**CSC490 Senior Project**

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------ Sources for code ----------

Udemy - The Ultimate MySQL Bootcamp: Go from SQL Beginner to Expert created by Colt Steele and Ian Schoonover, The Ultimate MySQL Bootcamp: Go from SQL Beginner to Expert created by Colt Steele and Ian Schooner, The Complete SQL Bootcamp created by Jose Portilla, Build Responsive Real World Websites with HTML5 and CSS3 created by Jonas Schmedtmann, Node JS API Development for Beginners

YouTube channels - freeCodeCamp.org, Academind, Telusko, Julio Codes, mmtuts, Study Zone

Getbootstrap.com

w3school.com

Stackoverflow.com

Codepen.io

----- **Tools** --------

XAMPP - XAMPP stands for Cross-Platform (X), Apache (A), MariaDB (M), PHP (P) and Perl (P). It is a simple, lightweight Apache distribution that makes it extremely easy for developers to create a local web server for testing and deployment purposes.

MySQL - is an open-source relational database management system.

MySQL Workbench - is a visual database design tool that integrates SQL development, administration, database design, creation and maintenance into a single integrated development environment for the MySQL database system.

Postman – Postman helps you be more efficient while working with APIs. Using Postman, you can construct complex HTTP requests quickly, organize them in collections and share them with your co-workers. **Postman helps developers understand how thing are working.** <https://www.getpostman.com> [https://www.getpostman.com](https://www.getpostman.com/)

Brackets - Brackets is a source code editor with a primary focus on web development. Created by Adobe Systems, it is free and open-source software licensed under the MIT License, and is currently maintained on GitHub by Adobe and other open-source developers. It is written in JavaScript, HTML and CSS. <https://www.youtube.com/watch?v=lUf8WrBr_aM>

Bootstrap - is a free collection of tools for creating a websites and web applications. It contains HTML and CSS-based design templates for typography, forms, buttons, navigation and other interface components, as well as optional JavaScript extensions. <https://www.w3schools.com/bootstrap4/bootstrap_get_started.asp>

CDNJS CLOUDFARE - is a content delivery network (CDN). ... Cached content: By caching web site content, Cloudflare helps improve page load speeds, reduce bandwidth usage, and reduce CPU usage on the server.

Font awesome - Font Awesome is a font and icon toolkit based on CSS and LESS. The <i> and <span> elements are widely used for icons. Also note that if you change the font-size or color of the icon's container, the icon changes. Same things goes for shadow, and anything else that gets inherited using CSS. <https://www.w3schools.com/icons/fontawesome_icons_intro.asp>

Node JS - Node.js is an open-source, cross-platform, JavaScript runtime environment that executes JavaScript code outside of a browser. <https://www.w3schools.com/nodejs/>

Pug - Pug is the middleman. Pug is a template engine for Node. js. A template engine allows us to inject data and then produce HTML. In short: At run time, Pug (and other template engines) replace variables in our file with actual values, and then send the resulting HTML string to the client. <https://www.npmjs.com/package/pug>

Express - Express is a node.js web development framework which comes with various features such as rendering, routing, REST controls. ... Creating Package file and installing dependencies (such as Express or Mysql etc) using NPM. A framework is an abstraction in which software providing generic functionality can be selectively changed by additional user-written code, thus providing application-specific software.

HTML - Short for Hypertext Markup Language, the authoring language used to create documents on the World Wide Web. HTML is similar to SGML, although it is not a strict subset. HTML defines the structure and layout of a Web document by using a variety of tags and attributes. <https://www.w3schools.com/html/>

CSS - Short for Cascading Style Sheets, is the language for describing the presentation of Web pages, including colors, layout, and

fonts. It allows one to adapt the presentation to different types of devices, such as large screens, small screens, or printers. CSS is independent of HTML and can be used with any XML-based markup language. <https://www.w3schools.com/Css/css_intro.asp>

XML - XML stands for extensible Markup Language. XML is a markup language much like HTML. XML was designed to store and transport data. XML was designed to be self-descriptive. <https://www.w3schools.com/xml/xml_whatis.asp#targetText=XML%20stands%20for%20eXtensible%20Markup,designed%20to%20be%20self-descriptive>

JSON - JSON, or JavaScript Object Notation, is a minimal, readable format for structuring data. It is used primarily to transmit data between a server and web application, as an alternative to XML. Squarespace uses JSON to store and organize site content created with the CMS. <https://www.w3schools.com/js/js_json_intro.asp>

