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# Linked List Implementation "Online learning"

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**Abstract**

Student enrollment in recent years and institutions of higher education have a keen interest in offering quality online MBA programs to meet the demands. This study aimed to develop an online learning platform. The project is a description of one of the methods of the Data Structure Course, which describes how to store data inside the Ram Memory. It is a website that contains a video to explain one of the methods of storing data within the memory of the computer, and the site contains a special page of training, which distinguishes it from the rest of the educational sites. The site helps to test the health of solving the issues of the student training on the lesson. The site shows how to use the pop front method, pop back method, push front method, push back method and delete the list from the memory. All of these functions could be difficult to imagine in reality, so the researchers designed a webpage to do this task.

**Keywords:** Linked List; online learning; webpage design.

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## 1. Introduction

A Linked List Implementation "Online Learning" is a website that teaches one of the most important courses of data engineering "data structure" through the development of videos that explain one of the methods used in the course and a design graph shows how the data is stored in this way by different orders and on this page, you can see how the data is cleared in a particular order using different commands (VijayaPandian, 2018; Ferri, Grifoni & Guzzo, 2020).

Online learning from modern things has begun to appear in the recent periods and various forms of Instruction (CMI), integrated learning systems (ILS), computer-based instruction (CBI), computer-assisted instruction (CAI), and computer-assisted learning (CAL) (Muchtar et al., 2020). These terms describe drill-and-practice programs, more sophisticated tutorials, and more individualized instruction, respectively. The term is currently used to describe a number of different educational computer applications. The earliest networked learning system was the Plato Learning Management system (PLM) developed in the 1970s by Control Data Corporation. First-class by Soft Arc was used by the United.

### *1.1.* ***Purpose of study***

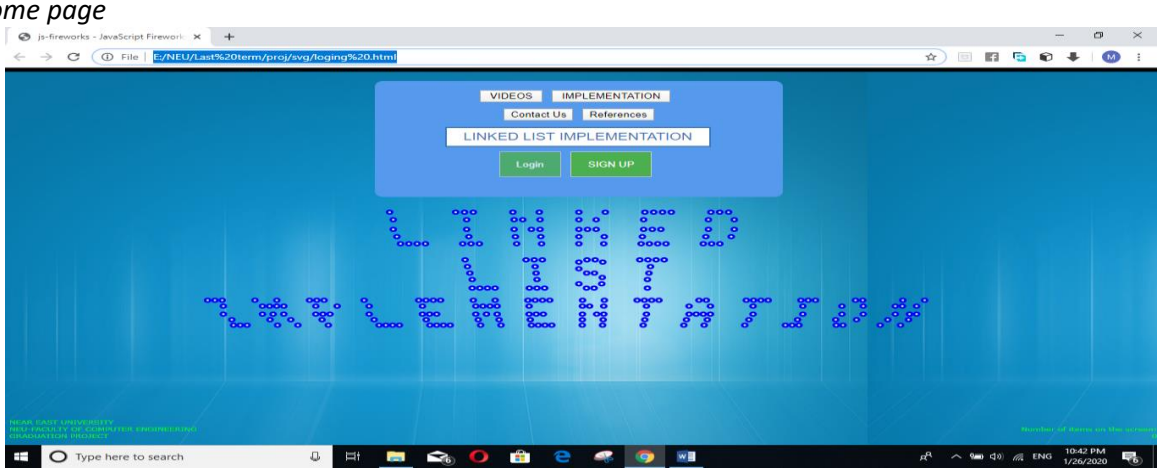
A linked List Implementation Website helps students understand the course faster and better than the traditional method of teaching and will facilitate the lecturer to do his job and be able to explain what he wants to explain to his students. The site will also contain a page with a brief profile of the participants in the project and the university supervising the site, and we can add other courses in the same way to our site to become more useful. This study aimed to develop an online learning platform based on the presented problem.

### ***1.2.*** **Results** ***Application Components***

#### *1.2.1. Home Page*

When you open the linked list implementation website you will find the home page in a comfortable color for your eyes. and I use fireworks to write the name of the project on it.
On the home page, there are six buttons. each button opens a new page.

**Figure 1**
*Home page*




And Figure 2 is part of the page code

**Figure 2**

*Page code*

loging .html - Notepad

File Edit Format View Help

```
<!DOCTYPE html>
<html>
<head>
<meta name="viewport" content="width=device-width, initial-scale=1">
<style>
body {font-family: Arial, Helvetica, sans-serif;}

/* Full-width input fields */
input[type=textw]{
  width: 100%;
  padding: 12px 20px;
  margin: 8px 0;
  display: inline-block;
  border: 1px solid #ccc;
  box-sizing: border-box;
}
 input[type=password] {
  width: 100%;
  padding: 12px 20px;
  margin: 8px 0;
  display: inline-block;
  border: 1px solid #ccc;
  box-sizing: border-box;
}

/* Set a style for all buttons */
button {
  background-color: #4CAF50;
  color: white;
  padding: 14px 20px;
  margin: 8px 0;
  border: 0.5px solid #ccc;;
  cursor: pointer;
  width: 100%;
}

button:hover {
  opacity: 0.8;
}

/* Extra styles for the cancel button */
.cancelbtn {
  width: auto;
  padding: 10px 18px;
  background-color: #f44336;
}
```

