SYNOPSIS

ON

Varithms (An e-Learning platform focused on Algorithms)

Submitted By:

Name/Branch/Section/Roll No)

Mr. Vivek Sharma (CS/Sec-D/181500820)

Mr. Akarsh Singh Gangwar(CS/ Sec- I/181500055)

Ms. Akansha Saxena (CS/ Sec- C/181500054)

Mr. Ansh Baranwal (CS/ Sec-H/181500105)

Ms. Ankita Sinha (CS/Sec-K/181500101)

Submitted To :

Mr. Amir Khan

(Technical Trainer, CS)

GLA University,

Mathura.

INTRODUCTION

E-Learning is the process of using technology to enhance learning and tutoring or it is a more effective way of delivering a visual and immersive learning experience on a computer or mobile device.

In this new era of globalization, where digitalization is playing a pivotal role in upgrading the life of people all around the globe, whether its industrial sector, educational sector, banking sector, etc. E-learning platforms are making learning easier. E-learning is more of, out-of-classroom and in-room educational experiences imparted to the users via technology, it is more of flexible learning as it is available anytime, anywhere. Hence, we can say the E-learning platform is breaking barriers as one can learn anywhere, these platforms also lack time constraints because one can access the content available on these sites 24*7.

These e-learning platforms are rising exponentially, these platforms are even helping professionals who cannot afford the time for in-classroom teaching due to busy schedules, those professionals to get themselves equipped with the knowledge they want to seek. For developing countries like India who are progressing towards E-Governance and education, these e-learning platforms are working as a boon.

In this new era of Electronics, we know the concept of e-learning, which is helping us minimize the use of pen and paper. There are many benefits of e-learning platforms like easy sharing of data and information. Our E-Learning platform will impart knowledge related to Algorithms, how they are implemented, and what are the advantages attached to these algorithms. We have designed this platform in two parts i.e. website and App.

Through Varithms, we will make learning effective and more efficient, through Url users will be able to log in and can access comprehensive knowledge about different types of Algorithms. Our E-learning platform is comprised of 2 major modules with their sub-modules as follows:

1) User

- **Login**: User can log in by using his/her id and password
- **Main Menu:** User will have access to the main menu
- **View:** user can view various content
- **Knowledge:** user read the knowledge article and content uploaded
- **Help:** user if encounters any difficulty can seek help by going on Contact us option.

2) Admin

- **Login**: Admin can log in using credentials
- **Manage**: Admin can manage the traffic on the platform
- Content: Admin can manage the uploading of documents on the platform.

The objective of the project:

We have designed this platform to make Algorithms learning more interesting, effective, and efficient.
As far as we believe, smart learning is the demand of the hour.

We are dedicated to providing you the best of knowledge keeping all your placement requirements in mind.

Our main concern here is not only to provide you with all the algorithms to study but also to make things a lot simpler for the students. Minimizing your struggle while understanding them.

We're here to provide you with simpler techniques to understand a particular algorithm and to implement it.

For that, we will be your companion throughout your journey towards your ultimate goal which is to achieve placement in your dream company.

Before making this platform work well for you guys we as a team have done lots of research and found out that there are very few platforms doing this for you. Keeping all these things in mind we will provide you with the best content and guidance.

Due to this pandemic, a lot of platforms have come up so you need to make a wise choice for yourself, seeing all the facilities a platform provides you with.

Software Development Model:

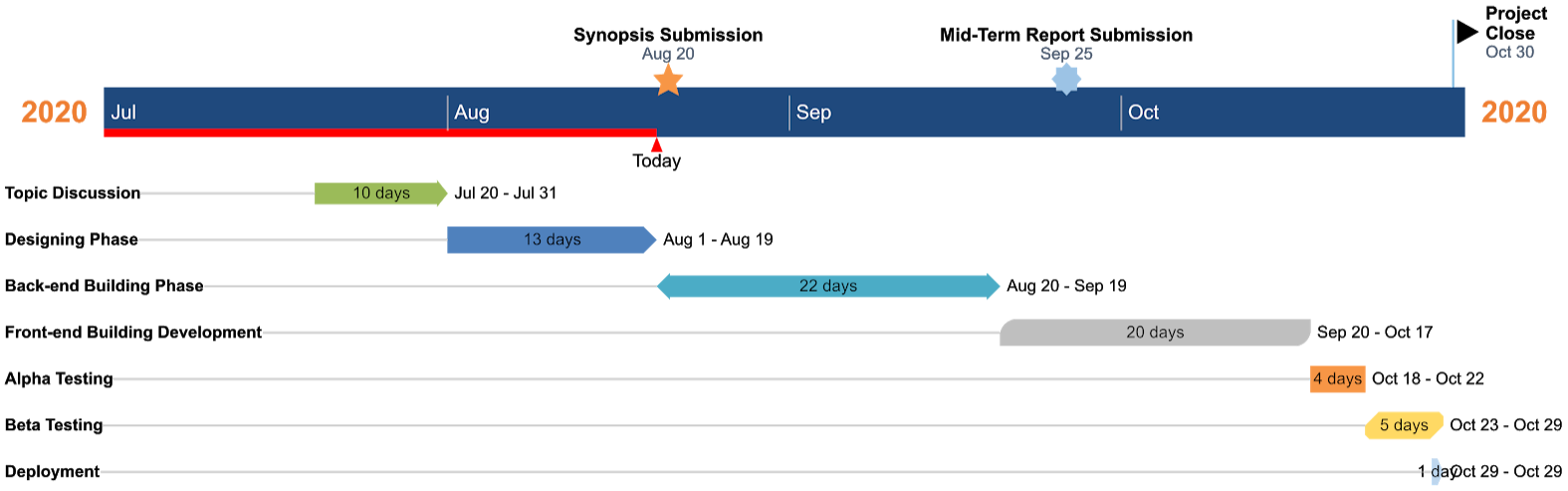
For this project, we will be using the Agile Software Development Model. A brief introduction is given below :