JavaScript - JavaScript is a programming language commonly used in web development. It was originally developed by Netscape as a means to add dynamic and interactive elements to websites. ... Like server-side scripting languages, such as PHP and ASP, JavaScript code can be inserted anywhere within the HTML of a [webpage. https://www.w3schools.com/js/](file:///C:\Users\tonyp\Downloads\webpage.%20https:\www.w3schools.com\js\)

jQuery - jQuery is a lightweight, "write less, do more", JavaScript library. The purpose of jQuery is to make it much easier to use JavaScript on your website. jQuery takes a lot of common tasks that require many lines of JavaScript code to accomplish and wraps them into methods that you can call with a single line of code. <https://www.w3schools.com/jquery/>

NPM - npm is a package manager for the JavaScript programming language. It is the default package manager for the JavaScript runtime environment Node.js. It consists of a command line client, also called npm, and an online database of public and paid-for private packages, called the npm registry. <https://www.w3schools.com/nodejs/nodejs_npm.asp>

Moment.js - What is Moment.js? Moment.js is a free and open source JavaScript library that removes the need to use the native JavaScript Date object directly. The library is a wrapper for the Date object (in the same way that jQuery is a wrapper for JavaScript) making the object a whole lot easier to work with.

----- HTML tags ----------

An HTML tag is a special word or letter surrounded by angle brackets, < and >. You use tags to create HTML elements, such as paragraphs or links. Many elements have an opening tag and a closing tag — for example, a p (paragraph) element has a <p> tag, followed by the paragraph text, followed by a closing </p> tag. <https://www.w3schools.com/tags/tag_html.asp>

<!DOCTYPE html> - The doctype declaration is not an HTML tag; it is an instruction to the web browser about what version of the markup language the page is written in. The doctype declaration refers to a Document Type Definition (DTD). The doctype is the tag that tells our browser about the type of document. <https://www.w3schools.com/tags/tag_doctype.asp>

<html> - html tags are the hidden keywords within a web page that define how your web browser must format and display the content. Most tags must have two parts, an opening and a closing part. For example, <html> is the opening tag and </html> is the closing tag. <https://www.w3schools.com/tags/tag_html.asp>

<head> - When writing in HTML, the <head> tag is used to contain specific information about a web page, often referred to as metadata. This information includes things like the title of the document (which is mandatory), as well as scripts or links to scripts, and CSS files. <https://www.w3schools.com/html/html_head.asp>

<title> - A title tag is an HTML element that specifies the title of a web page. Title tags are displayed on search engine results pages (SERPs) as the clickable headline for a given result, and are important for usability, SEO, and social sharing. <https://www.w3schools.com/tags/tag_title.asp>

<link> - The <link> element is used to define a relationship between an HTML document and an external resource. This element is most commonly used to define the relationship between a document and one or more external CSS stylesheets.

<https://www.w3schools.com/tags/tag_link.asp>

<body> - The HTML <body> tag defines the main content of the HTML document or the section of the HTML document that will be directly visible on your web page. This tag is also commonly referred to as the <body> element. <https://www.w3schools.com/tags/tag_body.asp>

<nav> - The <nav> tag is used to declaring the navigational section in HTML documents. ... These links can be placed inside a nav tag. In other words, nav element represents section of page whose purpose is to provide navigational links, either in current document or to another document. [https://www.w3schools.com/tags/tag\_nav.asp](https://www.w3schools.com/tags/tag_nav.asp%20)

<meta> - The META elements can be used to include name/value pairs describing properties of the HTML document, such as author, expiry date, a list of keywords, document author etc. The <meta> tag is used to provide such additional information. <https://www.w3schools.com/tags/tag_meta.asp>

<div> - The <div> tag is nothing more than a container unit that encapsulates other page elements and divides the HTML document into sections. Web developers use <div> elements to group together HTML elements and apply CSS styles to many elements at once. <https://www.w3schools.com/tags/tag_div.asp>

<script> - You can add JavaScript code in an HTML document by employing the dedicated HTML tag <script> that wraps around JavaScript code. The <script> tag can be placed in the <head> section of your HTML, in the <body> section, or after the </body> close tag, depending on when you want the JavaScript to load. [https://www.youtube.com/watch?v=GEIK\_CUerbQ https://www.w3schools.com/tags/tag\_script.asp https://www.w3schools.com/html/html\_scripts.asp](https://www.youtube.com/watch?v=GEIK_CUerbQ%20https://www.w3schools.com/tags/tag_script.asp%20https://www.w3schools.com/html/html_scripts.asp)

<a> - The HTML <a> tag is an inline HTML element that defines a hyperlink. Hyperlinks allow users to navigate from one page to another. The following sections contain information about this tag, including examples of how it is used as well as related attributes and browser compatibility. <https://www.w3schools.com/tags/tag_a.asp>