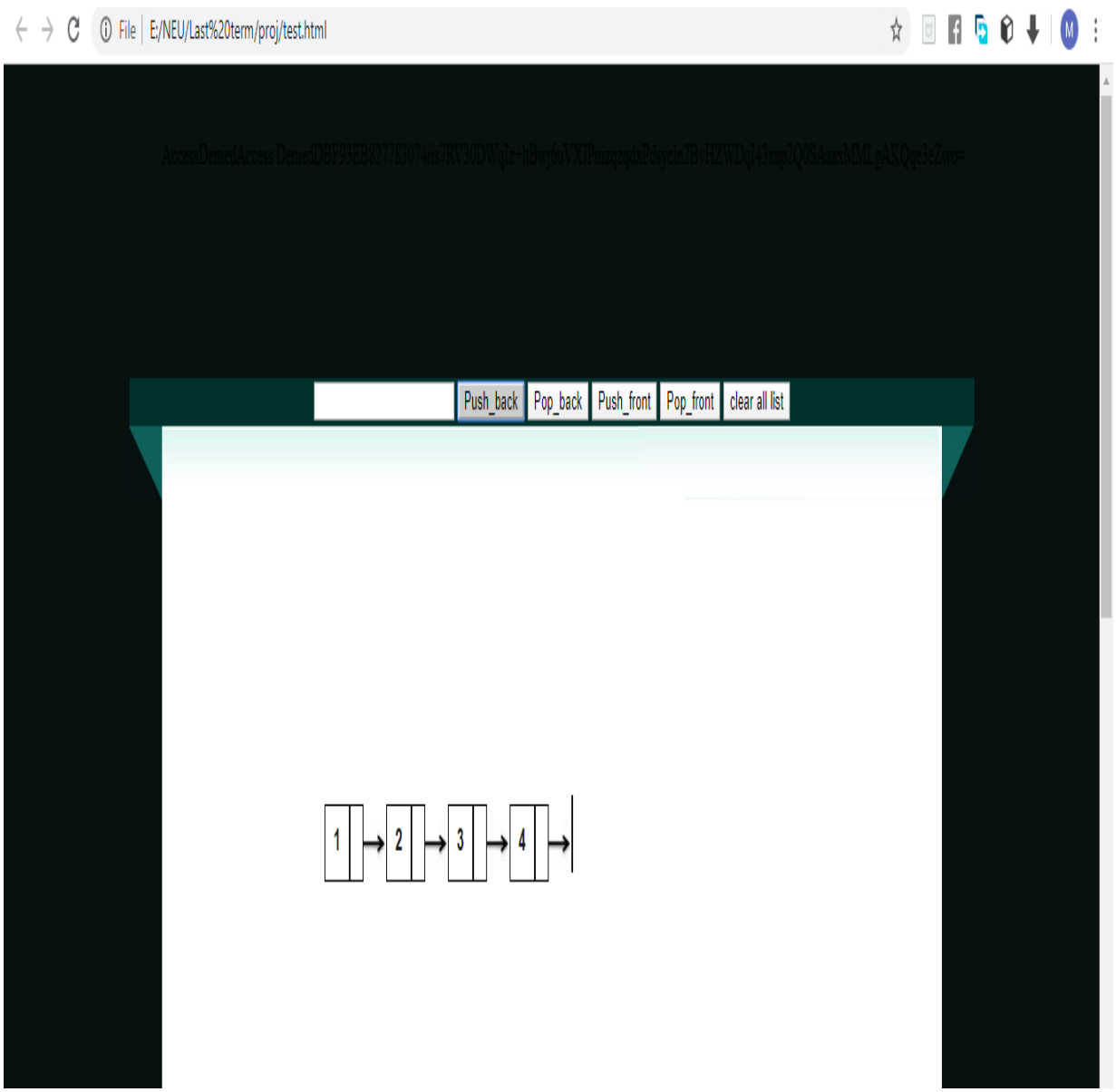
Windows (CRLF)

### *1.2.2. The Implementation page*

The implementation page is the main page of my project it shows the five main functions in the linked list is "push up, push back, pop up, pop back, clear all list ".

**Figure 3**

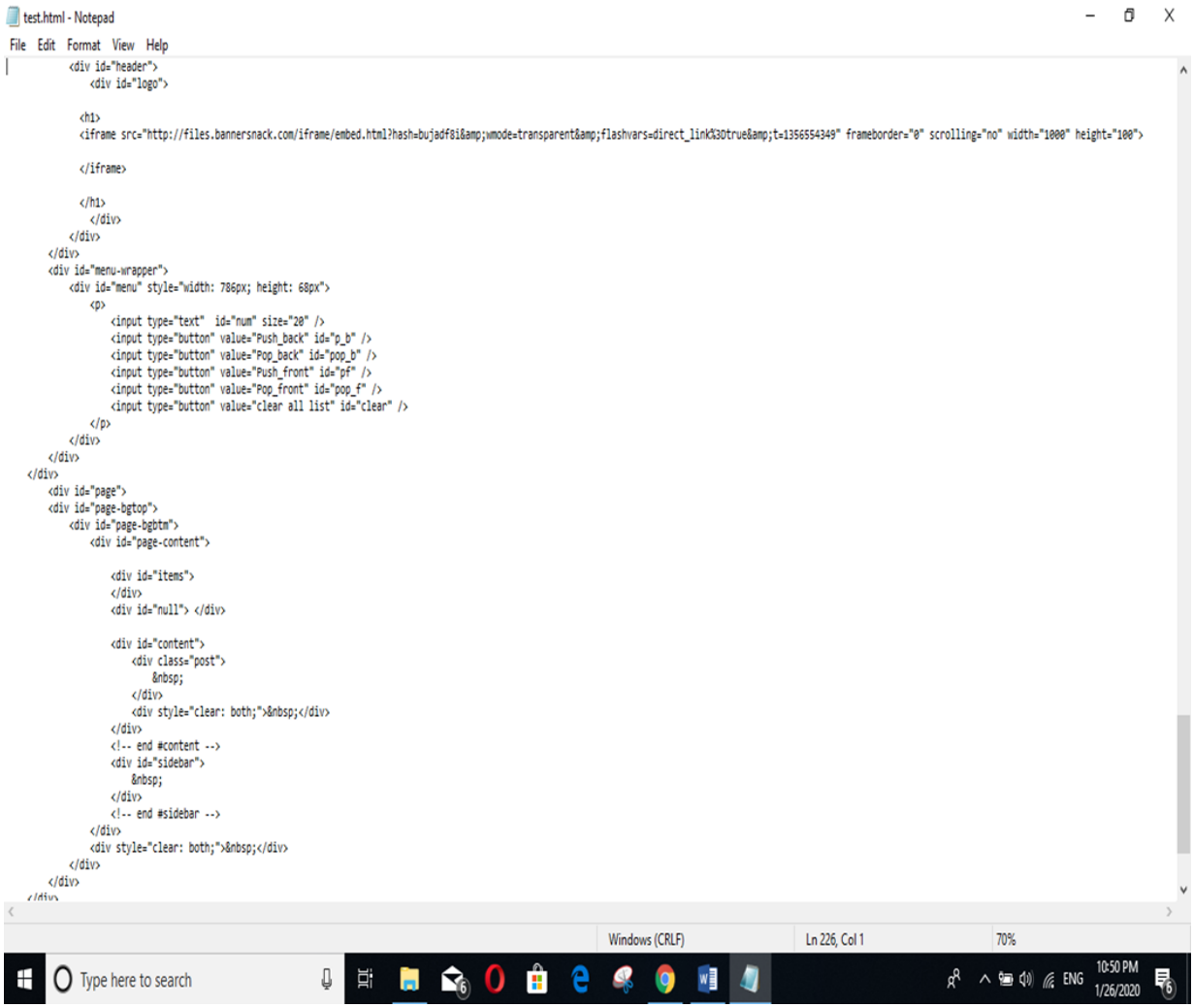
*Implementation page*




And Figure 4 is part of the page code

**Figure 4**

*Page code for implementation page*




### 1.2.2.1. Push back

The first function on the implementation page is "push back"
It used to add a new element in the back of the list > for example adding #10

