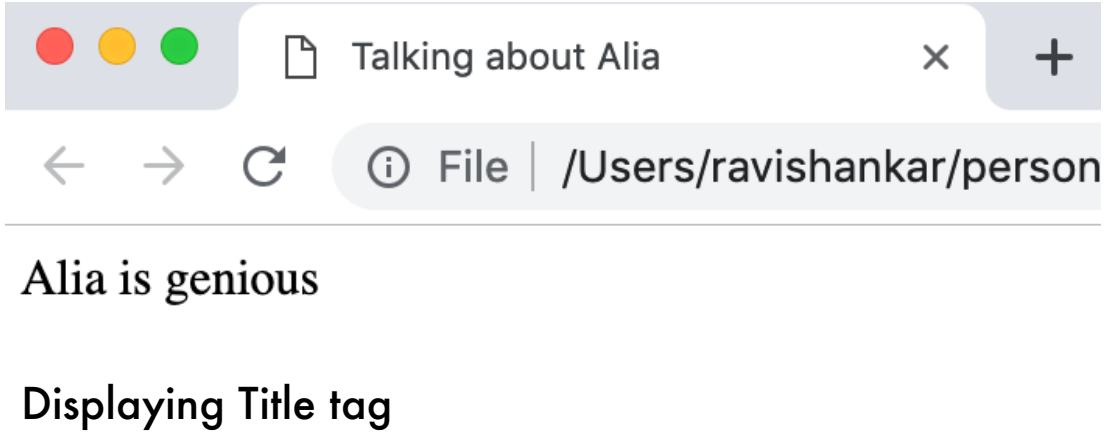
```
<title>Talking about Alia</title>
<p> Alia is genious </p>
```

Let's learn these tags in detail.

Title Tag

This tag contains the title of the page to be shown in browser. It is contained within head tag. Syntax:

```
<title>Talking about Alia</title>
```



Paragraph tag

This tag is used to render paragraphs on the viewport. Syntax:

```
<p> Alia is genius </p>
```

Heading Tag

These tags are used to render headlines in viewport. There are a total six types of heading tags in HTML ranging from H1(Largest font-size) to H6(Smallest font-size).

```
<h1> Alia is genius </h1>
<h2> Alia is genius </h2>
<h3></h3>
<h4></h4>
<h5></h5>
<h6></h6>
```

Line breaks

This tag is used to insert a break from the existing line. Its syntax is:

```
<br>
```

Note: Since, this doesn't include anything in between it doesn't require a closing tag.

Horizontal line

This tag is used to insert a horizontal line in the viewport. Its syntax is:

```
<hr>
```

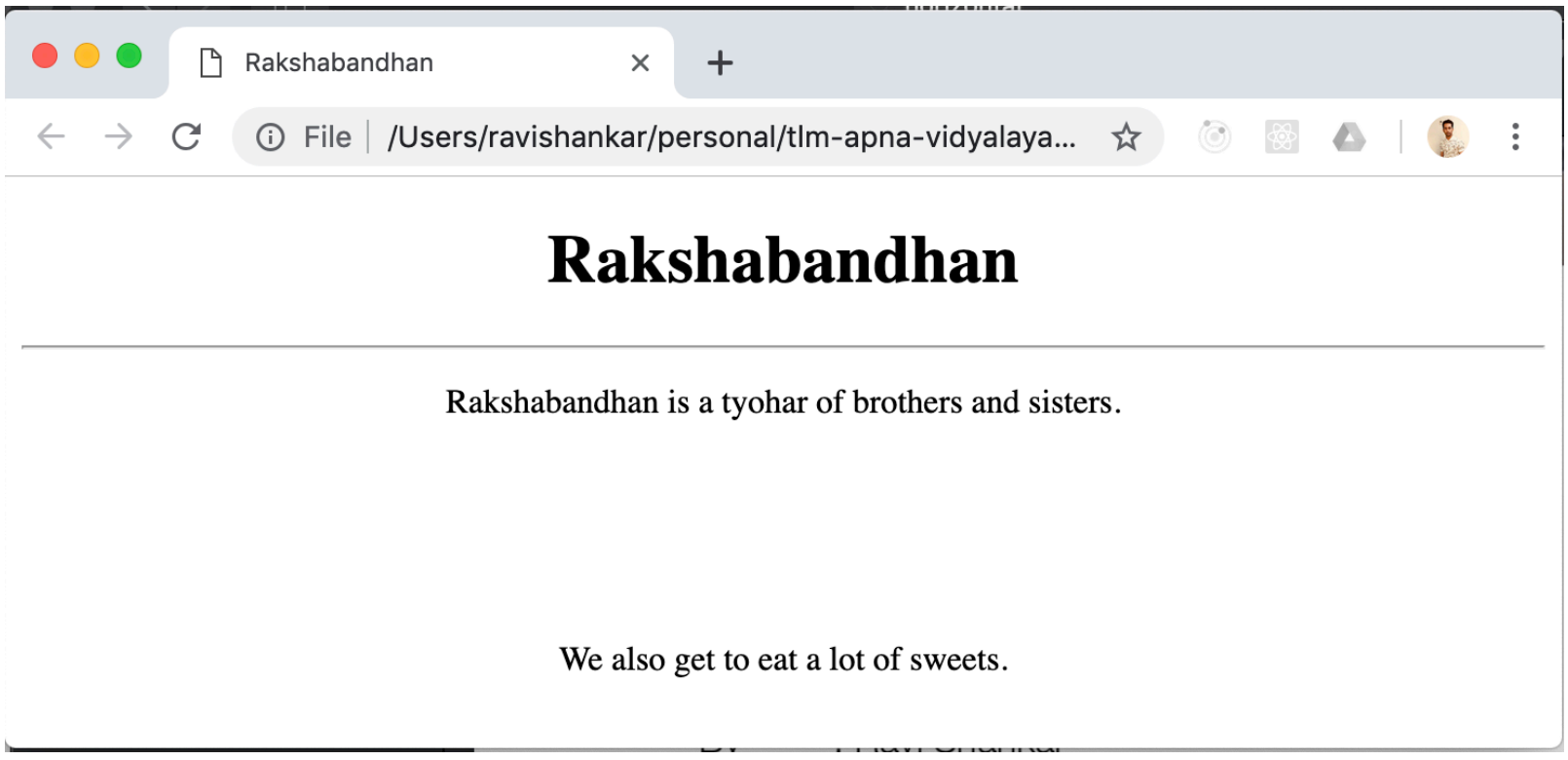
Note: Since, this doesn't include anything in between it also doesn't require a closing tag.

