**Kafkas Üniversitesi Fen Bilimleri Enstitüsü Dergisi**
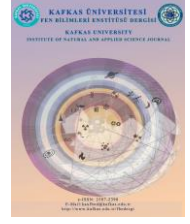**Institute of Natural and Applied Science Journal**

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# Using the Linked List Algorithm to Create a Learning Environment for Online Students

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**Abstract:** College and university students have requirements to pass prior income degrees on Thursdays. Their time is equally split between art and responsibilities to their own family. It is crucial that students have the option of taking online courses and reading on their own schedule. At the same time, many public colleges are unable to accommodate all of the college students who want to wait for their classes on campus. This problem is described as one of the methods for learning the Data Structure path. It demonstrates how to use RAM Memory by putting data in it and showing how to use it.. Things also offers a video that explains it in a more understandable way. The number of students enrolling in educational institutions has increased significantly over the coming years, and the institutions providing superior training have indicated a strong preference to provide outstanding online MBA programs. It is unquestionably a website with a video demonstrating one of the intricate methods for quickly storing information in the computer's hard drive. Additionally, this website has a dedicated education page that sets it apart from other educational websites by making it easier to teach students how to solve any issues they might encounter while taking a physical lesson. The website offers advice on how to delete the listing from memory and utilize the pop returned method, pop the front approach, posh returned approach, and posh front approach.

## Bağlantılı Liste Algoritmasını Kullanarak Çevrimiçi Öğrenme Ortamı Tasarlama

**Özet:** Perşembe günleri, kolej ve üniversite kolej öğrencilerinin geçmiş gelir derecelerini geçme yükümlülükleri vardır. Zamanları benzer şekilde resimler ve kendi akrabalarının yükümlülükleri arasında bölünmüştür. Akademisyenlerin kişisel zaman çizelgelerini okuma ve çevrimiçi eğitime katılma seçeneklerine sahip olmaları hayati önem taşımaktadır. Aynı zamanda, birçok devlet üniversitesi, kampüste eğitimi beklemek isteyen tüm üniversite öğrencilerini barındıramaz. Bu zorluk, Veri Yapısı olarak adlandırılan rotayı incelemek için stratejilerden biri olarak tanımlanır. İçinde saklanan bilgileri kullanarak Ram Belleğin nasıl kullanılacağını öğretir. Ayrıca, öğrenmesi daha basit bir şekilde açıklamak için bir videosu da var, Önümüzdeki birkaç yıl içinde, eğitim kurumlarına kaydolan çok çeşitli akademisyenler katlanarak hızlandı ve daha iyi eğitim sunan kuruluşlar, inanılmaz çevrimiçi MBA programları sunmak için sağlam bir seçim olduğunu ifade ettiler. Bu kesinlikle, bilgisayarın garajında zahmetsizce bilgi depolamanın karmaşık stratejilerinden birini açıklayan bir video taşıyan bir internet sitesidir ve bu web sayfasının eğitim için özel bir web sayfası vardır, bu da onu tüm farklı öğretim web sitelerinden ayırır. Bu web sayfası, beden dersinde eğitim alırken aynı zamanda öğrencilerin karşılaşacağı sorunları gidermenin yolunu öğretmeyi kolaylaştırmaktadır. İnternet sitesi, pop döndürülen yaklaşımın, pop front yaklaşımının, posh döndürülen yaklaşımın, posh front yaklaşımının ve listenin bellekten silinmesinin nasıl kullanılacağını önermektedir.

# 1. INTRODUCTION

Implementation of a Linked List Through the creation of videos that explain one of the methods used in the course, "Online Learning" is a website that teaches one of the most crucial courses of data engineering, "data structure" The design graph on this page demonstrates how the data is stored in this way by different orders, and you can see how the data is cleared in a particular order using various commands (Sundell et al., 2004; Yang et al., 2010).