**Figure 5**

*Push back*

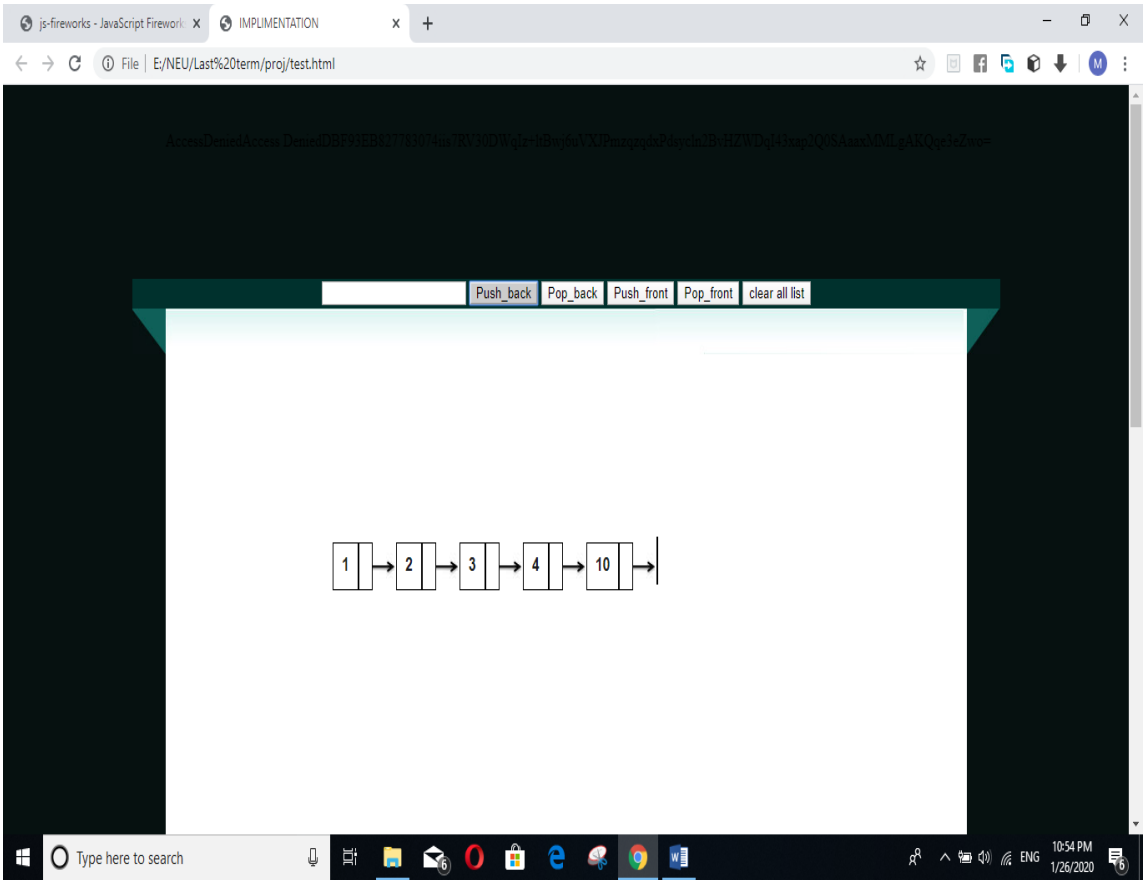



**Figure 6**

*Pop back function code*

```
...

$("#pop_b").click(function () {
//  alert(i);
    $("#block"+push[push.length-1]).hide(1000, function () {
        $("#block"+push[push.length-1]).remove();
        list.bob_back();
        push.pop();
    });
    m++;
            if(m==h)
     {
            $("#null").hide();
            h=0;
            m=0;
    }
  //  i--;
});
```

### 1.2.2.2. Pop front

The fourth function on the implementation page is "pop front"
It is used to delete an element from the beginning of the list > for example delete #20

**Figure 7**
*Pop front*

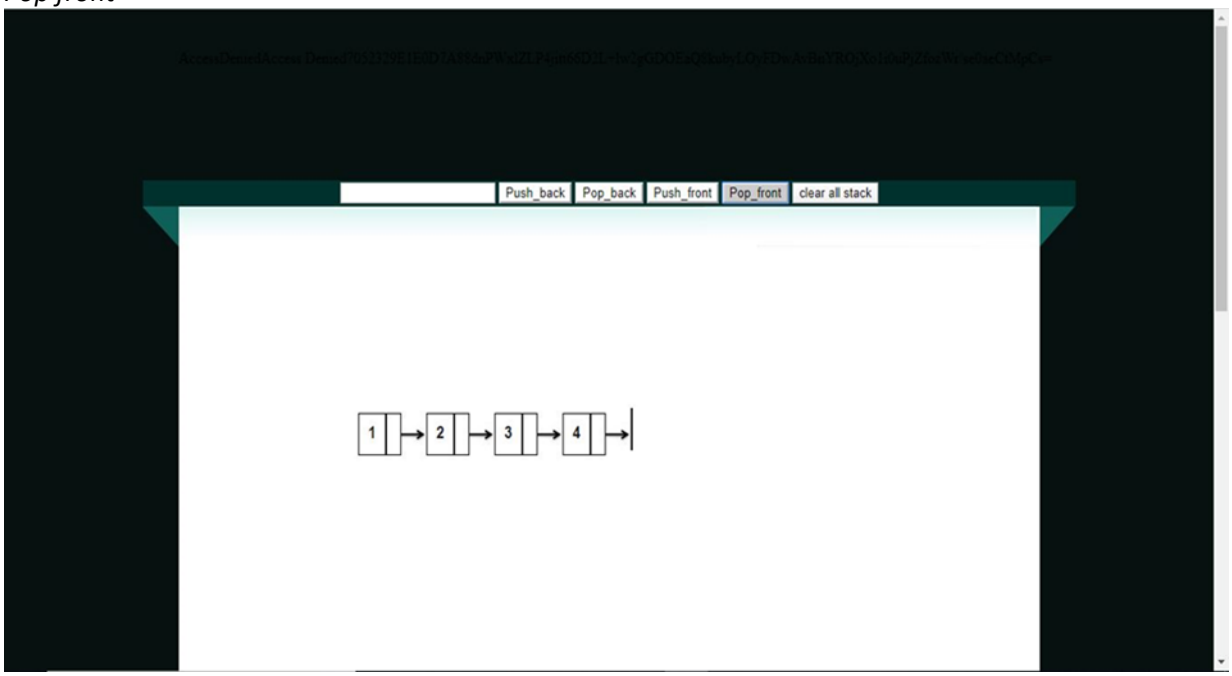



**Figure 8**
*Pop front function code*

```
$("#pop_f").click(function () {
    //alert(i);
    $("#block"+push[0]).hide(1000, function () {
        $("#block"+push[0]).remove();
        list.bob_front();
        push.shift();
        m++;
        if(m==h)
    {
            $("#null").hide();
            h=0;
            m=0;
    }
    });
   // i--;
});
```