<img> - The <img> tag defines an image in an HTML page. The <img> tag has two required attributes: src and alt. Note: Images are not technically inserted into an HTML page, images are linked to HTML pages. The <img> tag creates a holding space for the referenced image. <https://www.w3schools.com/tags/tag_img.asp>

<ul> - The <ul> tag defines an unordered (bulleted) list. Use the <ul> tag together with the <li> tag to create unordered lists. <https://www.w3schools.com/tags/tag_ul.asp>

<li> - The <li> tag defines a list item. The <li> tag is used in ordered lists(<ol>), unordered lists (<ul>), and in menu lists (<menu>). <https://www.w3schools.com/tags/tag_li.asp>

<button> - The <button> tag defines a clickable button. Inside a <button> element you can put content, like text or images. This is the difference between this element and buttons created with the <input> element.

[https://www.w3schools.com/tags/tag\_button.asp#targetText=Definition%20and%20Usage,with%20the%20element.](https://www.w3schools.com/tags/tag_button.asp%23targetText=Definition%20and%20Usage,with%20the%20element.)

<p> - The <p> tag is a block element used to designate a paragraph. <https://www.w3schools.com/html/html_paragraphs.asp>

<span> - The HTML <span> tag is used for grouping and applying styles to inline elements. There is a difference between the span tag and the div tag. The span tag is used with inline elements whilst the div tag is used with block-level content. <https://www.w3schools.com/tags/tag_span.asp>

<span aria-hidden="true">&times;</span> - A hidden attribute is a Boolean attribute (True/False). ... Aria-hidden attributes indicate that the element and ALL its descendants are still visible in the browser, but will be invisible to accessibility tools, such as screen readers.

<input> - The required attribute specifies that an input field must be filled out before submitting the form. The required attribute works with the following input types: text, search, url, tel, email, password, date pickers, number, checkbox, radio, and file. <https://www.w3schools.com/html/html_form_input_types.asp>

<form> - The HTML <form> tag is used for creating a form for user input. A form can contain text fields, checkboxes, radio-buttons and more. Forms are used to pass user-data to a specified URL[. https://www.w3schools.com/html/html\_forms.asp](file:///C:\Users\tonyp\Downloads\.%20https:\www.w3schools.com\html\html_forms.asp)

<h1> to <h6> - The <h1> to <h6> tags are used to define HTML headings. <h1> defines the most important heading. <h6> defines the least important heading. <https://www.w3schools.com/tags/tag_hn.asp>

<i> - The <i> and <span> elements are widely used to add icons. <https://www.w3schools.com/icons/>

<option> - The <option> element is used in conjunction with the <select> element to create a drop-down menu in a web form. Each <option> element is displayed as an available option in the resulting drop-down menu. <https://html.com/tags/option/>

<center> - Is a block-level element that displays its block-level or inline contents centered horizontally within its containing element. <https://www.w3schools.com/tags/tag_center.asp>

<label> - The <label> defines a text label for the <input> tag. The label is an ordinary text, clicking on which, the user can select the form element. It facilitates the use of the form, since it is not always convenient to get into the form elements with the cursor. <https://www.w3schools.com/tags/tag_label.asp>

<textarea> - The HTML <textarea> tag is used within a form to declare a textarea element - a control that allows the user to input text over multiple rows. <https://www.w3schools.com/TAGS/tag_textarea.asp>

------- **Attributes** ---------

id - The id attribute specifies a unique id for an HTML element (the value must be unique within the HTML document). The id attribute is most used to point to a style in a style sheet, and by JavaScript (via the HTML DOM) to manipulate the element with the specific id. <https://www.w3schools.com/html/html_id.asp>

Button type - The type attribute specifies the type of button. [https://www.w3schools.com/tags/att\_button\_type.asp](https://www.w3schools.com/tags/att_button_type.asp%20)

Input type - The required attribute specifies that an input field must be filled out before submitting the form. The required attribute works with the following input types: text, search, URL, tel, email, password, date pickers, number, checkbox, radio, and file. <https://www.w3schools.com/tags/att_input_type.asp>

name - The name attribute specifies the name of an <input> element. The name attribute is used to reference elements in a JavaScript, or to reference form data after a form is submitted. Note: Only form elements with a name attribute will have their values passed when submitting a form. <https://www.w3schools.com/tags/att_input_name.asp>

content - The content attribute of the meta element contains its values. This is used with the name attribute to specify metadata about the page. Content is essentially a container for the metadata defined in the name attribute. You'll often see this used to describe the description and keywords of a page, which may be helpful from an SEO perspective (depending on the search engine). We can also specify. <https://www.w3schools.com/tags/att_content.asp>

