

**MINI PROJECT**  
**(2021-22)**  
**E-Commerce Website**

**MID-TERM REPORT**



**Institute of Engineering & Technology**

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## **Abstract**

In this era of internet, e-commerce is growing by leaps and bounds keeping the growth of brick-and-mortar businesses in the dust. In many cases, brick-and-mortar businesses are resorting to having a counterpart which is internet or e-commerce driven. People in the developed world and a growing number of people in the developing world now use e-commerce websites on a daily basis to make their everyday purchases. Still the proliferation of e-commerce in the under-developed world is not that great and there is a lot to desire for. This paper outlines different aspects of developing an e-commerce website and the optimum solution to the challenges involved in developing one. It consists of the planning process, which starts with determining the use case, domain modelling and architectural pattern of the web application. The entire development process is primarily divided into two parts: the front-end development and the back end development. The database design is also discussed with an emphasis on its relational connectivity. This no-nonsense method of developing an e-commerce website can be easily replicated and followed in developing e-commerce websites in the developing and under-developed countries where computing resources are scarce and expensive because of their socio-economic condition.

## ACKNOWLEDGEMENT

It gives us a great sense of pleasure to present the synopsis of B.Tech Mini Project E commerce website undertaken during B.Tech IIIrd Year.

This project in itself is going to be an acknowledgement to the inspiration, drive and technical assistance that has motivated individuals like us. We owe special debt of gratitude to Mr. Manoj Varshney, Department of CEA, for providing us with an encouraging platform to develop this project, which thus helped us in shaping our abilities towards a constructive goal and for his constant support and guidance to our work. His sincerity, thoroughness and perseverance is been a constant source of inspiration for us. We believe that he will shower us with all his extensively experienced ideas and insightful comments at different stages of the project & also guide us about the latest industry-oriented technologies. We would also like to acknowledge the contribution of all faculty members of the department for their kind guidance and co-operation.

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## **Introduction**

Electronic commerce or e-commerce refers to a wide range of online business activities for products and services. It is usually associated with online buying and selling over the internet or conducting any transaction involving the transfer of ownership or rights to use goods or services through a computer mediated network. In our eyes we see it as a new dimension to the varied use of the internet and our purpose is to make it trendy in our country where its use is particularly very low. Because of the high context culture it is very important to develop trust among the people interested in a transaction. E-commerce in Bangladesh actually started in the year of 1999 based in USA with some non-resident Bangladeshis. Our motto is to develop an enriched e-commerce website in our country that should be largely accepted by the customers.

## **Features**

The main features of our website are: an end user can perform free online registration. Can search a specific product of his/her interest. Can order online the payment method is currently the “Cash on delivery” method. The administrator possesses the only right to add any product, update its price or delete any product. Can promote small or big advertisements and delete any specific advertise as well. Customers can update their personal information at any time. After logging in to the system the customers can order whatever they want without giving their billing information again and again. In this website products are organized based on categories and brands. Customer can enjoy the detail view of any product by just panning cursor over the product image in the product details section. The website also inherits automated inventory system. So, whenever a customer buys a product it is automatically being deducted from the inventory system & if any product becomes less than five in quantity then automatically e-mail should be delivered to the admin and supplier. Moreover if any product becomes out of stock then no customer would be able to buy that product.

## Technology used

### JavaScript

Modern JavaScript is a “safe” programming language. It does not provide low-level access to memory or CPU, because it was initially created for browsers which do not require it.

JavaScript’s capabilities greatly depend on the environment it’s running in. For instance, [Node.js](#) supports functions that allow JavaScript to read/write arbitrary files, perform network requests, etc.

In-browser JavaScript can do everything related to webpage manipulation, interaction with the user, and the webserver.

For instance, in-browser JavaScript is able to:

- Add new HTML to the page, change the existing content, modify styles.
- React to user actions, run on mouse clicks, pointer movements, key presses.
- Send requests over the network to remote servers, download and upload files (so-called [AJAX](#) and [COMET](#) technologies).
- Get and set cookies, ask questions to the visitor, show messages.
- Remember the data on the client-side (“local storage”).

### **What makes JavaScript Unique?.**

There are at least *three* great things about JavaScript:

- Full integration with HTML/CSS.
- Simple things are done simply.
- Support by all major browsers and enabled by default.

JavaScript is the only browser technology that combines these three things.

That’s what makes JavaScript unique. That’s why it’s the most widespread tool for creating browser interfaces.

That said, JavaScript also allows to create servers, mobile applications, etc.

## Languages “over” JavaScript

The syntax of JavaScript does not suit everyone’s needs. Different people want different features.

That’s to be expected, because projects and requirements are different for everyone.

So recently a plethora of new languages appeared, which are *transpiled* (converted) to JavaScript before they run in the browser.

Modern tools make the transpilation very fast and transparent, actually allowing developers to code in another language and auto-converting it “under the hood”.

Examples of such languages:

- [CoffeeScript](#) is a “syntactic sugar” for JavaScript. It introduces shorter syntax, allowing us to write clearer and more precise code. Usually, Ruby devs like it.
- [TypeScript](#) is concentrated on adding “strict data typing” to simplify the development and support of complex systems. It is developed by Microsoft.
- [Flow](#) also adds data typing, but in a different way. Developed by Facebook.
- [Dart](#) is a standalone language that has its own engine that runs in non-browser environments (like mobile apps), but also can be transpiled to JavaScript. Developed by Google.
- [Brython](#) is a Python transpiler to JavaScript that enables the writing of applications in pure Python without JavaScript.
- [Kotlin](#) is a modern, concise and safe programming language that can target the browser or Node.

There are more. Of course, even if we use one of transpiled languages, we should also know JavaScript to really understand what we’re doing.

## Summary

JavaScript was initially created as a browser-only language, but it is now used in many other environments as well.

- Today, JavaScript has a unique position as the most widely-adopted browser language with full integration in HTML/CSS.
- There are many languages that get “transpiled” to JavaScript and provide certain features. It is recommended to take a look at them, at least briefly, after mastering JavaScript.

## React JS

### Introduction to ReactJS

Let's say one of your friends posted a photograph on Facebook. Now you go and like the image and then you started checking out the comments too. Now while you are browsing over comments you see that the likes count has increased by 100, since you liked the picture, even without reloading the page. This magical count change is because of Reactjs.

React is a declarative, efficient, and flexible JavaScript library for building user interfaces. It's 'V' in MVC. ReactJS is an open-source, component-based front end library responsible only for the view layer of the application. It is maintained by Facebook.

React uses a declarative paradigm that makes it easier to reason about your application and aims to be both efficient and flexible. It designs simple views for each state in your application, and React will efficiently update and render just the right component when your data changes. The declarative view makes your code more predictable and easier to debug.

A React application is made of multiple components, each responsible for rendering a small, reusable piece of HTML. Components can be nested within other components to allow complex applications to be built out of simple building blocks. A component may also maintain an internal state – for example, a TabList component may store a variable corresponding to the currently open tab.