#### 1.2.2.3. Clear all list

The last function on the implementation page is "clear all stack". It is used to delete all the elements of the list.

**Figure 9**

*Clear all list*


**Figure 10**

*Clear all list Function code*

```
$("#clear").click(function(){
                    $("#items").html("");
                    //$("#page-content").prepend('<div id="items" style="display:block;"></div>');
  //$("#items").show();
                    list.deletelist();
                    i=0;
                    h=0;
                    m=0;
                    $("#null").hide();

                });
```

### *1.2.3. Videos*

On the video page, we have three videos for explanation linked links with three different languages. "Arabic, English, Turkish".

**Figure 11**

*videos*

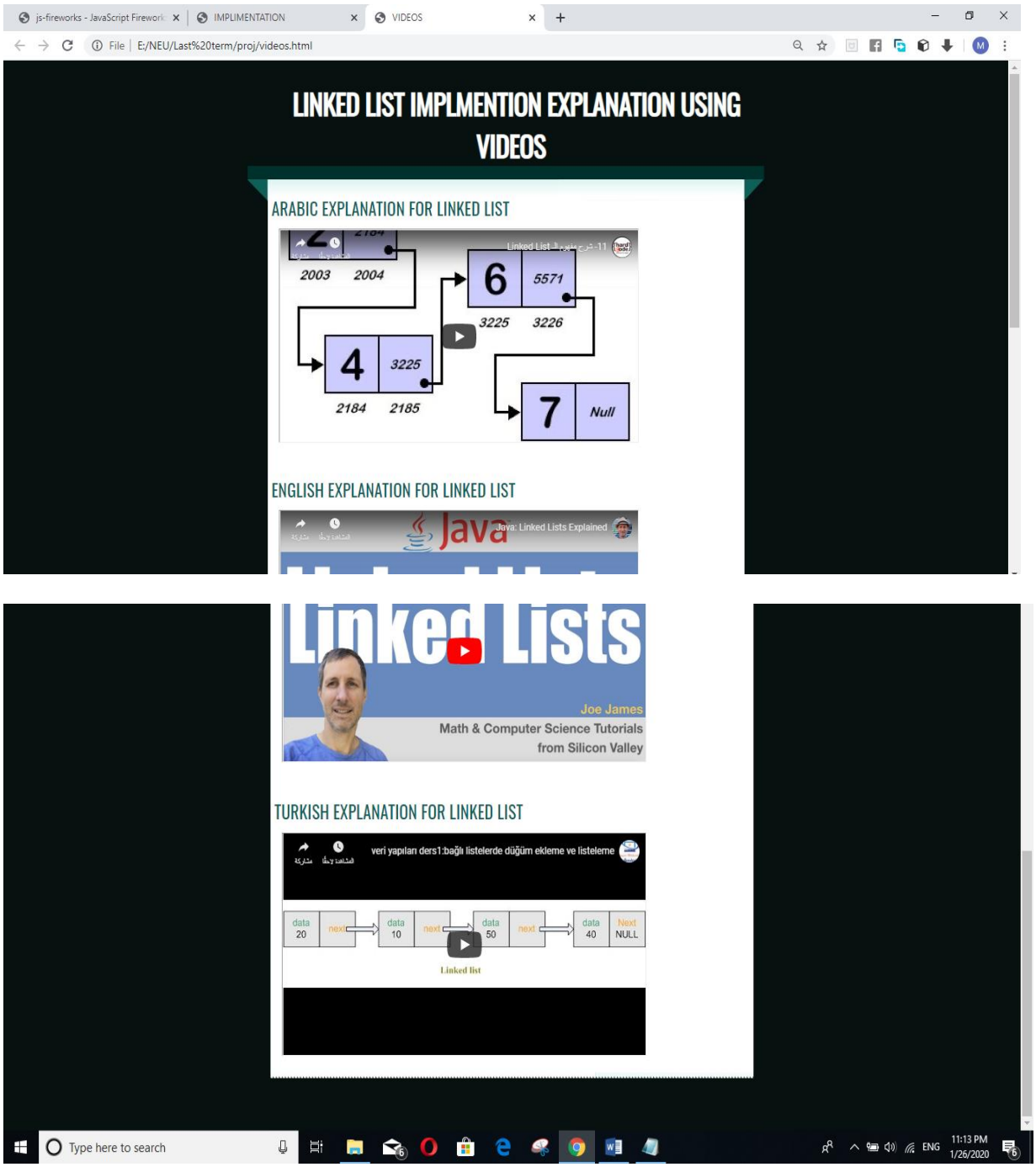


**Figure 12**

*Code for a videos page*

### *1.2.4. References*

The references page has some links for the websites which I used to design my site