## 1.1. History

Online learning from modern things has begun to appear in the recent periods and in various forms integrated learning systems (I-L-S), and Instruction (C-M-I) and computer-based instruction (C-B-I), and and computer-assisted learning (CAL), computer-assisted instruction (C-A-I). Drill-and-practice programs, more advanced tutorials, and more personalized training are all described by these phrases. Currently, the word is used to denote a variety of instructional computer programs. Control Data Corporation developed the Plato Learning Management System (PLM) in the 1970s, which was the first networked learning system. The United States used Soft Arc's First-class.

## 1.2. Purpose

A connected List Implementation Website will assist the lecturer perform his work and be able to communicate what he wants to explain to his pupils, and it will help students comprehend the course faster and better than the conventional style of teaching. The website will also have a page with a short description of the project's participants and the university overseeing the site and to make our website more useful, we may add other courses in the same way (Chattha et al., 2018; Verner et al., 2018; Alagumalai et al., 2020; Huang et al., 2021).

# 2. MATERIAL AND METHOD

## 2.1. Advantages of LLI-OL

### 2.1.1. Advantage for the Teacher

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.

### 2.1.2. Keeping the Students from Distorting Understanding

Where it makes him see all the meaning of what the lecturer wants to explain and not leave it to the imaginations that may be error.

### 2.1.3. Helping Students in Practice

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 want to test his solution, he can do that through my web site.

### 2.1.4. Reduces Development Costs and Learning

You may totally eliminate the teacher's commute expenditures, networking tutorial site rents, and physically printed Learning notes, with a linked list implementation website. Because your online learners may complete their entire training online, you can save a significant amount of money on your Development and Learning budget, because all of the material that online students would need is provided in the L-M-S, you don't have to arrange a hotel room for your instructor or print 500 tutorial notes or.

### 2.1.5. Keeping Corporations up to Date with Regulations

If your company has to remain on top of current compliance laws, a linked list implementation website might be a lifesaver. Using a corporation, A linked list implementation website, on the other hand, allows you to quickly add new compliance requirements to your online training course. As a result, your corporate learners will always be informed of the most up-to-date compliance standards, allowing your company to avoid costly fines. Furthermore, you have the authority to guarantee that all employees are on the same page when it comes to corporate standards and policies, which improves morale, boosting customer-satisfaction.

### 2.1.6. Reduces Development and Learning time

Because it delivers online students exactly what they seek, directly and in an ordered manner, a linked list implementation website can even shorten online training periods. Rather than sitting through an hour-long training session, online students may just opt to select the online curriculum they want and learn in a fraction of the time taken rather than the traditional way of searching through notes. By this online method, students may even test their knowledge by completing online examinations or tests, or watching E-Learning films that explain difficult procedures or activities.

### 2.1.7. Integrates Social Learning Experiences

Integrating social learning into your eLearning plan is simple with a linked list implementation website. You can include connections to Facebook and Twitter sites, LinkedIn groups, and online forums that may be useful to your learners because the LLI-OL is already online. You may also use social media to promote your eLearning course and build eLearning activities that focus on peer cooperation to attract new students (Dershem et al., 2002; Kolosovskiy 2009; Salmon et al., 2015; Hong et al., 2016).

## 2.2. Advantages of Online Classes

### 2.2.1. Abundance of Courses and Programs

Higher education today provides students with a number of possibilities, ranging from traditional four-year institutions to totally online professional colleges. This implies that students may locate the courses or degree programs they need online for whatever subject they want to pursue, from nursing

to neuroscience. They may also get any academic degree, from a professional certificate to a PhD, online.

### 2.2.2. A Convenient Learning Environment

Commercials showing online students studying in the pajamas merely scratch the surface of one of the most significant advantages of online education: there are no actual class meetings. Lectures and other materials are provided to students online, who must read them and submit homework. Students will not have to fight traffic, look for parking places, or leave work early to go to class, nor will they miss out on vital family time. Flexibility and convenience. Students who take online classes may schedule their study time around the rest of their day, rather than the other way around. Students may study and work when their energy levels are at their highest, whether it's early in the morning or late at night. There's no need to make special journeys to the library because course materials are constantly available online. All of this makes online learning a viable alternative for students juggling job and family obligations.