rel - The rel attribute inside anchor tags (<a>) describes the relation to the document where the link points to. It's optional, but a few values can come in very handy. It can take one of these 14 values: alternate: Points to an alternate version of the document. author: Points to the author of the document. <https://www.w3schools.com/TAGS/att_a_rel.asp>

src - The required src attribute specifies the URL of the image. <https://www.w3schools.com/tags/att_img_src.asp>

href - Short for hypertext reference, HREF is an HTML attribute that is used either to link to another web page, or a different portion of the same page. <https://www.w3schools.com/tags/att_a_href.asp>

class - The class is an attribute which specifies one or more class names for an HTML element. The class attribute can be used on any HTML element. The class name can be used by CSS and JavaScript to perform certain tasks for elements with the specified class name. https://www.w3schools.com/html/html\_classes.asp <https://www.youtube.com/watch?v=4_AjDEDhB14>

charset - A character set (charset) attribute is a predefined list of characters each defined by a number. Browsers make use of character sets in order to determine what should be displayed on a web page. Depending on which charset is defined by the website will determine how browsers will display the site to your visitors. <https://www.w3schools.com/html/html_charset.asp>

style - The style attribute specifies an inline style for an element. The style attribute will override any style set globally, e.g. styles specified in the <style> tag or in an external style sheet. <https://www.w3schools.com/html/html_styles.asp>

----- **Methods** -------

Viewport - A Browser's viewport is the area of web page in which the content is visible to the user. The viewport does not have the same size, it varies with the variation in screen size of the devices on which the website is visible. For a laptop, the viewport has a larger size as compared to a smartphone or tablet. <https://www.w3schools.com/tags/tag_meta.asp>

!important - The !important directive affects the way in which your CSS cascades while following the rules you feel are most crucial and should be applied. A rule that has this directive is always applied no matter where that rule appears in the CSS document.

----- **Modal** -------

Modal - A modal window is any type of window that is a child (secondary window) to a parent window and usurps the parent's control. It is commonly associated with an Internet Web site pop-up window that stays in front of the original window. <https://getbootstrap.com/docs/4.0/components/modal/>

---- **Navbar** -------

Navbar - responsive navigation header. https://getbootstrap.com/docs/4.0/components/navbar/ <https://www.w3schools.com/css/css_navbar.asp>

navbar-brand - is applied to typical branding logo you see in the top navigation bar. It may just contain a typical image logo or text. Refer to the image below to better understand. Now coming to the second question. The class applied to Toggle Navigation is sr-only that stands for screen reader only. [https://getbootstrap.com/docs/4.0/components/navbar/ https://www.w3schools.com/bootstrap/bootstrap\_navbar.asp https://www.youtube.com/watch?v=23bpce-5s8I](https://getbootstrap.com/docs/4.0/components/navbar/%20https:/www.w3schools.com/bootstrap/bootstrap_navbar.asp%20https:/www.youtube.com/watch?v=23bpce-5s8I)

navbar-toggle - With Bootstrap, a navigation bar can extend or collapse, depending on the screen size. A standard navigation bar is created with the .navbar class, followed by a responsive collapsing class: .navbar-expand-xl. ... To add links inside the navbar, use a <ul> element with class="navbar-nav" . [https://www.youtube.com/watch?v=23bpce-5s8I https://www.w3schools.com/howto/howto\_css\_menu\_icon.asp](https://www.youtube.com/watch?v=23bpce-5s8I%20https://www.w3schools.com/howto/howto_css_menu_icon.asp)

----- **Grid System** -----

Grid - CSS Grid Layout excels at dividing a page into major regions or defining the relationship in terms of size, position, and layer, between parts of a control built from HTML primitives. Like tables, grid layout enables an author to align elements into columns and rows. [https://www.w3schools.com/bootstrap/bootstrap\_grid\_system.asp https://getbootstrap.com/docs/4.0/layout/grid/](https://www.w3schools.com/bootstrap/bootstrap_grid_system.asp%20https:/getbootstrap.com/docs/4.0/layout/grid/)

Container - The container is the area enclosed by the beginning and ending tags. For example, < HTML > encloses an entire document while other tags may enclose a single word, paragraph, or other elements. In HTML code, all container must have a start and stop tag to close the container. <https://www.pair.com/support/kb/understanding-bootstraps-grid-system/>