**Figure 13**
*References*

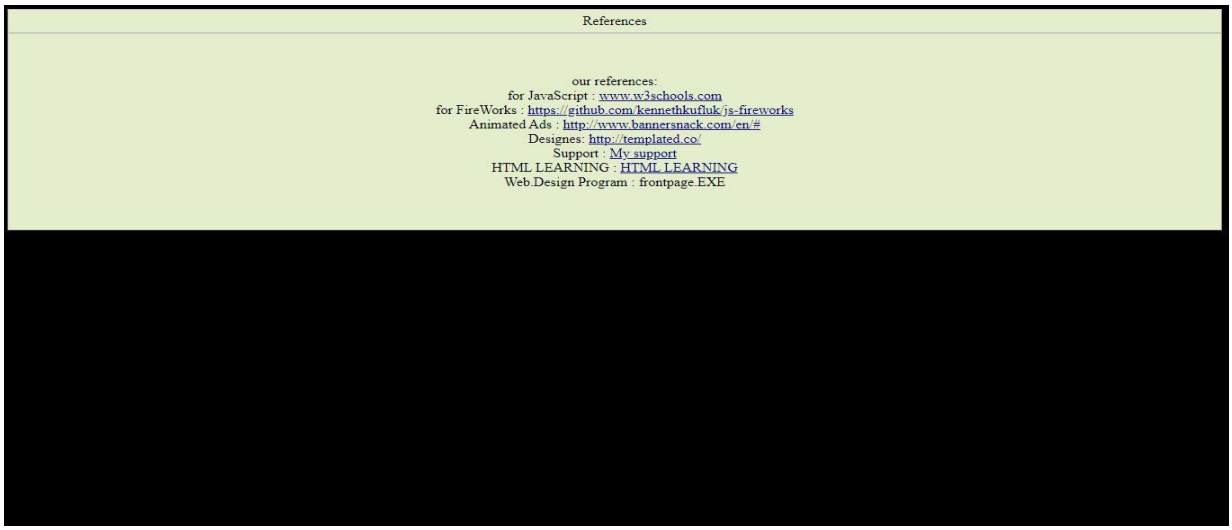
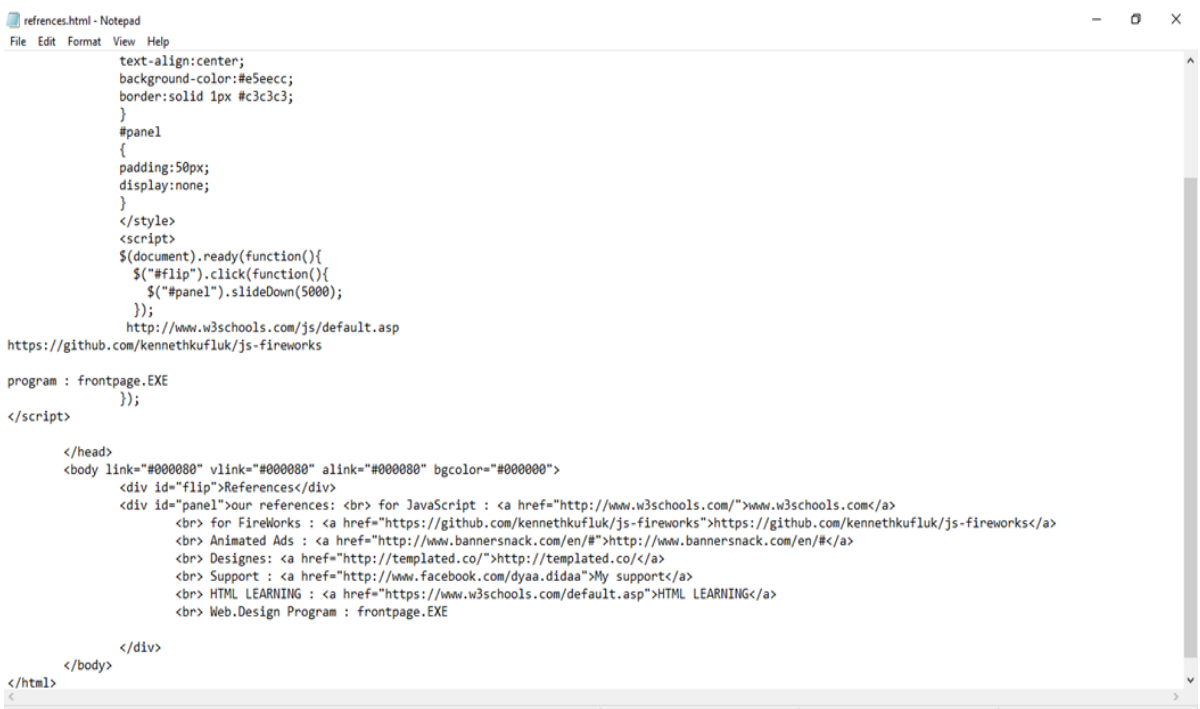