**How does it work:** While building client-side apps, a team of Facebook developers realized that the DOM is slow (The Document Object Model (DOM) is an application programming interface (API) for HTML and XML documents. It defines the logical structure of documents and the way a document is accessed and manipulated.). So, to make it faster, React implements a virtual DOM that is basically a DOM tree representation in JavaScript. So when it needs to read or write to the DOM, it will use the virtual representation of it. Then the virtual DOM will try to find the most efficient way to update the browser's DOM.

Unlike browser DOM elements, React elements are plain objects and are cheap to create. React DOM takes care of updating the DOM to match the React elements. The reason for this is that JavaScript is very fast and it's worth keeping a DOM tree in it to speed up its manipulation.

Although React was conceived to be used in the browser, because of its design it can also be used in the server with Node.js.

## Why learn ReactJS?

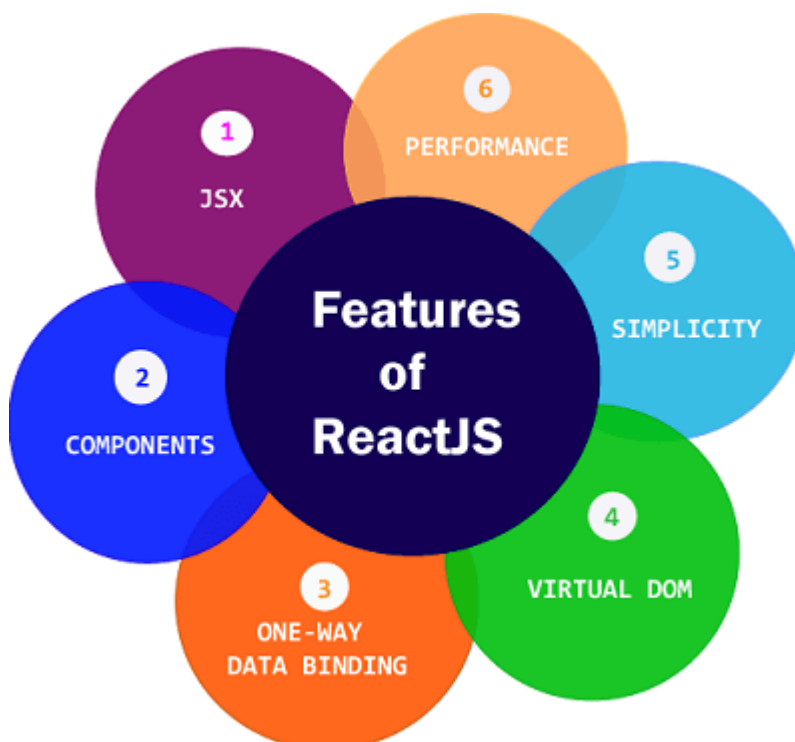
Today, many JavaScript frameworks are available in the market (like angular, node), but still, React came into the market and gained popularity amongst them. The previous frameworks follow the traditional data flow structure, which uses the DOM (Document Object Model). DOM is an object which is created by the browser each time a web page is loaded. It dynamically adds or removes the data at the back end and when any modifications were done, then each time a new DOM is created for the same page. This repeated creation of DOM makes



unnecessary memory wastage and reduces the performance of the application.

Therefore, a new technology ReactJS framework invented which remove this drawback. ReactJS allows you to divide your entire application into various components. ReactJS still used the same traditional data flow, but it is not directly operating on the browser's Document Object Model (DOM) immediately; instead, it operates on a virtual DOM. It means rather than manipulating the document in a browser after changes to our data, it resolves changes on a DOM built and run entirely in memory. After the virtual DOM has been updated, React determines what changes made to the actual browser's DOM. The React Virtual DOM exists entirely in memory and is a representation of the web browser's DOM. Due to this, when we write a React component, we did not write directly to the DOM; instead, we are writing virtual components that react will turn into the DOM.

## React Features



Currently, ReactJS gaining quick popularity as the best JavaScript framework among web developers. It is playing an essential role in the front-end ecosystem. The important features of ReactJS are as following.

- JSX
- Components
- One-way Data Binding
- Virtual DOM
- Simplicity
- Performance

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## JSX

JSX stands for JavaScript XML. It is a JavaScript syntax extension. Its an XML or HTML like syntax used by ReactJS. This syntax is processed into JavaScript calls of React Framework. It extends the ES6 so that HTML like text can co-exist with JavaScript react code. It is not necessary to use JSX, but it is recommended to use in ReactJS.

## Components

ReactJS is all about components. ReactJS application is made up of multiple components, and each component has its own logic and controls. These components can be reusable which help you to maintain the code when working on larger scale projects.

## One-way Data Binding

ReactJS is designed in such a manner that follows unidirectional data flow or one-way data binding. The benefits of one-way data binding give you better control throughout the application. If the data flow is in another direction, then it requires additional features. It is because components are supposed to be immutable and the data within them cannot be changed. Flux is a pattern that helps to keep your data

unidirectional. This makes the application more flexible that leads to increase efficiency.

## Virtual DOM

A virtual DOM object is a representation of the original DOM object. It works like a one-way data binding. Whenever any modifications happen in the web application, the entire UI is re-rendered in virtual DOM representation. Then it checks the difference between the previous DOM representation and new DOM. Once it has done, the real DOM will update only the things that have actually changed. This makes the application faster, and there is no wastage of memory.

## Simplicity

ReactJS uses JSX file which makes the application simple and to code as well as understand. We know that ReactJS is a component-based approach which makes the code reusable as your need. This makes it simple to use and learn.

## Performance

ReactJS is known to be a great performer. This feature makes it much better than other frameworks out there today. The reason behind this is that it manages a virtual DOM. The DOM is a cross-platform and programming API which deals with HTML, XML or XHTML. The DOM exists entirely in memory. Due to this, when we create a component, we did not write directly to the DOM. Instead, we are writing virtual components that will turn into the DOM leading to smoother and faster performance.