----- **Drop downs** -------

Drop-down - A drop-down list is a graphical control element, similar to a list box, that allows the user to choose one value from a list. When a drop-down list is inactive, it displays a single value. When activated, it displays a list of values, from which the user may select one. [https://www.w3schools.com/css/css\_dropdowns.asp https://www.w3schools.com/howto/howto\_js\_dropdown.asp](https://www.w3schools.com/css/css_dropdowns.asp%20https:/www.w3schools.com/howto/howto_js_dropdown.asp)

---- **Footers** ------

The <footer> tag defines the footer of a web page or a section. ... For example, you can place a footer inside the <article> tag to store information related to the article (links, footnotes, etc.). The tag can contain other HTML elements, except for the <footer> and <header> tags. <https://www.w3schools.com/howto/howto_css_fixed_footer.asp>

----- **external sources** -------

!!! COPY AND PASTE CODE IN HEADER!!!

<link rel="stylesheet" href="css/bootstrap.min.css"> - When you only need to include Bootstrap’s compiled CSS or JS. <https://www.w3schoolsCcom/bootstrap/bootstrap_get_started.asp>

<link rel="stylesheet" type="text/css" href="css/style.css"> - This technique allows you to define a style sheet as a separate document and import it into your web pages. Where you normally see style tags (in the header), there is no style. Instead, you see a <link> tag. This special tag is used to connect the current document with another document. When you use an external style, the style elements aren’t embedded in the page header but in an entirely separate document. In this case, the page is connected to a special file called myStyle.css. <https://www.w3schools.com/tags/tag_link.asp>

<script src="js/jquery.min.js"></script> - Used to add jQuery to web pages. The jQuery library is a single JavaScript file, and you reference it with the HTML. [https://www.w3schools.com/jquery/jquery\_get\_started.asp https://www.w3schools.com/jquery/html\_html.asp](https://www.w3schools.com/jquery/jquery_get_started.asp%20https:/www.w3schools.com/jquery/html_html.asp%20)

<script src="js/popper.min.js"></script> - A JavaScript library for DOM element positioning and popup management. Popovers rely on the 3rd party library Popper.js for positioning. Dropdowns are built on a third-party library, Popper.js, which provides dynamic positioning and viewport detection. So, these are the Bootstrap 4 components that need Popper.js. [https://stackoverflow.com/questions/47039812/how-to-install-popper-js-with-bootstrap-4 https://www.youtube.com/watch?v=V1JOH4kS6Pc](https://stackoverflow.com/questions/47039812/how-to-install-popper-js-with-bootstrap-4%20https:/www.youtube.com/watch?v=V1JOH4kS6Pc)

<script src="js/bootstrap.min.js"></script> - Used to add bootstrap. <https://getbootstrap.com/docs/4.3/getting-started/introduction/>

<link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/5.8.2/css/all.min.css"> - To use the Font Awesome icons, add this line inside the <head> section of your HTML page. [https://www.w3schools.com/icons/fontawesome\_icons\_intro.asp https://www.youtube.com/watch?v=rXiO4bm2Zpc https://fontawesome.com](https://www.w3schools.com/icons/fontawesome_icons_intro.asp%20https:/www.youtube.com/watch?v=rXiO4bm2Zpc%20https://fontawesome.com%20)

<link rel="stylesheet" href="build/css/bootstrap-datetimepicker.min.css">

<script src="build/js/moment.min.js" type="text/javascript"></script>

<script src="build/js/bootstrap-datetimepicker.min.js"></script>

------ **background** --------

background-image: url(images/b6.jpg) - The background-image property sets one or more background images for an element. By default, a background-image is placed at the top-left corner of an element, and repeated both vertically and horizontally. [https://www.w3schools.com/cssref/pr\_background-image.asp](https://www.w3schools.com/cssref/pr_background-image.asp%20)

background-size: cover - The background-size property specifies the size of the background images. The keyword contain will resize the background image to make sure it remains fully visible. The keyword cover will resize the background image to make sure the element is fully covered. <https://www.w3schools.com/cssref/css3_pr_background-size.asp>

------- **Date & time picker** -------

The DateTimePicker control is used to allow the user to select a date and time, and to display that date and time in the specified format. ... The calendar looks like the MonthCalendar control, which can be used for selecting multiple dates.