**Figure 14**
*Part of reference page code*



```
refrences.html - Notepad
File  Edit  Format  View  Help
                text-align:center;
                background-color:#e5eecc;
                border:solid 1px #c3c3c3;
                }
                #panel
                {
                padding:50px;
                display:none;
                }
                </style>
                <script>
                $(document).ready(function(){
                  $("#flip").click(function(){
                    $("#panel").slideDown(5000);
                  });
                 http://www.w3schools.com/js/default.asp
https://github.com/kennethkufluk/js-fireworks

program : frontpage.EXE
                });
</script>

        </head>
        <body link="#000080" vlink="#000080" alink="#000080" bgcolor="#000000">
                <div id="flip">References</div>
                <div id="panel">our references: <br> for JavaScript : <a href="http://www.w3schools.com/">www.w3schools.com</a>
                        <br> for FireWorks : <a href="https://github.com/kennethkufluk/js-fireworks">https://github.com/kennethkufluk/js-fireworks</a>
                        <br> Animated Ads : <a href="http://www.bannersnack.com/en/#">http://www.bannersnack.com/en/#</a>
                        <br> Designes: <a href="http://templated.co/">http://templated.co/</a>
                        <br> Support : <a href="http://www.facebook.com/dyaa.didaa">My support</a>
                        <br> HTML LEARNING : <a href="https://www.w3schools.com/default.asp">HTML LEARNING</a>
                        <br> Web.Design Program : frontpage.EXE

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

### *1.2.5. Contact us*

**Figure 15**

*Contact us*

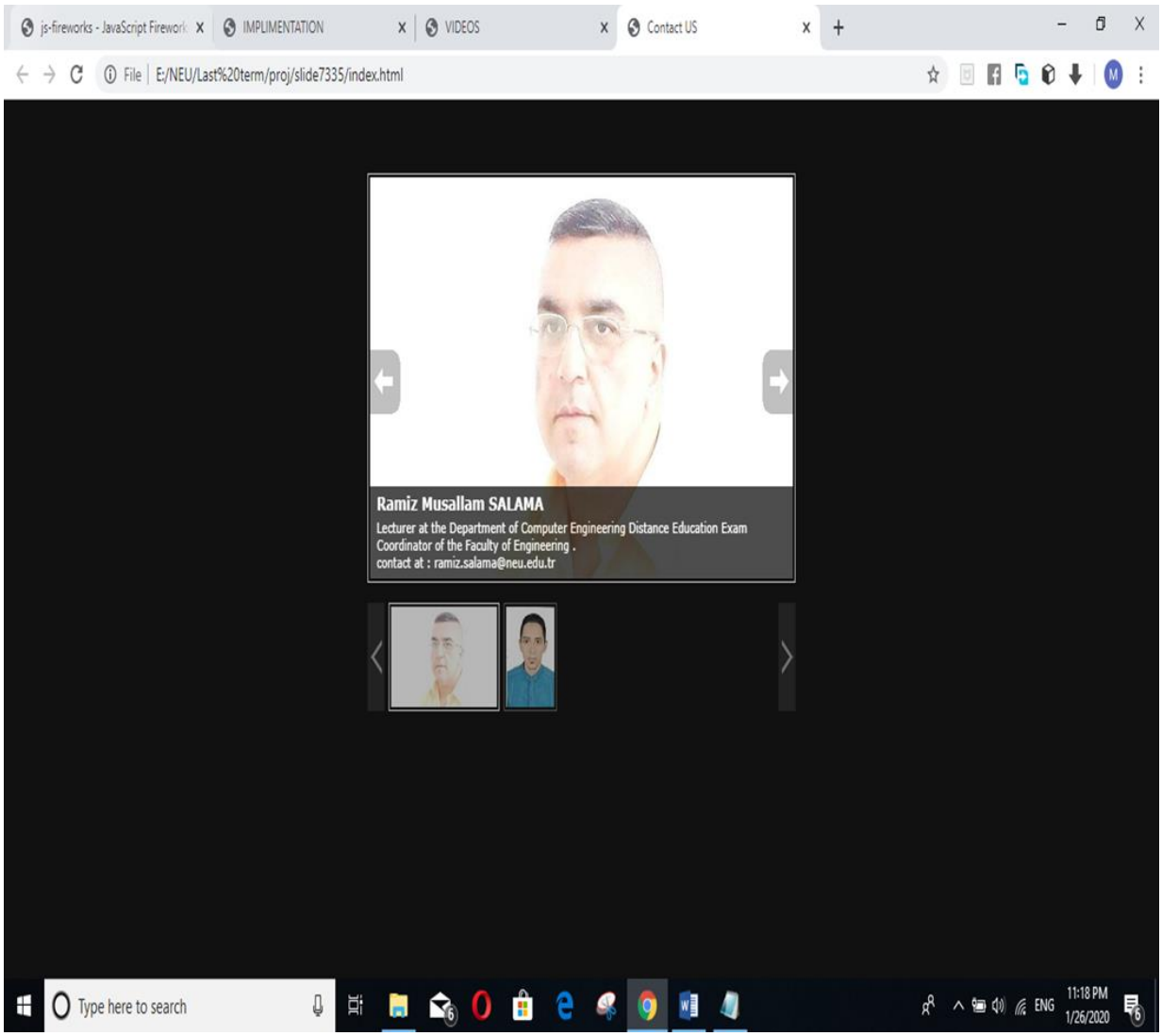


**Figure 16**

*Part of reference page code for contacts*

index.html - Notepad

File Edit Format View Help

```
<title>Contact US </title>
<link rel="stylesheet" href="style.css" />
</head>
<body>
	<ul id="slideshow">

		<li>
			<h3>Ramiz Musallam SALAMA</h3>
			<span>photos/ramez.jpg</span>
			<p> Lecturer at the Department of Computer Engineering Distance Education Exam Coordinator of the Faculty of Engineering .<br>contact at :  rami
			<img src="thumbnails/ramez.jpg" alt="ramiz" />
		</li>
		<li>
			<h3>Mahmoud Badr Mohammed</h3>
			<span>photos/1.jpg</span>
			<p>Student in NEU Faculty of Computer Engineering , and ASU FCIS .<br> contact at : mahmoudbadr212@yahoo.com </p>
			<a href="#"><img src="thumbnails/span2.jpg" alt="mahmoud" /></a>
		</li>

	</ul>
	<div id="wrapper">
		<div id="fullsize">
			<div id="imgprev" class="imgnav" title="Previous Image"></div>
			<div id="imglink"></div>
			<div id="imgnext" class="imgnav" title="Next Image"></div>
			<div id="image"></div>
			<div id="information">
				<h3></h3>
				<p></p>
			</div>
		</div>
		<div id="thumbnails">
			<div id="slideleft" title="Slide Left"></div>
			<div id="slidearea">
				<div id="slider"></div>
			</div>
```

### *1.2.6. Login*

**Figure 17**

*Login*

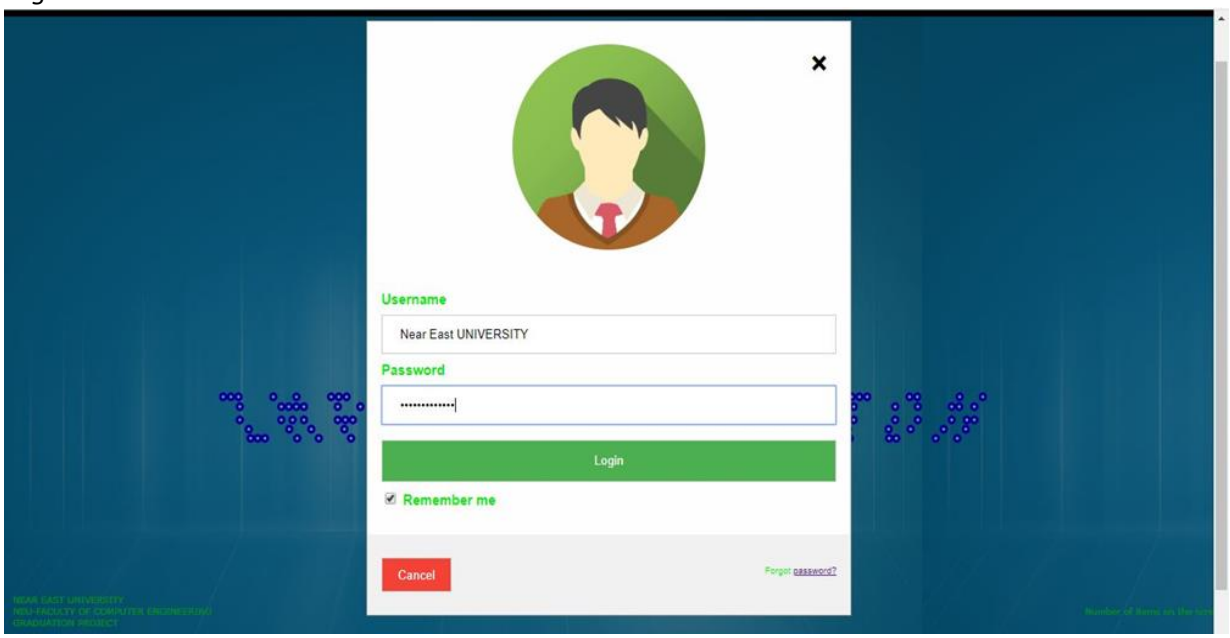



**Figure 18**

*Part of login page code*

loging .html - Notepad

File Edit Format View Help