### 2.2.3. An Overall Lower Expenditure

Traditional institutions may be more expensive than online programs. While not all online degrees have lower net tuition costs than traditional universities (link to OEDB article on college expenses I published), related expenditures are nearly always lower. There are no transportation fees, and often there are no needed course materials such as textbooks because they are frequently available online for free. Moreover, many schools and institutions are now accepting credits acquired through free massive open online courses (MOOCs), the most current advancement in online education. These kinds of free online courses can help students meet their general education needs at little or no expense.

### 2.2.4. A Greater Ability to Concentrate and More Interactions

While there is conflicting research about the percentage of online student involvement vs conventional course attendance, one thing is certain: online courses make it easier for shy or timid students to join in class discussions or chats than face-to-face classes. Some students even claim that because they are not distracted by other students or classroom activities, online courses are easier to focus in.

### 2.2.5. Continuation of Your Profession

Even if someone wishes to finish a degree program, this does not imply that they wish to quit their existing position. Because of today's high college expenditures, most students must work part-time while attending classes. Students can work while seeking academic qualifications thanks to the previously mentioned flexibility of online degree programs.

### 2.2.6. Career Improvement

While working, in-between jobs, or raising a family, students may opt to register online courses for the ease of access and even successfully avail their degrees while working, or while establishing a family. This source of education will also prove to be useful in elaborating any discontinuities or gaps in a resume. This kind of a degree might also demonstrate that you are an ambitious person and want to stay updated. it also gives the potential employers an insight into your skills and preparedness for new challenges.

### 2.2.7. Transferring Credits

Receiving online-classes by an authorized institution and transferring the course credits to their major college/university is a fantastic solution for the students who desire to save time and take a few extra courses during the summer semester. It is particularly useful for those students who reside far from their colleges or for those students who have to work part time jobs while managing time for their lectures. By implementing this, students will have the option to avail college credit, all the while still taking advantage of their summer vacations or working at seasonal employment.

### 2.2.8. Improving Your Set of Skills

When it comes to attaining knowledge even a simple online course necessitates the acquisition of staying up to date with tech skills because students have to navigate various learning management systems (L-M-S) and tools. Students gain skills that may be used in a variety of conditions, such as adding audio or video assets to a project, preparing and distributing papers and completing online learning sessions.

### 2.2.9. No Need to Commute

Colleges may postpone courses during snowstorms and thunderstorms; if they don't, you risk being injured while travelling in hazardous circumstances. In such a natural outcome these students which opted for online-courses can conveniently "participate" in chat sessions or lectures while being in the comfort and safety of their own home, these students will be providing their assignments on time, and these students have the convenience of accessing pre-recorded lectures or important notes rather than missing essential class periods. Many students also discover that not having to physically go to their college/university generally, regardless of weather conditions, may save them a significant amount of money on fuel (Tiene et al., 2000; Daymont et al., 2011; Dumford et al., 2018; Davis et al., 2019).

## 3. RESULTS AND DISCUSSION

### 3.1. Application Components

### 3.1.1. 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. In the home page there are six buttons. Each button opens a new page.
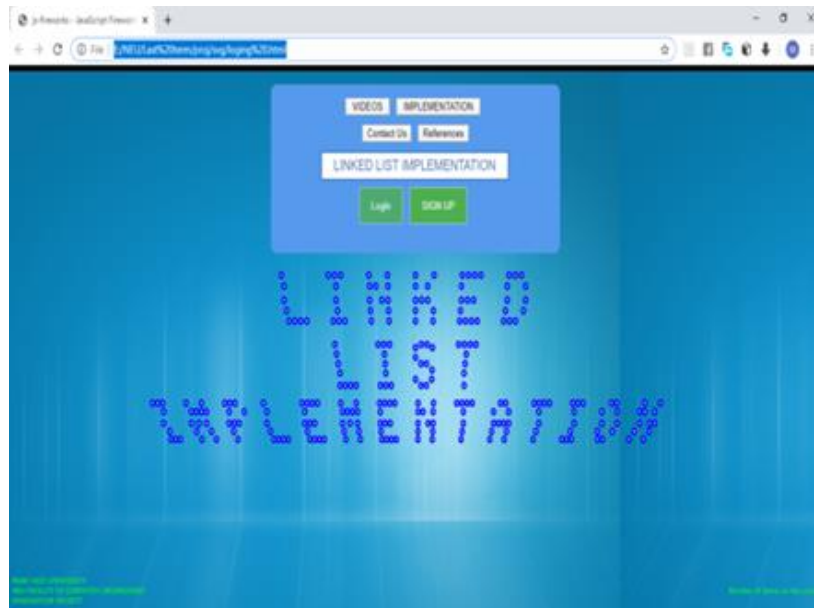
**Figure 1.** Home page of application component.