How to make a date-time picker using jQuery and bootstrap with full features such as date picker, time picker, date time picker, mask date time picker, custom date time picker, inline date time picker, language date time piker, event date time picker and more. [https://www.youtube.com/watch?v=ub-vK97VOhE https://www.youtube.com/watch?time\_continue=40&v=VV9geyPrJok](https://www.youtube.com/watch?v=ub-vK97VOhE%20https://www.youtube.com/watch?time_continue=40&v=VV9geyPrJok)

------ **CSS** -------------

@import - The @import rule allows you to import a style sheet into another style sheet. <https://www.w3schools.com/cssref/pr_import_rule.asp>

font-family - property specifies the font for an element. <https://www.w3schools.com/cssref/pr_font_font-family.asp>

background - Set different background properties in one declaration. <https://www.w3schools.com/cssref/css3_pr_background.asp>

background-attachment - The background-attachment property sets whether a background image scrolls with the rest of the page or is fixed. The background-attachment property sets whether a background image scrolls with the rest of the page or is fixed. <https://www.w3schools.com/cssref/pr_background-attachment.asp>

color - All modern browsers support the following 140 color names (click on a color name, or a hex value, to view the color as the background-color along with different text colors). All modern browsers support the following 140 color names (click on a color name, or a hex value, to view the color as the background-color along with different text colors) <https://www.w3schools.com/cssref/css_colors.asp>

font-weight - The font-weight property sets how thick or thin characters in text should be displayed. <https://www.w3schools.com/cssref/pr_font_weight.asp>

text-align - The text-align property specifies the horizontal alignment of text in an element. <https://www.w3schools.com/cssref/pr_text_text-align.asp>

margin-bottom - he margin-bottom property sets the bottom margin of an element. <https://www.w3schools.com/cssref/pr_margin-bottom.asp>

text-decoration - The text-decoration property specifies the decoration added to text and is a shorthand property for: text-decoration-line (required), text-decoration-color, text-decoration-style. <https://www.w3schools.com/cssref/pr_text_text-decoration.asp>

:hover - The :hover selector is used to select elements when you mouse over them. <https://www.w3schools.com/cssref/sel_hover.asp>

:focus - The :focus selector is used to select the element that has focus. <https://www.w3schools.com/cssref/sel_focus.asp>

margin - The CSS margin properties are used to create space around elements, outside of any defined borders. <https://www.w3schools.com/css/css_margin.asp>

display - The display property specifies the display behavior (the type of rendering box) of an element. <https://www.w3schools.com/cssref/pr_class_display.asp>

width - The width property sets the width of an element. <https://www.w3schools.com/cssref/pr_dim_width.asp>

max-width - The max-width property defines the maximum width of an element. <https://www.w3schools.com/cssref/pr_dim_max-width.asp>

padding - The CSS padding properties are used to generate space around an element's content, inside of any defined borders. <https://www.w3schools.com/css/css_padding.asp>

font-size - The font-size property sets the size of a font. <https://www.w3schools.com/cssref/pr_font_font-size.asp>

letter-spacing - The letter-spacing property increases or decreases the space between characters in a text. <https://www.w3schools.com/cssref/pr_text_letter-spacing.asp>

box-shadow - The box-shadow property attaches one or more shadows to an element. <https://www.w3schools.com/cssref/css3_pr_box-shadow.asp>

outline - An outline is a line that is drawn around elements, OUTSIDE the borders, to make the element "stand out". [https://www.w3schools.com/css/css\_outline.asp#targetText=An%20outline%20is%20a%20line,outline-style](https://www.w3schools.com/css/css_outline.asp%23targetText=An%20outline%20is%20a%20line,outline-style)

margin-top - The margin-top property sets the top margin of an element. <https://www.w3schools.com/cssref/pr_margin-top.asp>

transition - CSS transitions allows you to change property values smoothly, over a given duration. Mouse over the element below to see a CSS transition effect. <https://www.w3schools.com/css/css3_transitions.asp>

box-shadow - With CSS you can add shadow to text and to elements. <https://www.w3schools.com/css/css3_shadows.asp>

border-radius - The border-radius property defines the radius of the element's corners. <https://www.w3schools.com/cssref/css3_pr_border-radius.asp>

border - The CSS border properties allow you to specify the style, width, and color of an element's border. <https://www.w3schools.com/css/css_border.asp>

position - The position property specifies the type of positioning method used for an element (static, relative, fixed, absolute or sticky). <https://www.w3schools.com/css/css_positioning.asp>

height - he height property sets the height of an element. <https://www.w3schools.com/cssref/pr_dim_height.asp'>

top - The top property affects the vertical position of a positioned element. This property has no effect on non-positioned elements. <https://www.w3schools.com/cssref/pr_pos_top.asp>

object-fit - The CSS object-fit property is used to specify how an <img> or <video> should be resized to fit its container. <https://www.w3schools.com/css/css3_object-fit.asp>

right - The right property affects the horizontal position of a positioned element. This property has no effect on non-positioned elements. <https://www.w3schools.com/cssref/pr_pos_right.asp>

left - The left property affects the horizontal position of a positioned element. This property has no effect on non-positioned elements. <https://www.w3schools.com/cssref/pr_pos_left.asp>

background-image - The background-image property sets one or more background images for an element. <https://www.w3schools.com/cssref/pr_background-image.asp>

background-size - The background-size property specifies the size of the background images. <https://www.w3schools.com/cssref/css3_pr_background-size.asp>

border-left - The border-left property is a shorthand property for (in the following order), border-left-width, border-left-style (required), border-left-color.