```
<div id="id01" class="modal">

  <form class="modal-content animate" action="/action_page.php" method="post">
    <div class="imgcontainer">
      <span onclick="document.getElementById('id01').style.display='none'" class="close" title="Close Modal">&times;</spa
      <img src="img_avatar2.png" alt="Avatar" class="avatar">
    </div>

    <div class="container">
      <label for="uname"><b><h2> Username</h></b></label><br>
      <input type="textw" placeholder="Enter Username" name="uname" required><br>

      <label for="psw"><b>Password</b></label>
      <input type="password" placeholder="Enter Password" name="psw" required>

      <button type="submit">Login</button>
      <label>
        <input type="checkbox" checked="checked" name="remember"> Remember me
      </label>
    </div>

    <div class="container" style="background-color:#f1f1f1">
      <button type="button" onclick="document.getElementById('id01').style.display='none'" class="cancelbtn">Cancel</but
      <span class="psw">Forgot <a href="#">password?</a></span>
    </div>
  </form>
</div>

<script>
// Get the modal
```

### *1.2.7. Sign up*

**Figure 19**

*Sign up*

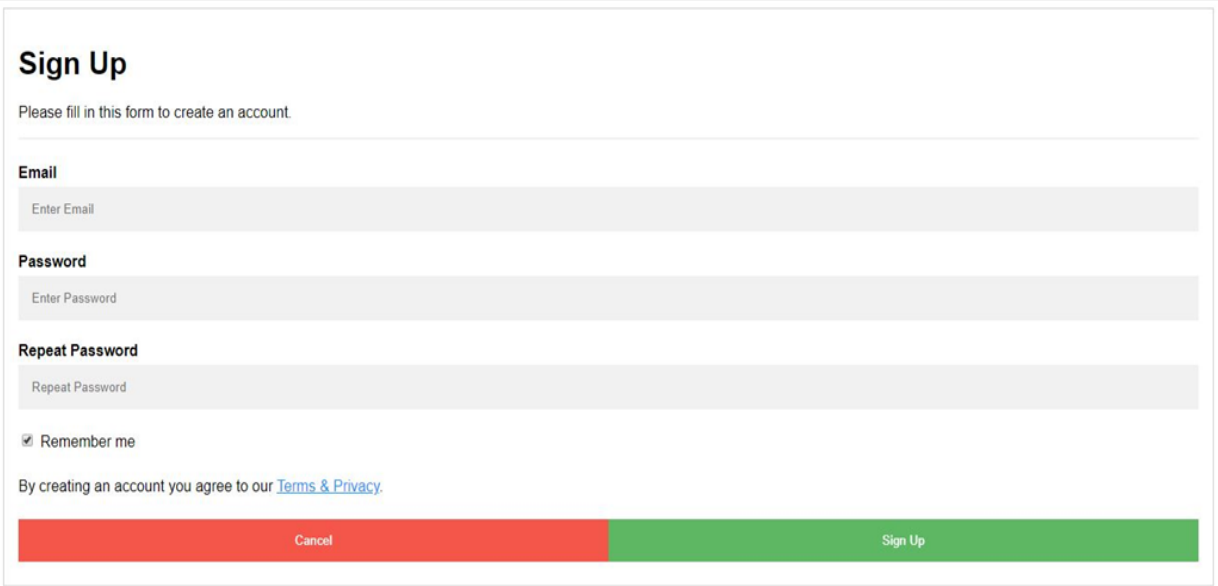
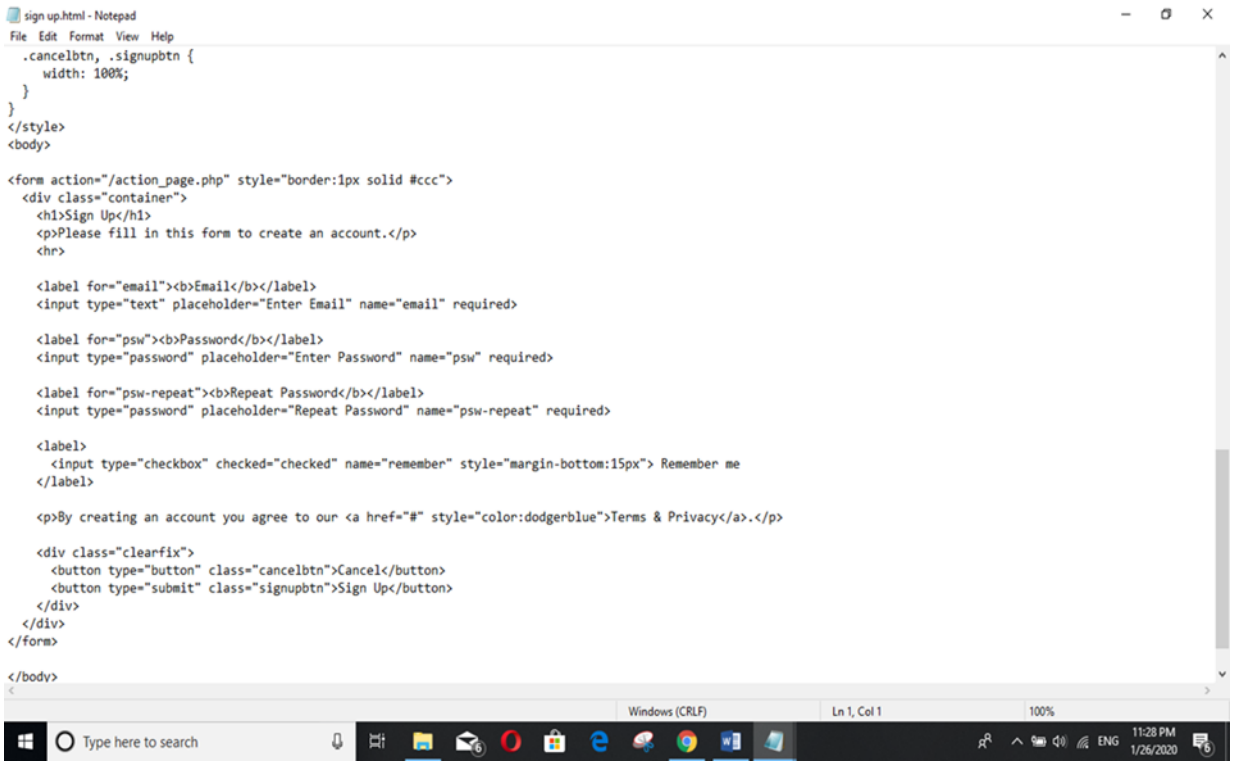


**Figure 20**

*Part of the Sign-up page code*




## 2. Discussion

The advantages of LLI-OL cannot be overestimated. Some of the advantages are discussed below:

It helps the lecturer to explain one part of the data structure course easily and to reach the student to a high degree of understanding. It keeps the students from distorting understanding, where it makes them see all the meaning of what the lecturer wants to explain and not leave it to the imaginations that may be the error.

It provides a new way to solve problems by entering data, seeing how outcomes are determined and how the computer handles these data. if the student already has an example and wants to test his solution, he can do that through my website. It also reduces learning and development costs. A linked list implementation website gives you the power to completely do away with instructor travel costs, online training site rentals, and printed eLearning materials. Your online learners can carry out all of their training online, which means that you can save a sizable sum on your Learning and Development budget. For example, you won't have to worry about printing out 500 manuals and booking a hotel room for your instructor, because all the information your online learners require is right in the LMS (Kasim & Khalid, 2016).

A linked list implementation website can even reduce online training times, thanks to the fact that it gives online learners only the information they need in a direct and organized manner. Instead of having to sit through a lengthy half-hour online training course, online learners can simply click on the online modules they need and absorb the knowledge in a fraction of the time. They can also assess their understanding by taking online exams or quizzes, participating in interactive scenarios and simulations, and watching eLearning videos that highlight complex processes or tasks as seen in Ferri, Grifoni & Guzzo (2020).

If your organization must stay up-to-date with current compliance regulations, then a linked list implementation website can be an invaluable tool (Osuszek & Ledzianowski, 2020). Compliance laws change regularly and updating a traditional course to reflect these changes can be a time-consuming chore. However, using a corporate A linked list implementation website gives you the ability to add new compliance standards to your online training course within a matter of minutes. As such, your corporate learners can always be aware of the latest compliance rules that they need to be aware, of so that your organization can avoid costly penalties. In addition, you have the power to ensure that every employee is on the same page when it comes to expectations and company policies, which boosts customer satisfaction and decreases employee turnover rates.

A linked list implementation website makes it easy to integrate social learning into your eLearning strategy. Since the LLI-OL is already online, you can include links to Facebook and Twitter pages, LinkedIn groups, and online forums that may be beneficial for your learners. You can also market your eLearning course on social media sites to attract new learners, as well as create eLearning exercises that center on peer collaboration

From traditional four-year universities to completely online career colleges, higher education today offers a variety of options for students. This means that no matter what students wish to study, from nursing to neuroscience, they can find online the courses or degree programs they need (Kim, Shin, Smith & Hwang, 2018). They can also earn every academic degree online, all the way from a career certificate to a doctorate.