Center

This tag is used to align the text in center. Its syntax is:

```
<center>Contents</center>
```

Practical class assignment: Write HTML code for this image.



Solution: Rakshabandhan.html

Lists in HTML

There are two types of lists in HTML. Ordered list and unordered list. Let's look at them.

Unordered List

```
<ul>
  <li> list item</li>
  <li> list item</li>
  <li> list item</li>
</ul>
```

Here, <li> tags are places inside <ul> tags. ul tag represents unordered list and li tag represents list items.

Ordered List

Just like unordered list, we also have ordered list. The only difference being that here, we use ol tag instead of ul tag. ol represents ordered list. Example:

```
<ol>
  <li> list item</li>
  <li> list item</li>
  <li> list item</li>
</ol>
```

Formatting tags

HTML offers some tags for formatting the way text gets painted in the viewport. Let's see example of a few of them.

```
<em> Texts </em>
<strong> Texts </strong>
<small> Texts </small>
```

First one is em tag. em represents emphasised, and this tag generally makes the text the italic. this is a modern version of italics tag.

Second one is, strong tag. This tag generally make the test a bit bold. This is a modern version of bold tag.

Third one is small tag, this tag makes the test a bit smalle to de-emphasize it.

Image Tag

We use this tag to put images inside web pages. Example:

```
<img src="http://www.google.com/images/srpr/logo1w .png" alt="Google">
```

Notice that we have put alt attribute inside this tag. alt means alternatively. If for some reason (including network issues, or because image size is too large to display, or the image file is corrupted), the browser is not able to display the image, it will show the alt tag.

Anchor tag

This tag is used for inserting hyperlinks inside webpages. Example:

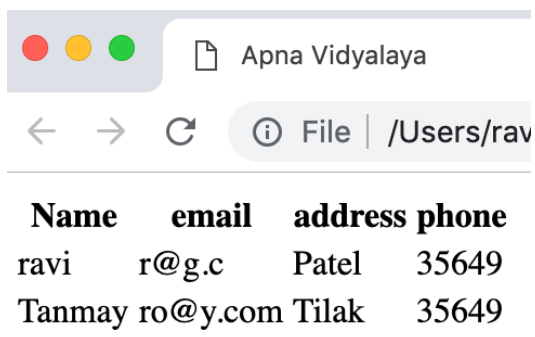
```
<a href="http://www.apnavidyalaya.com" > Apna Vidyalaya </a>
```

Just like anchor tags, we also have link (<link>) tags.

Tables

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <meta http-equiv="X-UA-Compatible" content="ie=edge">
  <title>Apna Vidyalaya</title>
</head>
<body>
  <table>
    <tr>
    <th>heading 1</th>
    <th>heading 2</th> </tr>
    <tr>
    <td>Data 1</td>
    <td>Data 2</td> </tr>
    </table>
</body>
</html>
```

Classroom assignment: Write HTML for showing following data in browser



Solution: tableintro.html

Note: Never use table for writing layout of a web page. These pages are not responsive.

To write the details/description about table, we can use caption tag.

Example:

```
<table>
  <tr>
    <th>Name</th>
    <th>email</th>
    <th>address</th>
    <th>phone</th>
  </tr>
  <tr>
    <td>ravi</td>
    <td>r@g.c</td>
    <td>Patel</td>
    <td>35649</td>
  </tr>
  <caption>Description of table</caption>
</table>
```

Forms

SOLUTIONS

empty.html

```
<!-- empty.html -->
<!DOCTYPE html>
<html>
    Content
</html>
```

rakshabandhan.html

```
<!--rakshabandhan.html-->
<!doctype html>
<html>
<head>
  <title>Rakshabandhan</title>
</head>
<body>
  <h1>
    <center>Rakshabandhan</center>
  </h1>
  <hr>
  <p>
    <center>Rakshabandhan is a tyohar of brothers and sisters.</ center>
  </p>
  <br><br><br><br>
  <p>
    <center>We also get to eat a lot of sweets.</center>
  </p>
</body>
</html>
```

tableintro.html

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <meta http-equiv="X-UA-Compatible" content="ie=edge">
  <title>Apna Vidyalaya</title>
</head>

<body>
  <table>
    <tr>
      <th>Name</th>
```

```
      <th>email</th>
      <th>address</th>
      <th>phone</th>
    </tr>
    <tr>
      <td>ravi</td>
      <td>r@g.c</td>
      <td>Patel</td>
      <td>35649</td>
    </tr>
    <tr>
      <td>Tanmay</td>
      <td>ro@y.com</td>
      <td>Tilak</td>
      <td>35649</td>
    </tr>
  </table>
</body>

</html>
```