padding-top - An element's padding is the space between its content and its border. The padding-top property sets the top padding (space) of an element. <https://www.w3schools.com/cssref/pr_padding-top.asp>

padding-right - An element's padding is the space between its content and its border. The padding-right property sets the right padding (space) of an element. <https://www.w3schools.com/cssref/pr_padding-right.asp>

min-height - The min-height property defines the minimum height of an element. <https://www.w3schools.com/cssref/pr_dim_min-height.asp>

list-style - The list-style property is a shorthand for the following properties, list-style-type, list-style-position, list-style-image. <https://www.w3schools.com/cssref/pr_list-style.asp>

line-height - The line-height property specifies the height of a line. <https://www.w3schools.com/cssref/pr_dim_line-height.asp>

border-color - The border-color property sets the color of an element's four borders. This property can have from one to four values. <https://www.w3schools.com/cssref/pr_border-color.asp>

:before - The ::before selector inserts something before the content of each selected element(s). <https://www.w3schools.com/cssref/sel_before.asp>

content - The content property is used with the ::before and ::after pseudo-elements, to insert generated content. <https://www.w3schools.com/cssref/pr_gen_content.asp>

----- Responsive ------

Responsive Web design - It is called responsive web design when you use CSS and HTML to resize, hide, shrink, enlarge, or move the content to make it look good on any screen. <https://www.w3schools.com/css/css_rwd_intro.asp>

@media - The @media rule is used in media queries to apply different styles for different media types/devices. <https://www.w3schools.com/cssref/css3_pr_mediaquery.asp>

------ **Building Node.js website using Express and Pug** ------

## **Prerequisites**

If you know JavaScript but you have never done any server-side programming before, this tutorial for you. Before you continue though, you need to have Node.js and npm installed.

You can search the web for instructions on how to install Node.js and npm for your preferred platform or visit the [Node.js website](https://nodejs.org/en/download/) (npm comes with Node). The versions I used while building this project are as follows:

* Node.js v9.3.0
* npm v5.8.0

You can view the version of Node and npm you have installed by running the following commands in your terminal:

node -v

npm -v

**Copy**

I believe the code will still work even if you’re on an older version of [Node](https://nodejs.org/), but if you have any trouble completing the tutorial, try upgrading to the versions I used to see if it fixes your problem.

## **Getting started**

[Download the starter files](https://github.com/ayoisaiah/node-website-starter-files) from Github, then run the following command from the root of the downloaded folder to install the project dependencies.

npm install

**Copy**

I’ve chosen to provide these starter files, so you don’t run the risk of running into bugs as a result of using a different version of a package from the one I used. Don’t worry, I’ll explain what each dependency does as we go along.

Now open up server.js in the root directory and type in the following code:

const express = require('express');

const app = express();

**Copy**

We start by importing [Express](https://expressjs.com/) which is the web server framework we are using. The express() function is a top-level function exported by the express module.

Next, we need to set up the website to run on port 7000. You can choose another port if 7000 is in use on your machine.

const server = app.listen(7000, () => {

console.log(`Express running → PORT ${server.address().port}`);

});

**Copy**

You can start the web server by running node server.js from the root of your project folder.

If you open http://localhost:7000 in your browser, you will see an error message that says “Cannot GET /”. This is because we have not defined a root route for our website so let’s go ahead and do just that.

Add the following code before the server variable declaration in server.js:

app.get('/', (req, res) => {

res.send('Hello World!');

});

**Copy**

The code above specifies that when a GET request is made to the root of our website, the callback function we specified within the get() method will be invoked. In this case, we are sending the text “Hello World!” back to the browser.

While you can setup routes for other types of HTTP requests such as POST, PUT and the likes, we’ll only consider GET requests in this tutorial.

Now you need to restart your server before the changes take effect. Doing this every time you make a change in your code can become incredibly tedious, but I’ll show you how to get around that in the next section.

For now, stop the Node process in your terminal using Ctrl-C and start it again with node server.js then refresh your browser. You should see the text “Hello World!” on the page.