**Figure 2**. Code of home page.

### 3.1.2. The implementation page

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

**Figure 3.** The implementation page is the main page.

And this is part of the page code



**Figure 4.** Code of the implementation page.

## i Push back

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



**Figure 5.** Push back.

Push 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--;
});
```

**Figure 6.** Push back function code.

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



**Figure 7.** Push front.

push 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--;
});
```

**Figure 8.** Push front function code.

## iii Clear all list
The last function in the implementation page is "clear all stack" It used to delete all the elements of the list.

**Figure 9.** Clear all list.

Clear all list Function code



**Figure. 10.** Clear all list Function code.

### 3.1.3. Videos

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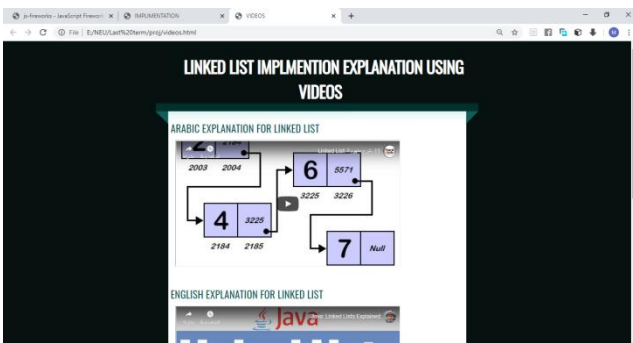


**Figure 11.** Videos for explanation.

### 3.1.4. Some links which used to design

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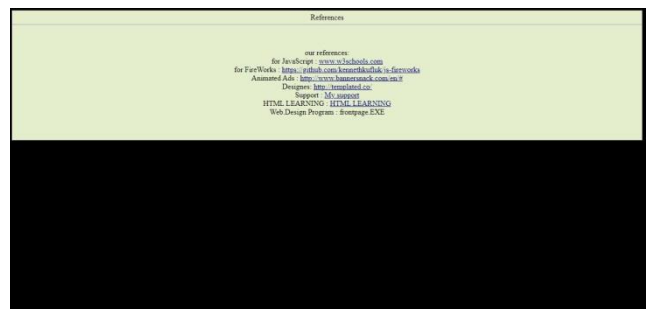