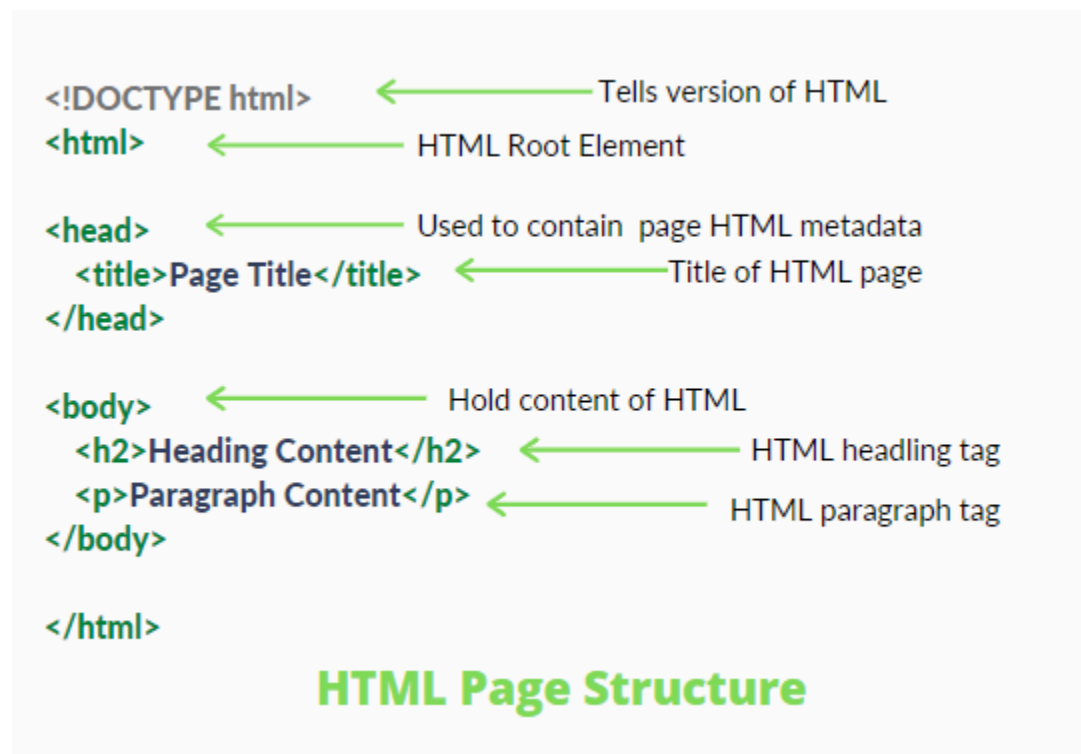
## HTML

**HTML** stands for HyperText Markup Language. It is used to design web pages using a markup language. HTML is the combination of Hypertext and Markup language. Hypertext defines the link between the web pages. A markup language is used to define the text document within tag which defines the structure of web pages. This language is used to annotate (make notes for the computer) text so that a machine can

understand it and manipulate text accordingly. Most markup languages (e.g. HTML) are human-readable. The language uses tags to define what manipulation has to be done on the text.

HTML is a markup language used by the browser to manipulate text, images, and other content, in order to display it in the required format. HTML was created by Tim Berners-Lee in 1991. The first-ever version of HTML was HTML 1.0, but the first standard version was HTML 2.0, published in 1999.

**HTML page structure:** The basic structure of an HTML page is laid out below. It contains the essential building-block elements (i.e. doctype declaration, HTML, head, title, and body elements) upon which all web pages are created.



**<DOCTYPE! html>:** This is the document type declaration (not technically a tag). It declares a document as being an HTML document. The doctype declaration is not case-sensitive.

**<html>:** This is called the HTML root element. All other elements are contained within it.

**<head>:** The head tag contains the “behind the scenes” elements for a webpage. Elements within the head aren’t visible on the front-end of a webpage. HTML elements used inside the <head> element include:

- [<style>](#)
- [<title>](#)
- [<base>](#)
- [<noscript>](#)
- [<script>](#)
- [<meta>](#)
- [<link>](#)

**<body>**: the body tag is used to enclose all the visible content of a webpage. In other words, the body content is what the browser will show on the front-end.

An HTML document can be created using any text editor. Save the text file using **.html** or **.htm**. Once saved as an HTML document, the file can be opened as a webpage in the browser.

NOTE: Basic/built-in text editors are Notepad (Windows) and TextEdit (Macs). Basic text editors are entirely sufficient for when you're just getting started. As you progress, there are many feature-rich text editors available which allow for greater function and flexibility.

## Why to Learn HTML?

Originally, **HTML** was developed with the intent of defining the structure of documents like headings, paragraphs, lists, and so forth to facilitate the sharing of scientific information between researchers. Now, HTML is being widely used to format web pages with the help of different tags available in HTML language.

**HTML** is a MUST for students and working professionals to become a great Software Engineer specially when they are working in Web Development Domain. I will list down some of the key advantages of learning HTML:

- **Create Web site** - You can create a website or customize an existing web template if you know HTML well.
- **Become a web designer** - If you want to start a career as a professional web designer, HTML and CSS designing is a must skill.
- **Understand web** - If you want to optimize your website, to boost its speed and performance, it is good to know HTML to yield best results.

- **Learn other languages** - Once you understand the basics of HTML then other related technologies like javascript, php, or angular are become easier to understand.

## **Node JS**

What is Node.js?

- Node.js is an open source server environment
- Node.js is free
- Node.js runs on various platforms (Windows, Linux, Unix, Mac OS X, etc.)
- Node.js uses JavaScript on the server

Why Node.js?

A common task for a web server can be to open a file on the server and return the content to the client.

Here is how PHP or ASP handles a file request:

1. Sends the task to the computer's file system.
2. Waits while the file system opens and reads the file.
3. Returns the content to the client.
4. Ready to handle the next request.

Here is how Node.js handles a file request:

1. Sends the task to the computer's file system.
2. Ready to handle the next request.
3. When the file system has opened and read the file, the server returns the content to the client.

Node.js eliminates the waiting, and simply continues with the next request.

Node.js runs single-threaded, non-blocking, asynchronously programming, which is very memory efficient.

### What Can Node.js Do?

- Node.js can generate dynamic page content
- Node.js can create, open, read, write, delete, and close files on the server
- Node.js can collect form data
- Node.js can add, delete, modify data in your database

### What is a Node.js File?

- Node.js files contain tasks that will be executed on certain events
- A typical event is someone trying to access a port on the server
- Node.js files must be initiated on the server before having any effect
- Node.js files have extension ".js"

## CSS

**Cascading Style Sheets**, fondly referred to as **CSS**, is a simply designed language intended to simplify the process of making web pages presentable. CSS allows you to apply styles to web pages. More importantly, CSS enables you to do this independent of the HTML that makes up each web page.

CSS is easy to learn and understood but it provides powerful control over the presentation of an HTML document.

## WHY CSS?

- **CSS saves time** : You can write CSS once and reuse same sheet in multiple HTML pages.

- **Easy Maintenance** : To make a global change simply change the style, and all elements in all the webpages will be updated automatically.
- **Search Engines** : CSS is considered as clean coding technique, which means search engines won't have to struggle to "read" its content.
- **Superior styles to HTML** : CSS has a much wider array of attributes than HTML, so you can give a far better look to your HTML page in comparison to HTML attributes.
- **Offline Browsing** : CSS can store web applications locally with the help of offline cache. Using of this we can view offline websites.

## CSS Syntax

A CSS comprises of style rules that are interpreted by the browser and then applied to the corresponding elements in your document.

A style rule set consists of a selector and declaration block.

**Selector => h1**

**Declaration => {color:blue;font size:12px;}**

- The selector points to the HTML element you want to style.
- The declaration block contains one or more declarations separated by semicolons.
- Each declaration includes a CSS property name and a value, separated by a colon.

For Example:

-> color is property and blue is value.

-> font size is property and 12px is value.

- A CSS declaration always ends with a semicolon, and declaration blocks are surrounded by curly braces.