Agile Software Development Model:

In software development, agile (sometimes written Agile) approaches development requirements and solutions through the collaborative effort of self-organizing and cross-functional teams and their customer(s)/end user(s). It advocates adaptive planning, evolutionary development, early delivery, and continual improvement, and it encourages flexible responses to change. It was popularized by the Manifesto for Agile Software Development. The values and principles espoused in this manifesto were derived from and underpin a broad range of software development frameworks, including Scrum and Kanban. While there is much anecdotal evidence that adopting agile practices and values improves the agility of software professionals, teams, and organizations, some empirical studies have disputed that evidence.

Project Planning:

Project Development will be referenced from the timeline below :



FUTURE SCOPE

As far as the future is concerned we will be updating the content in the platform according to the feedback of our users.

For now, will be having study materials in notes format which will be precise enough to help you out.

We will also provide mentors to you to solve your daily doubts.

And we will continue to improve on it as we receive the feedback. In the coming future, we are also planning to provide you with multimedia learning content that is comprehensive and practical using video, images, and text which will serve as great tools in learning new skills or information.

We are also planning to increase the number of courses which we are currently having on our platform, which will again help you but will be based on the feedback and requests of our clients only.

We will provide you a complete learning track that you choose at the time of your registration.

If we get positive feedback then we will plan for a discussion forum as well.

EXISTING SYSTEM

The E-learning platforms are more empowering, effective, efficient, and economical. Initially, when these platforms started developing they were based on Computer-based learning (CBL), the role of the e-learning system for which they were developed was to impart knowledge in a more efficient method. Later on, these platforms developed which were based on Computer-supported collaborative learning (CSCL) which refers to the activity of peers interacting with each other for learning and with the support of information and communication technologies (ICT).

Nowadays, it is an increasing trend to create virtual learning environments(VLE) as they are more efficient, effective, and economical.

Drawbacks of Existing System

- They are less efficient, as they are using the orthodox method of teaching.
- Most of the e-learning platforms are paid, not everybody can afford it.
- They are not able to provide information in an effective manner

Need for new System

- To make e-learning process faster
- Reduce the time for E-learning
- To move towards digitalization and reduce paper use
- To make learning more interesting.

USE OF THE PROJECT

- This platform is specifically designed to keep all requirements of a computer science student in mind, It provides a self-paced learning experience to all students out there. So yes you can learn at whichever time that suits you.
- It opens up the door for almost everyone to see the subject matter in depth. You can learn a particular subject in much more depth than before.
- This platform will provide knowledge to a computer science student in a way that will increase efficiency by providing updated content and materials whichever is just sufficient for him to know.

- A student who is ambitious towards his goal can make the most out of it by saving time which he used to spend by traveling to his coaching center just to get guidance from the faculty which now he will be getting at the comfort of his home itself. So that will be a plus point for all those who wanted to save their time.
- For all those students who just wanted to learn from somebody who could also clear up their doubts, for them, the platform will work magically. All the registered students will be getting access to our video lectures which will work to solve your doubts, till now you know you were bundling up in your mind and procrastinating as you were unable to reach your faculty. Over a single teacher in a traditional teaching system, many students are always there to ask their doubts and you hardly get any chance in that. So this will be a boon for you people as you will get mentors to support 24 X 7.

FUNCTIONAL SPECIFICATION

The project will consist of various modules, each module having lots of functionalities :

- **Login Module:**

  Will allow users to log in to access their profile.

  Will allow users to sign up for a new account

  Easy Access through various providers including Facebook and Google.

  Users can also use their phone numbers to receive an OTP and log in.

- **Learning Module:**

  Users can understand various algorithms by reading out the simplified core concept.

  Interactive examples for better understanding.

  Text-to-Speech Services for the reading content included.

  Testing services to check the progress and understanding

- **Searching Module:**

  Efficiently search across hundreds of algorithms(Implementation Of TRIE algorithm)

  Categorical Searching.

- **Recommendation Module:**

  Recommending what to learn next based on previous categories

  Recommending next to learn based on popularity

Recommending next to learn based on usability

Software Specification:

- Technology Implemented : Android Studio 3.5, Java Development Kit 11, Flutter SDK 1.17 (Stable), Dart SDK, Google FireAuth, FireStore, Firebase Hosting and Testing
- Language Used : Dart, Kotlin, Swift, XML, HTML5, JavaScript, CSS, BootStrap, jQuery
- Database : Google Firebase
- User Interface Design : Adobe xD and Figma
- Web Browser : Google Chrome 86

Hardware Requirements:

- Processor : Intel Core i5 or AMD FX-4300
- Operating System : Microsoft® Windows® 7/8/10 (64-bit) / GNOME or KDE desktop. Tested on gLinux based on Debian.
- RAM : 4 GB of RAM
- Hardware Devices : Huawei Honor 20i (Android) and Apple iPhone 7 [For on-Device Testing]
- Hard disk : 4 GB of available disk space minimum (500 MB for IDE + 1.5 GB for Android SDK and emulator system image)
- Display : 1280 x 800 minimum screen resolution.