## Setup Nodemon to auto restart Node.js application server

There are several tools you can use to auto restart your Node server after every change so you don’t have to deal with that. My preferred tool is [Nodemon](https://nodemon.io/) which has worked well for me in my projects.

If you look at the package.json file, you will see that nodemon is listed under the devDependencies, so you can start using it right away.

Change the start script in package.json to the following:

{

// ...

"scripts": {

"start": "npx nodemon server.js"

}

// ...

}

**Copy**

Kill the node process and run npm start. Now the web server will be restarted automatically everytime you make a change.

## Rendering HTML in the Browser

Instead of just sending text to the browser when someone hits a route, we can send some HTML as most websites do. We can author the HTML files by hand and specify what file to send to the browser once a GET request hits a route, but it’s almost always better to use a template engine to generate HTML files on the fly.

A template engine allows you to define templates for your application and replace the variables in the template with actual values at runtime while transforming the template to an actual HTML file which is then sent to the client.

There are several template engines you can use with Express. [Pug](https://pugjs.org/), [Mustache](https://github.com/janl/mustache.js/), and [EJS](http://ejs.co/) are some of the most popular ones. I’ll be using Pug here because I’m comfortable with the syntax but you can do the tutorial in another templating engine if you wish.

I’ve already included the pug package in our project dependencies so we can go ahead and use it in express.

Add the following code to your server.js file below the app variable. This tells express that we are using pug as our template engine.

app.set('view engine', 'pug');

**Copy**

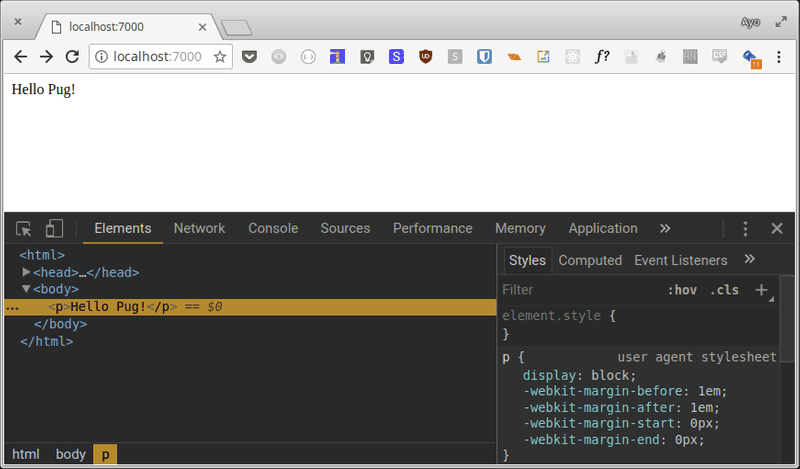
Express expects that our template files be kept in a folder called views. Create this folder in the root of your project directory then create a file called index.pug in the views folder and paste the following code therein:

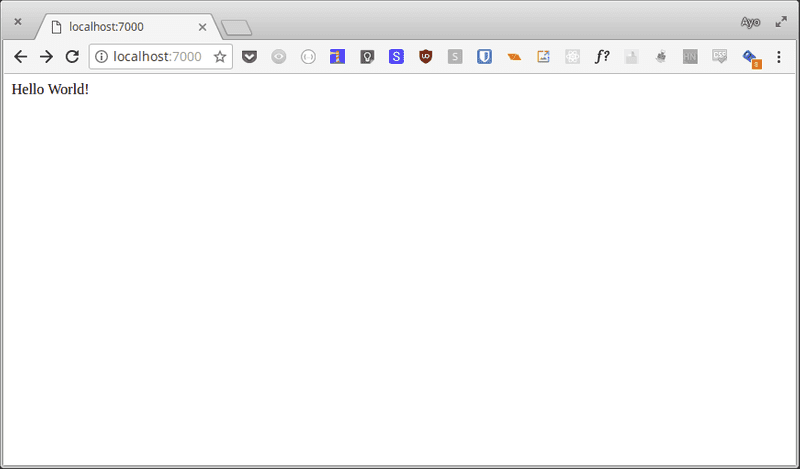
p Hello Pug!

**Copy**

Now change the line in your server.js file that says res.send('Hello World!') to res.render('index'). This tells express to render the index template that we just created. You don’t need to put the .pug extension at the end.

If you refresh your browser, you should see the words “Hello Pug!” on the page. If you inspect the text using your browser’s developer tools, you should see that the code you wrote in index.pug was transformed into regular HTML.

[](https://freshman.tech/assets/dist/images/learn-node/hello-pug.png)

[](https://freshman.tech/assets/dist/images/learn-node/hello-world.png)

<https://freshman.tech/learn-node/>