## Advantages of CSS

- **CSS saves time** – You can write CSS once and then reuse same sheet in multiple HTML pages. You can define a style for each HTML element and apply it to as many Web pages as you want.
- **Pages load faster** – If you are using CSS, you do not need to write HTML tag attributes every time. Just write one CSS rule of a tag and apply it to all the occurrences of that tag. So less code means faster download times.
- **Easy maintenance** – To make a global change, simply change the style, and all elements in all the web pages will be updated automatically.
- **Superior styles to HTML** – CSS has a much wider array of attributes than HTML, so you can give a far better look to your HTML page in comparison to HTML attributes.
- **Multiple Device Compatibility** – Style sheets allow content to be optimized for more than one type of device. By using the same HTML document, different versions of a website can be presented for handheld devices such as PDAs and cell phones or for printing.
- **Global web standards** – Now HTML attributes are being deprecated and it is being recommended to use CSS. So its a good idea to start using CSS in all the HTML pages to make them compatible to future browsers.

## Who Creates and Maintains CSS?

CSS is created and maintained through a group of people within the W3C called the CSS Working Group. The CSS Working Group creates documents called specifications. When a specification has been discussed and officially ratified by the W3C members, it becomes a recommendation.

These ratified specifications are called recommendations because the W3C has no control over the actual implementation of the language. Independent companies and organizations create that software.

## CSS Versions

Cascading Style Sheets level 1 (CSS1) came out of W3C as a recommendation in December 1996. This version describes the CSS language as well as a simple visual formatting model for all the HTML tags.

CSS2 became a W3C recommendation in May 1998 and builds on CSS1. This version adds support for media-specific style sheets e.g. printers and aural devices, downloadable fonts, element positioning and tables.

Cascading Style Sheets (CSS) is a style sheet language used for describing the look and formatting of a document written in a markup language. CSS3 is a latest standard of css earlier versions(CSS2). The main difference between css2 and css3 is follows –

- Media Queries
- Namespaces
- Selectors Level 3
- Color

# **REQUIREMENT ANALYSIS**

## **HARDWARE REQUIREMENT (MINIMUM)**

• 2 GB RAM • Dual Core Processor • Internet Connections • Storage Devices for Backup

## **SOFTWARE REQUIREMENT-**

- **SYSTEM SOFTWARE** - Operating System (Windows, Linux)

