Project Synopsis

on

**Education Geeks**

Submitted as a part of the course curriculum for

**Bachelor of Technology**

in

**Computer Science**



**Submitted by**

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**2021-2022**

**DECLARATION**

We hereby declare that this submission is our work and that, to the best of our knowledge and belief, it contains no material previously published or written by another person nor material that to a substantial extent has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text.

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**CERTIFICATE**

This is to certify that the Project Report entitled “**Education Geeks**” which is submitted by Aaditya Raj Sharma (1900290120001), Aastha Chaudhary (1900290120004) and Garima Kushwaha (1900290120036)in partial fulfilment of the requirement for the award of degree B. Tech. in Department of Computer Science of Dr. A.P.J. Abdul Kalam Technical University, Lucknow is a record of the candidates own work carried out by them under my supervision. The matter embodied in this report is original and has not been submitted for the award of any other degree.

**Date:** ………….  **Supervisor Signature**

Mr. Vikas Kamra

Assistant Professor

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Last but not the least, we acknowledge our friends for their contribution to the completion of the project.

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**ABSTRACT**

As in this highly volatile era, a distraction for students to choose and start learning in their domain. Freshers are not usually aware of all the competitions which happen worldwide, different online coding platforms, or which website is more suitable to start learning and when. This creates confusion and bafflement among students. All these issues cause a delay in the learning process. This will help each student getting placed in their dream companies with proper strategy and planning that starts from 1st year of B.Tech. Through this website, students would be aware of the roadmap that needs to be followed for preparation in any specified domain, about important ongoing competitions, the best websites for learning, type of projects one should make in any domain, Internship opportunities, and best material present on YouTube as suggested by seniors.

The aim of this project is to develop a website that is a proposed solution to solve all the placement related problems faced by the students of KIET from 1st year till getting placed. This website will help them by providing a simple and clear path for learning new technologies to prepare for both placements and exams.

Through our website any query that a student faces during preparation can be easily resolved with the guidance of the people who are more familiar in the subject (teachers and experts). The biproduct of this will be increased network of the users within the college. The details of online competitions and placement tests will also be updated regularly. And the resume would be made stronger with the help of resume checker. Till now, we target KIET Computer Science students. But in near future we are expecting to extend our reach to every department in KIET college.

This project will make learning easy, fun and progressive.

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**CHAPTER 1**

* 1. **INTRODUCTION**

Our website is for the students of KIET, by the students of KIET to help them get placed in their dream companies. As there is less interaction between seniors, juniors and faculty who specialize in same domain. So, students are less aware about the roadmap that should be followed during their course duration to achieve expertise in a specific domain. The aim of this project is to develop a website that is a proposed solution to solve all the placement related problems faced by the students of KIET from 1st year till getting placed. This website will help them by providing a simple and clear path for learning new technologies to prepare for both placements and exams. Through this website, students will be aware with the roadmap to get knowledge about specified domains, about ongoing competitions on online platform, best websites for learning, type of projects one should make, Internship opportunities one should grab and best material present on YouTube that was followed by seniors etc. This website will make learning easy and fun.

The biproduct of this project would be increased network of the users within the college.

**1.2 PROBLEM STATEMENT**

As there is lack of interaction between seniors, juniors and faculty, students are less aware about the roadmap that should be followed during their course duration to achieve expertise in any specific domain. In this highly volatile era, the technologies are getting outdated and replaced very fast, this creates distraction and hesitation for students to choose domains and start learning. The students who are not able to join any technical club in KIET don’t know about preparation pattern and ongoing competitions. There is a need of guidance for the freshers who are not aware with all the important competitions that happen worldwide, different online coding platforms, which website is more suitable to start their learning and when. If all these problems would be solved, then it would create learning process easy and impactful.

**1.3 OBJECTIVES**

Our objective is to help each student getting placed in their dream companies with proper strategy and planning that starts from 1st year of B.Tech.

Our website will help students with the following things:

1. Roadmap students must follow to prepare for placements.
2. Ongoing competitions on online coding platforms.
3. Best websites for learning.
4. Updates by faculty and seniors.
5. Kind of projects one should make for a good resume.
6. Internship opportunities.
7. Use of different online coding platforms.
8. Best study material present on YouTube for different subjects.
9. Exam patterns.
10. Quantitative aptitude and logical reasoning.
11. Job opportunities and job descriptions.

**1.4 Scope**

Our website is for the Kietians, by the Kietians to help them get places in their dream company. Because of this website, Students are updated with all type of competition, study material, projects, internship and extracurricular activities.

Till Now, our Targeted audience is KIET Computer Science students. We are expecting to extend our reach to each and every department in KIET college.