**Figure 12.** Page has some links for the websites.

Part of page code has some links which used to design



**Figure13.** Code of the page which has some links used for design.

### 3.1.5. Contact Us
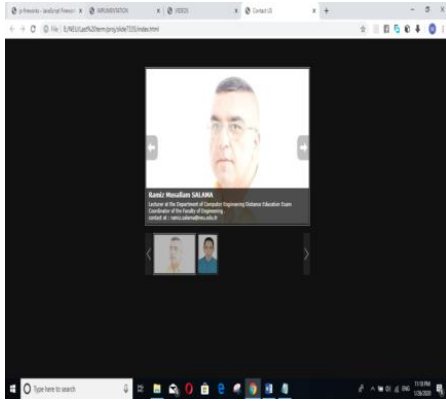


**Figure 14.** Contact us page.

Part of Contact us page code



**Figure 15.** Part of Contact us page code.

### 3.1.6. Login
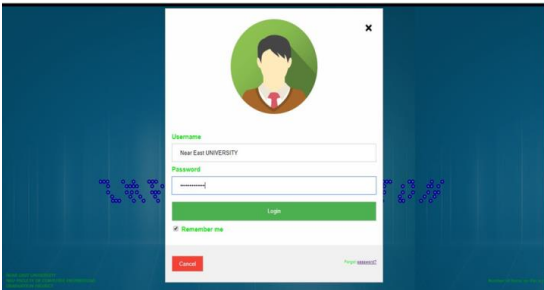


**Figure 16.** Logging Page.

Part of logging page code



**Figure 17.** Logging page code.

### 3.1.7. Sign up
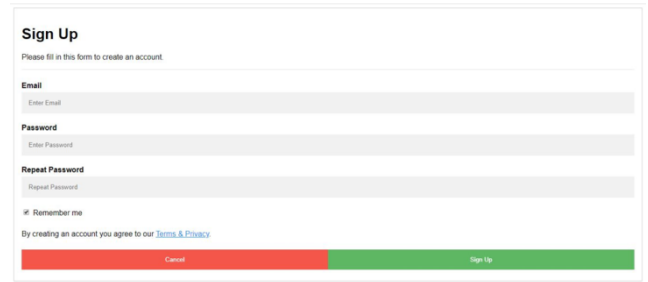


**Figure 18.** Sign up page.

Part of Sign-up page code



**Figure 19.** Sign-up page code.

## 4. CONCLUSION

You are now familiar with LLI-knowledge, OLs, and the tools we used thanks to the report that came before it. This study may be helpful in persuading you to explore a new website for online learning as many students and lecturers may not be familiar with them. In this book, we covered the Teacher and Student characteristics that distinguish LLI-OL from other O-Learning websites. This paper also includes details on several significant online services, such as AWS (Amazon Web Services), which may be used in conjunction with the Python script Easy engine to make the installation of NGINX simple. Finally, this study covers the significance of CMS and the Learn Press plugin.

## 5. REFERENCES

Alagumalai E., Natarajan R. (2020). Internet of things and libraries: An empirical study of selected educational institutions in United Arab Emirates. Library Philosophy and Practice, 1-7. Forbes. Retrieved 13 April 2015. Bersin, Josh.

Chattha S.P., Réhman S.u. and Alandjani G.O. (2018). Role of internet of things (iot) in higher education. Proceedings of ADVED, 792-800.

Davis N.L., Gough M., Taylor L.L. (2019). Online teaching: advantages, obstacles and tools for getting it right. Journal of Teaching in Travel & Tourism, 19(3), 256-263.

Daymont T., Blau G., Campbell D. (2011). Deciding between traditional and online formats: Exploring the role of learning advantages, flexibility, and compensatory adaptation. Journal of Behavioral and Applied Management, 12 (2), 156.

Dershem H.L., McFall R.L. and Uti N. (2002) in Proceedings of the 33rd SIGCSE technical symposium on Computer science education, pp. 53-57

Dumford A.D. and Miller A.L. (2018). Online learning in higher education: exploring advantages and disadvantages for engagement. Journal of Computing in Higher Education, 30 (3), 452-465.

Hong B., Kim G., Ahn J.H., Kwon Y., Kim H. and Kim J. (2016). In Proceedings of the 2016 International Conference on Parallel Architectures and Compilation, pp. 113-124.

Huang J., Li G., Tian J. and Li S. (2021). Accurate interpretation of the online learning model for 6G-enabled Internet of Things. IEEE Internet of Things Journal, 8(20), 15228-15239.

Kolosovskiy M.A. (2009). Data structure for representing a graph: combination of linked list and hash table. arXiv preprint arXiv:0908.3089.

Salmon G., Ross B., Pechenkina E. and Chase A.M. (2015). The space for social media in structured online learning. Research in Learning Technology, 23.

Sundell H. and Tsigas P. (2004). In International Conference On Principles Of Distributed Systems. Springer, pp. 240-255

Tiene D., (2000). Online discussions: A survey of advantages and disadvantages compared to face-to-face discussions. Journal of educational multimedia and hypermedia, 9(4), 369-382.

Verner I., Cuperman D., Fang A., Reitman M., Romm T. and Balikin G. (2018). Robot online learning through digital twin experiments: A weightlifting project  Springer, Place, Published, pp. 307-314.

Yang J.C., Hensley J., Grün H. and Thibieroz N. (2010). In Computer Graphics Forum, Wiley Online Library, pp. 1297-1304.