- **APPLICATION SOFTWARE**

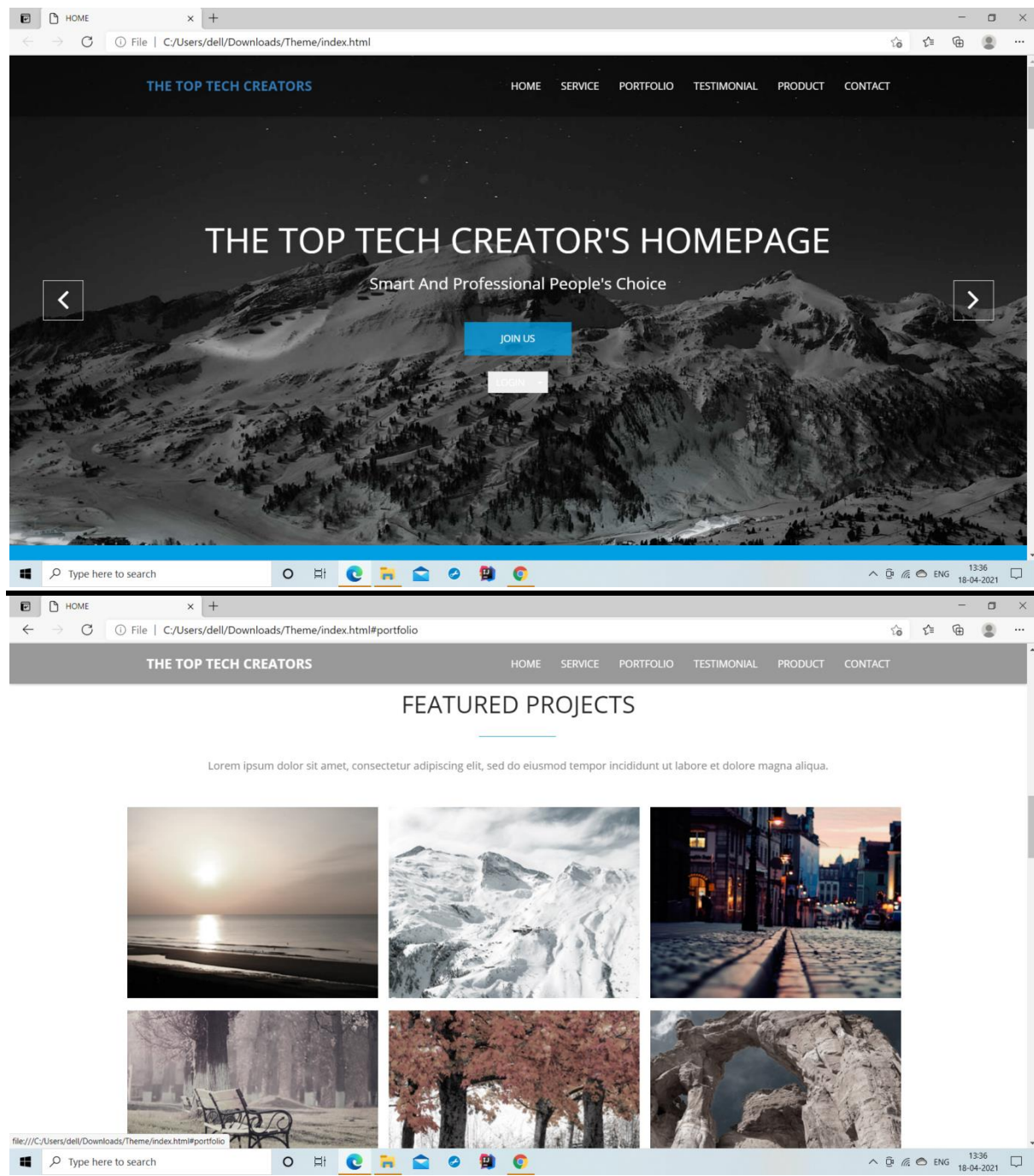
–**Programming Language:** JavaScript

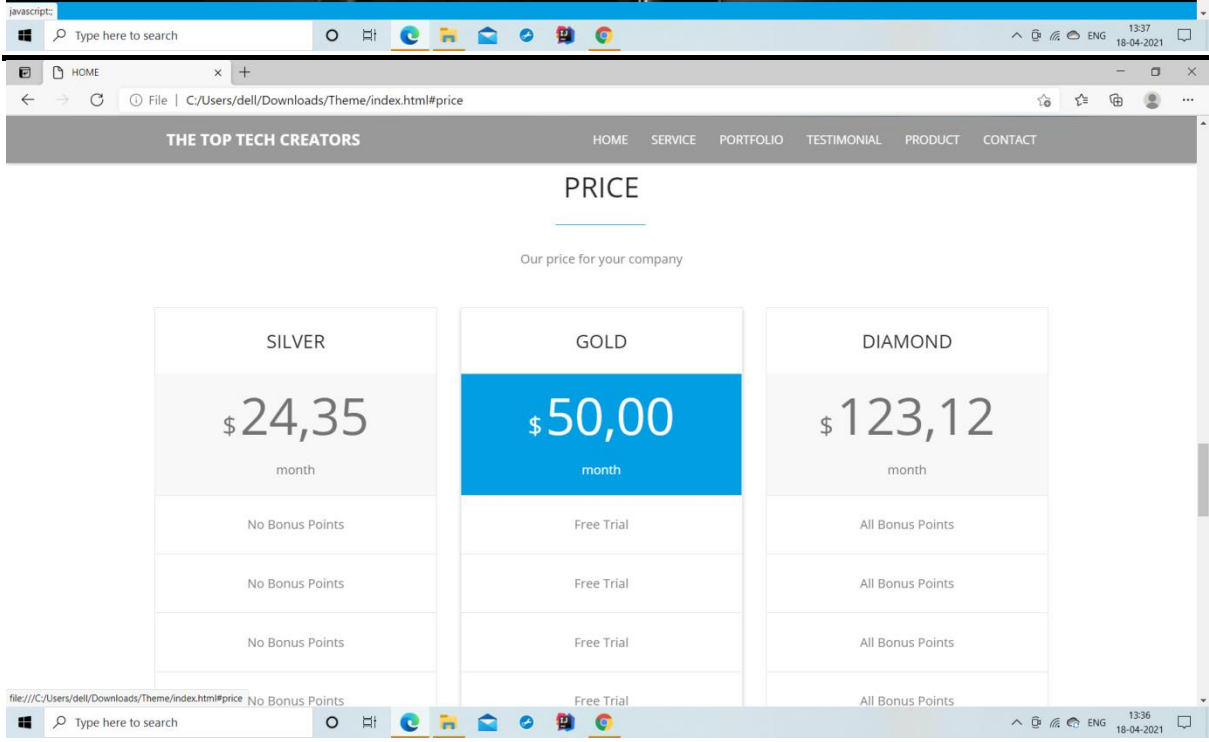
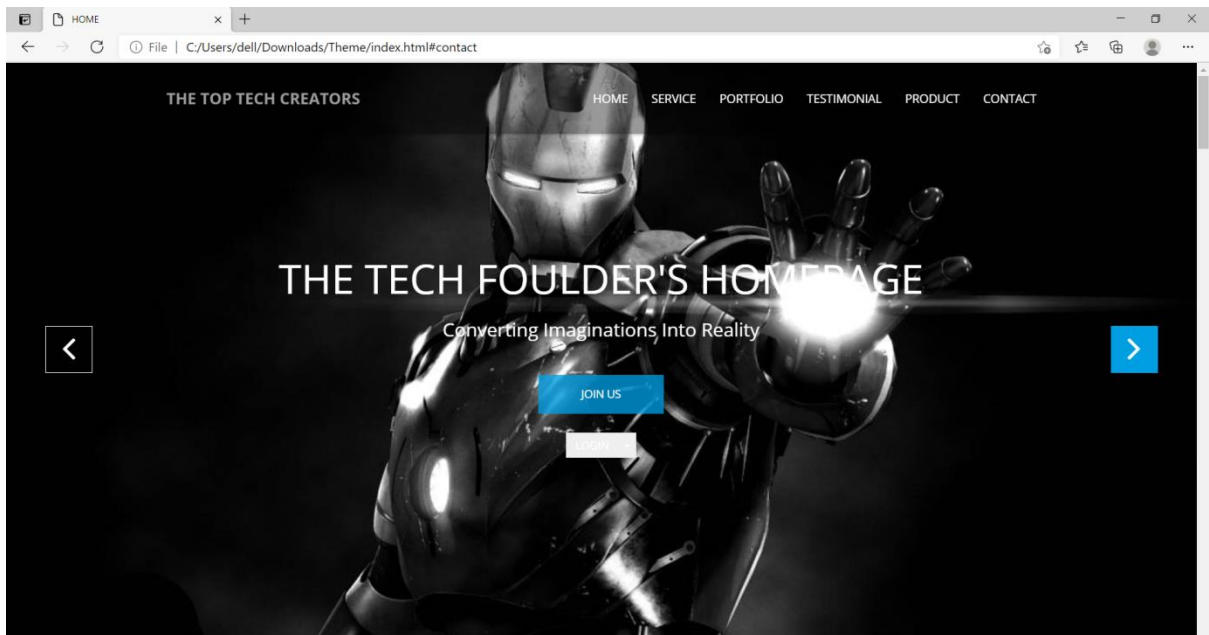
- **Tools:** Visual Studio Code Editor