**CHAPTER 2**

**LITERATURE REVIEW**

**Recommendation Systems for Education: Systematic Review**

María Cora Urdaneta-Ponte

Recommendation systems have emerged as a response to overload in terms of increased amounts of information online, which has become a problem for users regarding the time spent on their search and the amount of information retrieved by it. In the field of recommendation systems in education, the relevance of recommended educational resources will improve the student’s learning process, and hence the importance of being able to suitably and reliably ensure relevant, useful information.

The purpose of this systematic review is to analyze the work undertaken on recommendation systems that support educational practices with a view to acquiring information related to the type of education and areas dealt with, the developmental approach used, and the elements recommended, as well as being able to detect any gaps in this area for future research work.

Recommendation systems (RSs) have emerged in order to deal with this problem, with the purpose of helping users find what is genuinely relevant to their needs. Hybrid recommendation systems that combine two or more techniques from among the approaches described previously to improve recommendation performance have emerged as a means to overcome any problems.

A systematic review was carried out that included 98 articles from a total of 2937 found in main databases (IEEE, ACM, Scopus and WoS), about which it was able to be established that most are geared towards recommending educational resources for users of formal education, in which the main approaches used in recommendation systems are the collaborative approach, the content-based approach, and the hybrid approach, with a tendency to use machine learning in the last two years. Finally, possible future areas of research and development in this field are presented.

**Technology Road mapping – developing a practical approach for linking resources to strategic goals**

Clare Farrukh

As technological development increases in pace and complexity, it is ever more important for companies to understand the link between the technological resources at their disposal and the business goals they aim to achieve. The cost of bringing inappropriate technologies to market may destabilize an otherwise successful firm, and it is imperative to make the right choices at all stages of the product lifecycle. Technology road mapping offers a means to explore this linkage, and together with supporting analysis, a powerful means to identify the key required technologies. However there has been no generally applicable approach to the technique available in the public domain, and individual company experience is fragmented and inaccessible. This paper describes a particular approach to technology road mapping, which has been developed as part of a wider research project. The technique is intended to enable any organization to assess the value of road mapping in its own particular context. The lessons from the research cases are discussed, together with implications for wider application.

**Computer-Assisted Education**

The purpose of this review paper is to explore and learn boundlessly about computer-assisted education, and its impact on students and their academic success. Computer-assisted learning provides academics with various teaching information and multimedia platforms for easy learning of students. It interprets the innovation of computer-assisted education and its success in today’s era. Computer-aided education signifies the integrated approach of the computer and its devices. Nevertheless, it does not mean online learning will eventually replace traditional education and teachers, rather teachers using computer-based platforms, and their applications to teaching, like smart classes, videos, and web tutoring with improved resources and reduced teacher workloads. By which, students can arrive, grasp, and engage themselves at their own pace in a co-relational environment. Moreover, in the situation of a pandemic like this, we all are choosing computer-assisted education. Therefore, without computer-facilitated education today, it would have been merely impossible for us to study, and attain education. The world has widely opened and accepted the new technology of computer-assisted education. This paper is done to distinguish the success of computer-assisted education.

**Full Stack Web Development Teaching: Current Status and A New Proposal**

The main purpose of this effort is to present a brand-new environment for practicing some of the most broadly used – both client- and server-side – web technologies. It is about a web-based, access-free, educational platform, which provides a user-friendly interface, illustrative graphics and supporting material, as well. Full-stack development platforms are rarely met online, as most of them are usually oriented towards either front or back-end development and focus on specific programming languages without offering an overview of actual, integrated projects. As mentioned above, the environments compared in the analysis compose a representative sample of the most popular online educational platforms. The research has been conducted under limitations, which include online presence, free access, and availability of the examined web technologies (HTML, CSS, JS, PHP, MySQL). The paper places particular emphasis on the recognition of the applications’ key features and the variety of programming tools that promote learning and skill enhancement. Moreover, it discusses the roles of tutors and learners, while suggesting a learning path for novice developers. Given the fact that computer science courses often require exceptional practices, this study aims at encouraging active, self-motivated and self-paced learning.

**Comparative Analysis of Mean Stack and Mern Stack**

Current web applications are designed using a ‘stack’ of various technologies. A stack is a collection of frameworks and tools used to develop a software product. MEAN stack and MERN stack are two of the most popular and extremely powerful stacks used in web development. JavaScript provides an option to use both MEAN and MERN stack to develop web application by eliminating the need for switching the code. Both MEAN and MERN have a stellar combination of tools to help you build well-functioning software products. This ensures faster development of web applications and helps developers quickly get products to market as we only use a single language for frontend, backend rather than old ways of using different languages for frontend and backend and eventually leads to a huge cut in development costs and improves efficiency. Selection becomes intimidating for newcomers to pick the right stack for their applications. This paper aims at providing the various advantages and disadvantages of MEAN and MERN stacks, which enables the newcomers to pick appropriate right stack as applicable for developing a web application.