Online programs can be a more affordable option than traditional colleges (Suresh, Vishnu Priya & Gayathri, 2018). Though not all online degrees have less expensive net tuition prices than traditional colleges (link to OEDB article I wrote about college costs), associated costs are almost always less expensive. For example, there are no commuting costs, and sometimes there are also not any required course materials such as textbooks because those are often available for free online. In addition, many colleges and universities have begun to accept credits earned via free massive open online courses (MOOCs), the most recent advance in online education. Free online courses such as these can help students fulfill general education requirements at little to no cost.

Commercials that feature online students studying in the panamas only skim the surface of one of the primary benefits of online education: there are no physical class sessions. Lectures and other materials are electronically sent to the student, who will then read them and complete assignments. Students will not have to fight traffic, find parking spaces, leave work early to go to class or miss important family time. Convenience and flexibility

Online courses allow students to plan their study time around the rest of their day, instead of the other way around (Suresh, Vishnu Priya & Gayathri, 2018). Students can study and work when they are at their peak energy, whether that's early morning or late at night. Course material is always accessible online, so there's no need to schedule special trips to a library either. All of this makes online learning a good option for students who need to balance their work and family commitments.

While there is contradictory evidence about the rate of online student participation versus participation in traditional courses, one thing is certain: online courses offer shy or more reticent students the opportunity to participate in class discussions or chats with more ease than face-to-face class sessions. Some students even report that online courses are easier to concentrate in because they are not distracted by other students and classroom activities.

Students can take online courses and even complete entire degrees while working, in between jobs, or while taking time to raise a family (Kim, Shin, Smith & Hwang, 2018). This academic work will explain any discontinuity or gaps in a resume as well. Also, earning a degree can show prospective employers that you are ambitious and want to remain informed and prepared for any new challenges. Even if someone wants to complete a degree program, it doesn't mean that they want to leave their current job. For most students today, college costs mean that it's necessary to continue working while in school. The previously mentioned flexibility of online degree programs enables students to keep working while also pursuing academic credentials.

During snowstorms and thunderstorms, colleges may cancel classes; if they don't, you run the risk of getting hurt in dangerous driving conditions. Rather than miss important class sessions, students in online courses can always "attend" by participating on discussion boards or in chat sessions, turning in their work on time, and watching lectures or reading materials. Many students also find that the amount they save on fuel costs can be substantial if they don't have to commute to a physical campus in general, no matter what the weather conditions may be.

Even the most basic online course requires the development of new computer skills, as students learn to navigate different learning management systems (LMS) and programs (John, 2021). The skills students learn to participate in their online courses translate to many professions, including creating and sharing documents, incorporating audio/video materials into their assignments, completing online training sessions, etc.

For college students who want to attend summer classes, but who live too far from their colleges or have to work summer jobs, taking online classes from an accredited college and transferring the credits to their primary college is a good idea. Students will be able to earn college credit while still enjoying their summer vacation or fulfilling the responsibilities of their seasonal jobs. Similarly, if a college or university is unable to offer enough open sections of a required course, students can take the course online at another college and transfer the credits.

## 3. Conclusion

This report provides the knowledge of the LLI-OL and the tools that have been used. The online courses may be unfamiliar to many students and teachers, so this report may help in trying a new website for

online learning. In this article, we have mentioned Teacher and Student features, these features help LLI-OL to stand out from many available O-Learning websites.

This report also contains information about many important web services such as AWS (Amazon Web Services) to be used along with python script easy engine which makes nginix installation easy. Lastly, this report discusses Learn Press plugin and the importance of CMS.

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