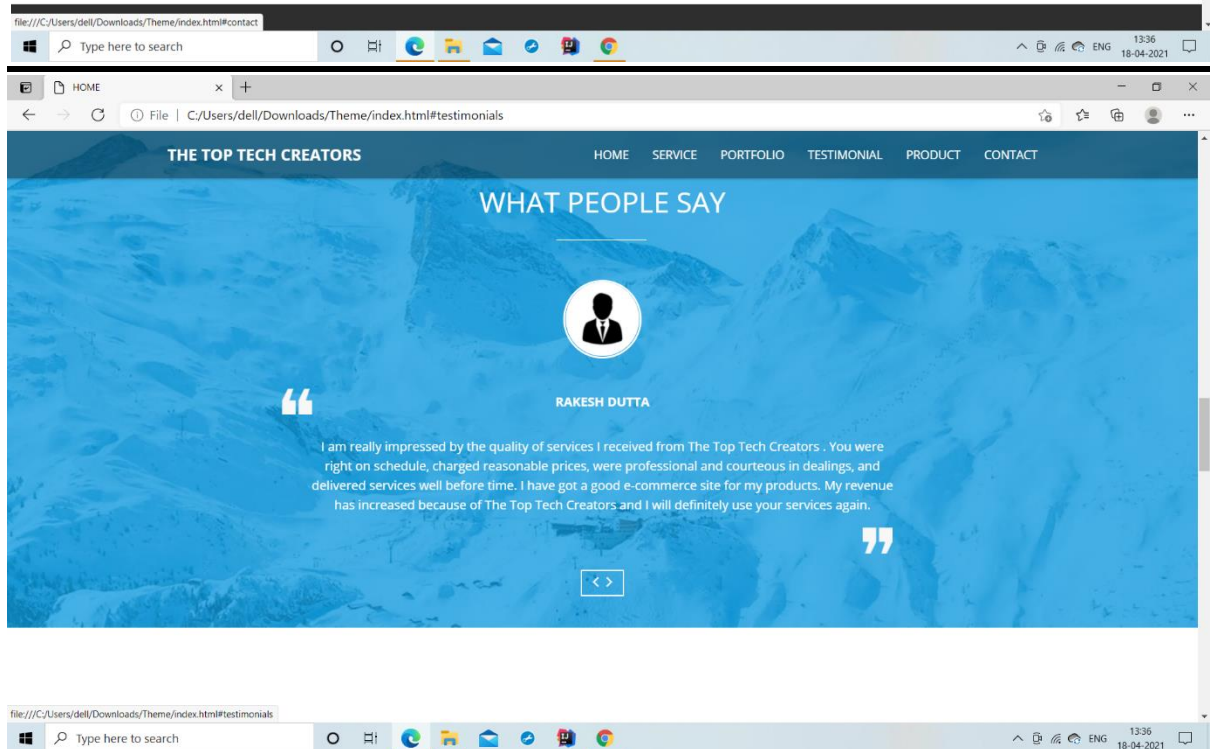
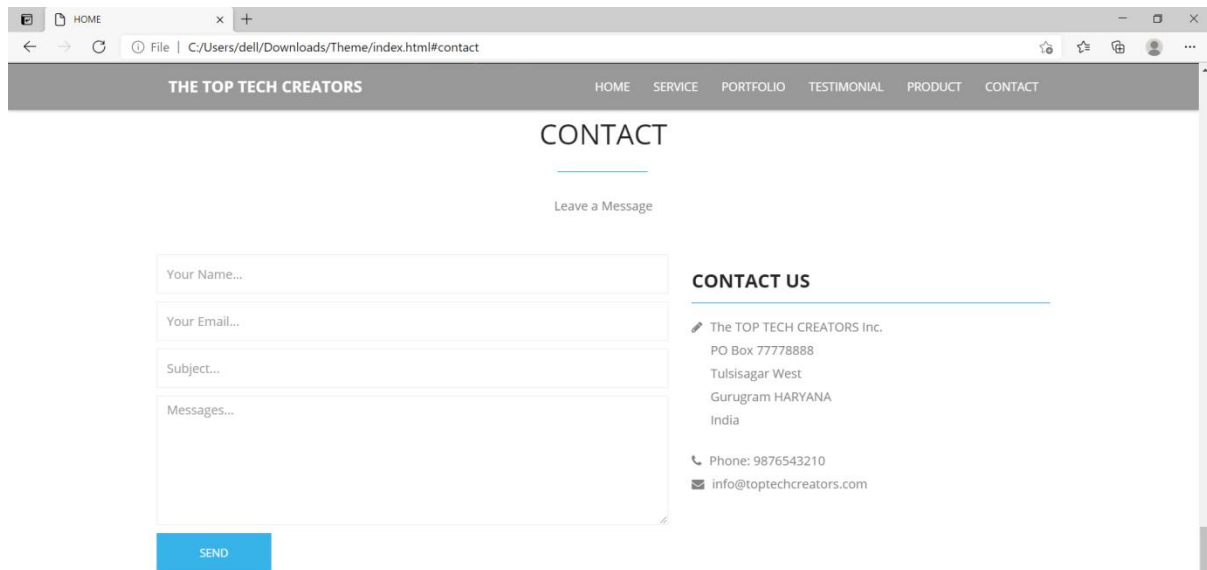
- **Front-End:** React JS

- **Back-End:** MongoDB, Express JS, Node JS

# Screenshot







indexhtml - Theme - Visual Studio Code

indexhtml X regiss.html form.php

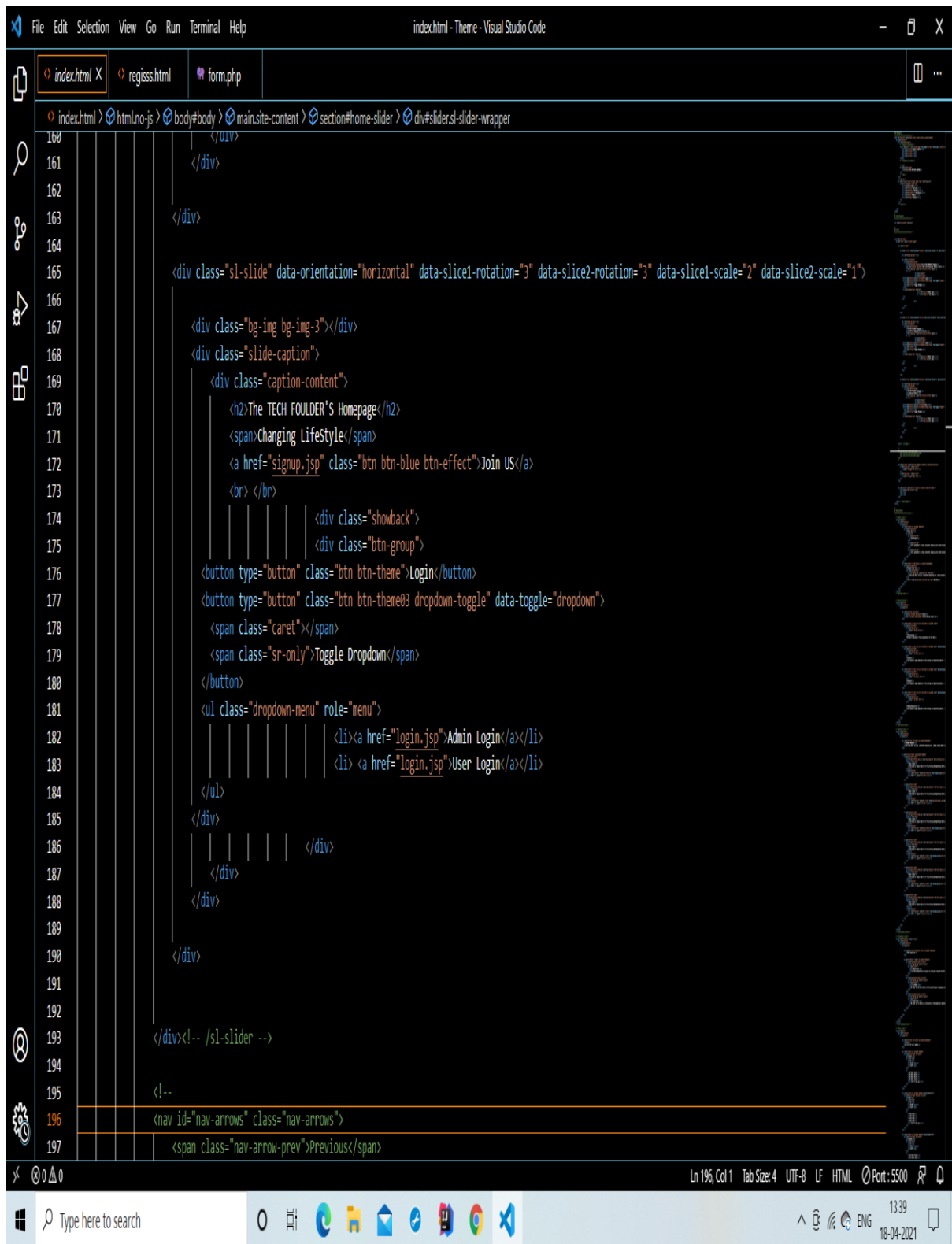
indexhtml > ...

```
1
2
3 <!DOCTYPE html>
4 <!--[if lt IE 7]> <html lang="en" class="no-js lt-ie9 lt-ie8 lt-ie7"> <![endif]-->
5 <!--[if IE 7]> <html lang="en" class="no-js lt-ie9 lt-ie8"> <![endif]-->
6 <!--[if IE 8]> <html lang="en" class="no-js lt-ie9"> <![endif]-->
7 <!--[if gt IE 8]><!--> <html lang="en" class="no-js"> <!--<![endif]-->
8 <head>
9 <!-- meta character set -->
10 <meta charset="utf-8">
11
12 <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
13 <title>HOME</title>
14 <!-- Meta Description -->
15 <meta name="description" content="Blue One Page Creative HTML5 Template">
16 <meta name="keywords" content="one page, single page, onepage, responsive, parallax, creative, business, html5, css3, css3 animation">
17 <meta name="author" content="Muhammad Morshed">
18
19 <!-- Mobile Specific Meta -->
20 <meta name="viewport" content="width=device-width, initial-scale=1">
21
22 <!-- CSS
23 ===== -->
24
25 <link href='http://fonts.googleapis.com/css?family=Open+Sans:400,300,700' rel='stylesheet' type='text/css'>
26
27 <!-- Fontawesome Icon font -->
28 <link rel="stylesheet" href="css/font-awesome.min.css">
29 <!-- bootstrap.min -->
30 <link rel="stylesheet" href="css/jquery.fancybox.css">
31 <!-- bootstrap.min -->
32 <link rel="stylesheet" href="css/bootstrap.min.css">
33 <!-- bootstrap.min -->
34 <link rel="stylesheet" href="css/owl.carousel.css">
35 <!-- bootstrap.min -->
36 <link rel="stylesheet" href="css/slit-slider.css">
37 <!-- bootstrap.min -->
38 <link rel="stylesheet" href="css/animate.css">
```