**Modern Web Applications Using Reactjs**

Introduction: - ReactJS is JavaScript library which is deployed to develop reusable user interface (UI) components. React implements unidirectional data flow thus simplifying the boilerplate and hence proves to be much easier than traditional data binding.

Features: -

A) Lightweight DOM (Document Object Model) For Better Performance

B) Easy Learning Curve.

C) Use of JSX.

D) Highly efficient performance.

E) Virtual DOM (document object model).

F) One way Dataflow.

Limitations: -

1) Only the View entity in the MVC is handled by the react.

2) Use of inline templates and JSX sometimes proves to be a complex and tiring task.

3) Also, in case of ReactJS, failures happen at compile time instead of runtime.

Conclusion: -

Despite of a few minor disadvantages that that ReactJS has, it is a sure shot game changer. The client scripts now make sure that only necessary and essential data is pushed, and a seamless and pleasing experience is maintained across the entire web. ReactJS has intense power and features to meet requirements of today’s trends.

**Mern Stack Web Application**

Introduction: -

This is a responsive web application that can be accessed in both desktops as well as mobile phone browsers. This application is developed using the MERN Stack i.e., Mongoose, ExpressJs, ReactJs and NodeJS. It is basically a single page web application which means there is only one html page that is rendered.

Scope: -

MERN Stack Web Application software is designed to make the process of task creation and management easy. The key benefit of the proposed application is that the end user can build a list of tasks and assign them to their colleagues. Objective: - The objective of this application is to improve the working and definite achievement of goals within a certified time. System Design Introduction: - System design is known as the process of defining all the requirements of a system such as the architecture, design, interface, and modules.

Advantages: -

a) Data Security.

b) More organized way of maintaining the schedules of multiple users.

c) Enhanced communication.

Justification Of the Programming Language: -

The first benefit for builders in the use of the MERN stack is that each line of code is written in JavaScript, a famous one that is often a programming language which used everywhere, each for server-facet code and client-facet code.

Conclusion: -

The development of “MERN Stack Web Application” for Task creation and Management using React JS and MongoDB accords a lot of benefits to the end users. React JS provides one-way Data Binding, which improves code maintainability and serve the purpose of streamlining the UI development.

**MERN Stack Web Development**

Web application development is not the same as before, even if it is a few years back. Today, there are so many options, and strangers are often confused about what is best for them. There are many options not only for a wide stack (various tiers or technology used), but also tools that help improve. This paper states that the MERN stack is excellent for building a complete web system. This paper looks at four components of the MERN stack (Mongo Db, Expresses, ReactJs & NodeJs) and how well they work together, their beauty as a complete stack in web design. This paper focuses exclusively on the functions of these four MERN stack technologies and how they are applied to current popularity.

We use React JS for MERN frontend. Because part of the front-end app is straightforward and does not have a functionality that is different enough for a single frame to be allowed to run, the selection is greatly reduced to personal preference. React.js has some advantages compared to other previous frameworks, such as a faster learning curve, support, and future development programs from the organization (Facebook), and strong documentation that has made it an easy-to read and useful service framework. For backend we use Node JS and Express JS. We use Mongo DB database. MongoDB stores data in flexible scripts, such as JSON. Ideal for web applications with many pre-built connections. You may feel the same way with other stacks, but you will find that it is much easier to do so with MERN.

**Decreasing the Barrier to Entry for an Open-Source Full-Stack Web Development**

The purpose of this paper is to propose how to decrease the barrier to entry for open-source projects and full-stack web development. For this purpose, we conduct documentation and architectural modeling to lessen the steep learning curve for open source and full-stack web development. The research will bring in ten hands-on practices (HOPs) to teach students to build a full-stack web application.

The research will conduct the following:

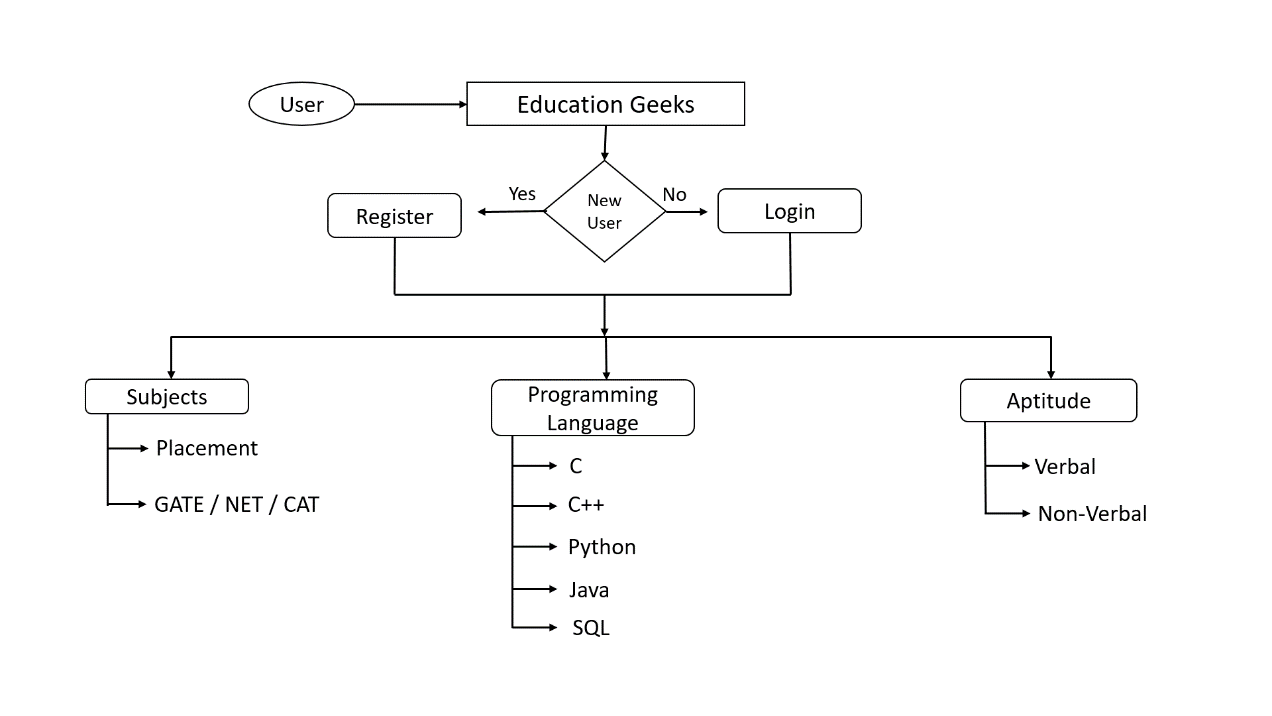
1) Create documentation and architectural model for the hands-on practice.

2) Evaluate the documentation and architectural model with a survey. Then, we evaluate the impact of the documentation and architectural diagram in decreasing the learning curve of full-stack development through a survey. The survey results show that implementing architectural modeling in the documentation of an open-source full-stack development reduces the learning curve for the developers because it gives a visualization that the developer can easily follow and digest the high-level concept.

**CHAPTER 3**

**METHODOLOGY**

* 1. **FLOWCHART**



**Diagram, schematic

Description automatically generated**

**Graphical user interface

Description automatically generated**

**Diagram

Description automatically generated**

* 1. **Algorithm:**

1. Registration through college mail ID is the first step followed by all the students.
2. Students choose whether they want to prepare for placement or GATE/GRE Exam. They also got the choice of reaching the section of Programming Language and Aptitude.
3. If they go for Placement preparation, they can access about subject’s syllabus, question according to their difficulty level (Beginner, Medium, Hard). Students also get the chance to add some unique Questions after proper evaluation by subject expertise.
4. If they go for Programming Language, they got a proper planning chart which must be followed. Here, problems are again divided according to difficulty level and after a successful submission they got some points. 1point for Beginner questions, 2 points for medium questions and 3 points for Hard questions. These points help them to buy KIET goodies.
5. They also got a choice to create new problem statement which help them to achieve 5 points.
6. And for Aptitude, verbal and non-verbal reasoning questions are available. These contains questions that are mostly asked by On Campus Placement Companies.
7. Apart from all these, there is a section of interaction with students who achieved the highest points in a particular subject for asking doubt or building networks with other students.

**CHAPTER 4**

**TECHNOLOGIES USED**

* Html
* CSS
* JavaScript
* ReactJs
* NodeJS

**CHAPTER 5**

**CONCLUSION**

The aim of this project is to develop a website that is a proposed solution to solve the problem faced by the students of KIET from 1st year till getting placed. This website will help by providing the students with a simple and clear path of learning new technologies to prepare for both placements and exams.

Through our website, any query that a student faces during preparation can be easily resolved with the guidance of the people who are more familiar with the subject (teachers and experts). The biproduct of this will be an increased network of users within the college. The details of online competitions and placement tests will also be updated regularly. And the resume would be made stronger with the help of a resume checker. This project will make learning easy, fun and progressive.

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