Ln 1, Col 1 Tab Size: 4 UTF-8 LF HTML Port: 5500

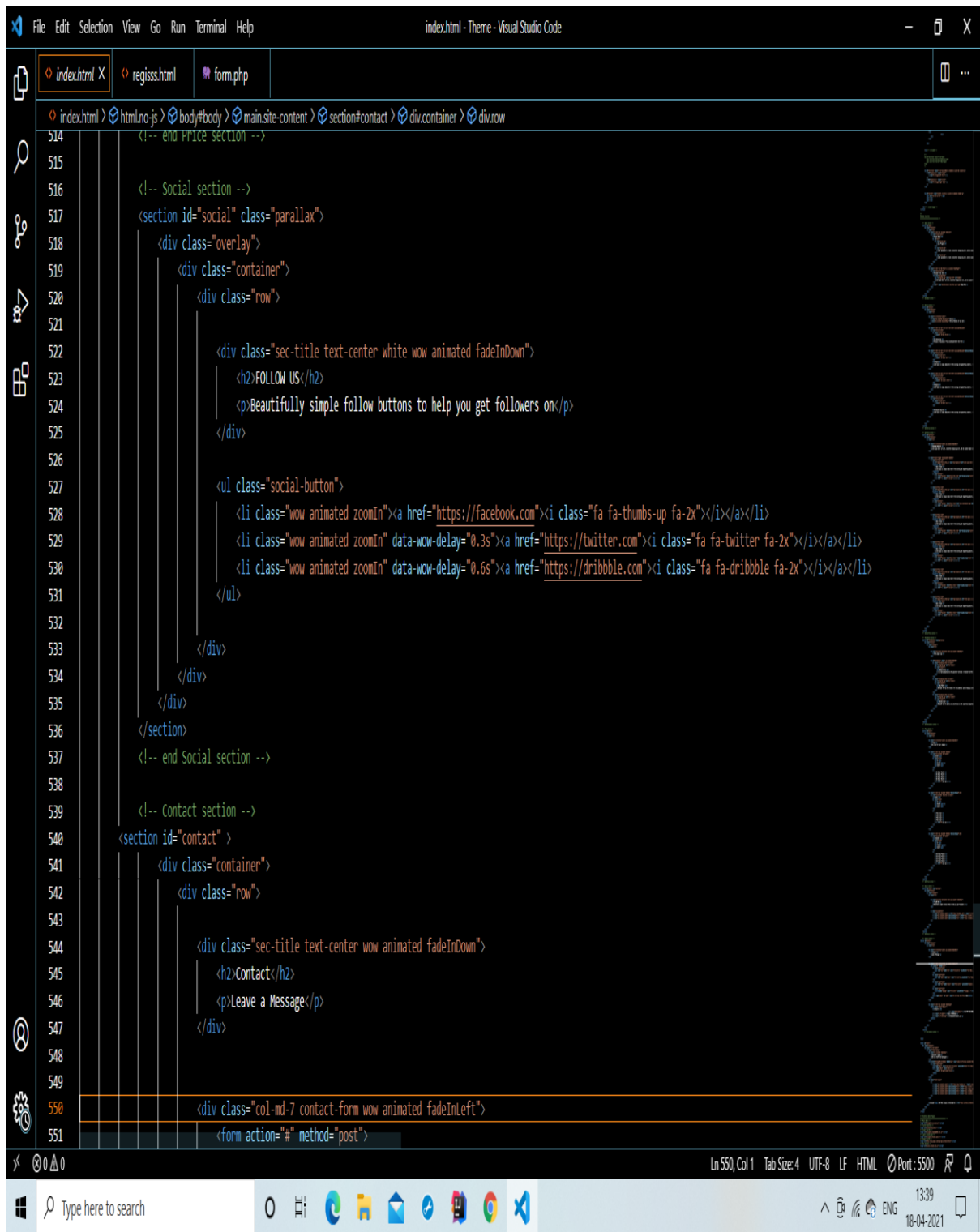
Type here to search

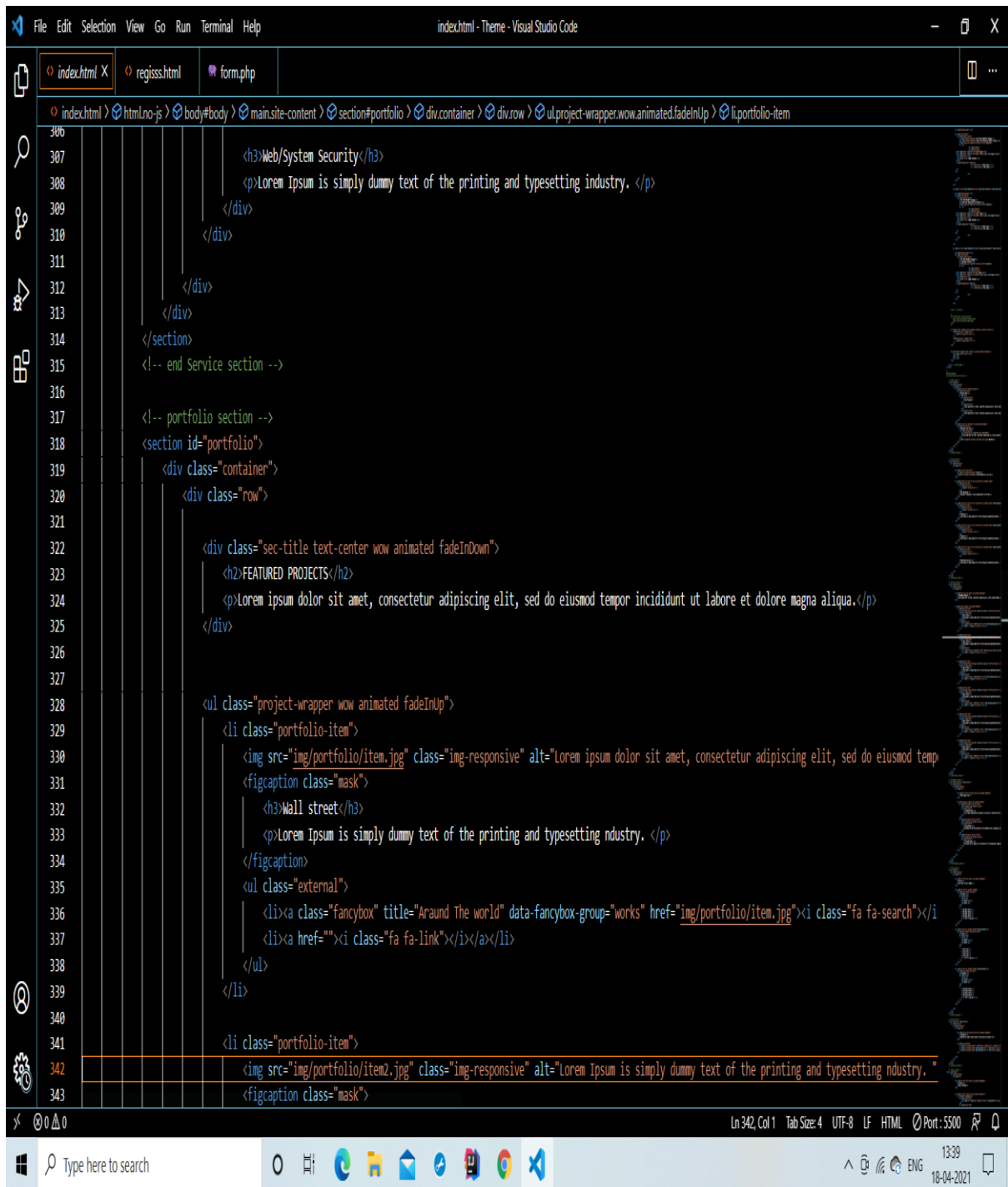
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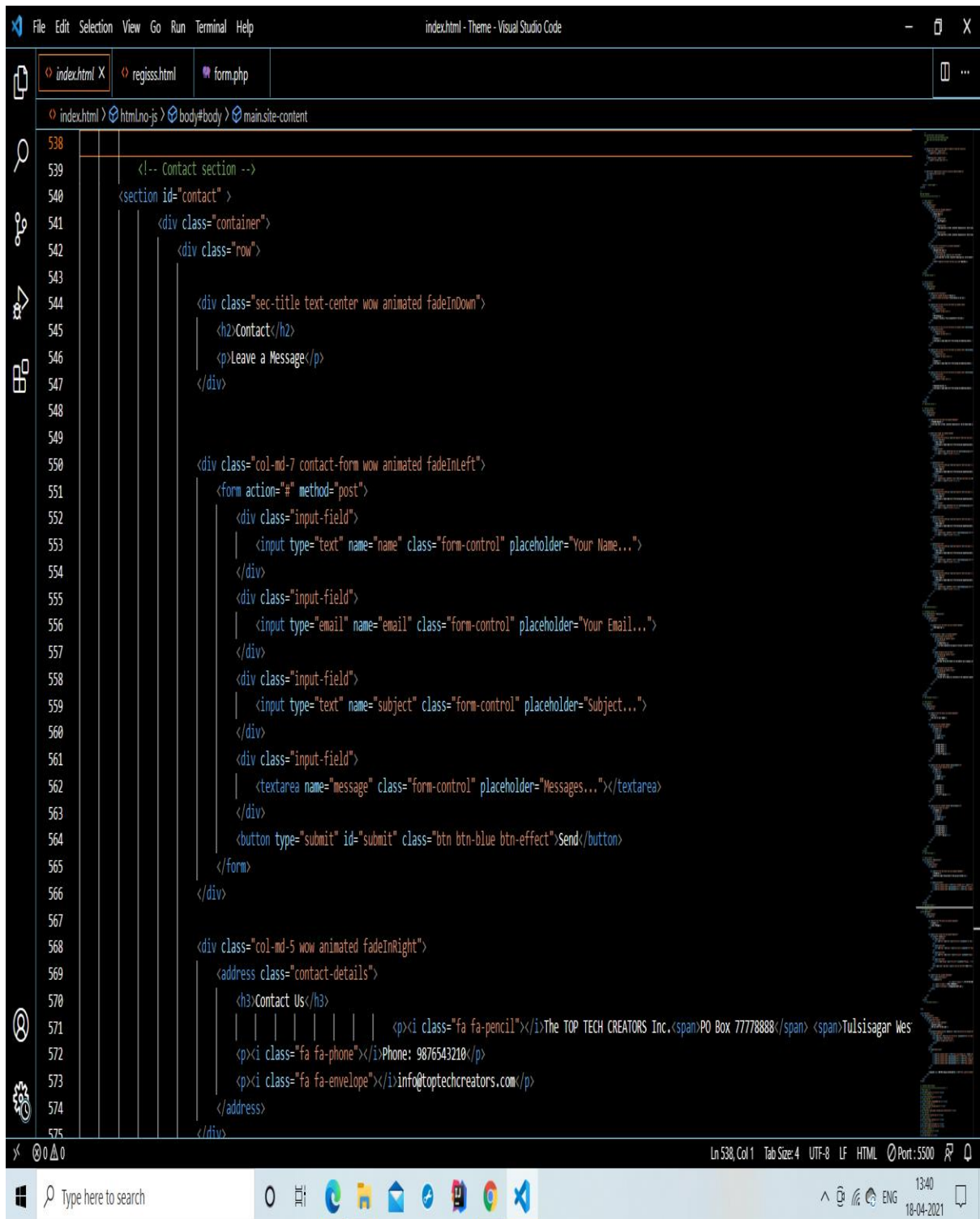














## **REFERENCES:-**

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[https://www.youtube.com/watch?v=Qqx\\_wzMmFeA](https://www.youtube.com/watch?v=Qqx_wzMmFeA)

<https://www.w3schools.com/js/DEFAULT.asp>

[https://www.w3schools.com/nodejs/ref\\_modules.asp](https://www.w3schools.com/nodejs/ref_modules.asp)