

**A PROJECT BASED LEARNING REPORT ON**

# **CRACK WITH US!**

**SUBMITTED TO THE SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE  
IN THE PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE AWARD OF THE DEGREE**

**OF**

## **SECOND YEAR COMPUTER ENGINEERING**

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**2021-2022**



## CERTIFICATE

This is to certify that the project report entitles  
**“CRACK WITH US!”**

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is a bonafide student of this institute and the work has been carried out by him/her under the supervision of **Prof. Mohini D. Kumbhar** and it is approved for the partial fulfillment of the requirement of Savitribai Phule Pune University, for the award of the degree of **Second Year of Engineering** (Computer Engineering).

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Date :

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At last we must express our sincere heartfelt gratitude to all the faculty members of the Computer Engineering Department who helped me directly or indirectly during this project work.

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## LIST OF ABBREVIATIONS

ABBREVIATIONS	ILLUSTRATIONS
MERN	MongoDB, ExpressJS, ReactJS, NodeJS
IDE	Integrated Development Environment
CSS	Cascading Style Sheets
SCSS	Superset of Cascading Style Sheets
DB	Database

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# **1. INTRODUCTION:**

## **1.1 OVERVIEW**

In this project we will be creating a website that would help users, mainly students to keep track of their progress in a particular subject (Data Structures & Algorithms). There will be questions on each topic of the subject.

Our website would send questions related to the topic through e-mails to the users on daily basis so that there would no problem of logging in to the website again and again.

The users will be able to make notes on the topic they are studying through the website.

## **1.2 MOTIVATION**

The basic motivation for this website is to reduce the time of finding appropriate study material and questions related to Data Structures and Algorithms. It is difficult to keep track of our progress related to the subject which we are studying daily. So, to overcome this problem we came up with an idea of CRACK WITH US! Website which will help to keep track of our daily progress.

## **1.3 PROBLEM DEFINITION AND OBJECTIVES**

To develop an Educational Website for Learning Data Structure and Algorithms Using MERN Stack.

## **1.4 METHODOLOGIES OF PROBLEM SOLVING**

### **1.4.1 Define the Problem:**

Defining the Problem is the first stage of the methodology of problem solving. It involves finding various problems related to your domain that can be resolved.

**1.4.2 Design:**

The Design phase involves the way in which the problem can be solved. This is where your ideas are transformed into physical designs. In this phase the solution for the problem is designed.

**1.4.3 Implement the solution:**

In implementation phase brings the solution into action. Implementation brings the planning process into execution.

**1.4.4 Review the result:**

After the implementation of the solution, it is necessary to review and test the working of the project.

## **2. LITERATURE SURVEY:**

### **2.1 Adaptive and Intelligent Systems for Collaborative Learning Support: A Review of the Field Ioannis Magnisalis, Stavros Demetriadis, and Anastasios Karakostas**

The reason of this paper is to review the impact on online learning which has gained tremendous growth during this pandemic. The paper defines how a student can learn using adaptive and intelligent systems for collaborative learning.

### **2.2 A Review of Literature on E-Learning Systems in Higher Education Tagreed Kattoua, Prof. Musa Al-Lozi, Dr. Ala'aldin Alrowwad**

This paper reviewed the problems related to e-learning systems and their solutions. Mainly, this paper describes the origins, characteristics, limitations, weaknesses and strengths of e-learning systems.

### **2.3 Web-based Education and Accessibility Emre Dinc**

In this paper, the importance of web-based education which is necessary for every student in the 21st century and the critical issues of the web that needs to be considered while designing a product is accessibility that is reviewed. E-learning has a huge effect on the education.

## **3.SOFTWARE REQUIREMENTS SPECIFICATION**

### **3.1 SYSTEM REQUIREMENTS**

### **3.1.1 Database Requirements**

- MongoDB
- Local Base

### **3.1.2 Software Requirements**

- VS code
- NodeJS- ExpressJS
- Web Technologies (HTML5, CSS3, SCSS, Bootstrap, JavaScript)
- ReactJS

### **3.1.3 Hardware Requirements**

- 4GB Ram
- I3 Processor and above
- Android 6.0 and above

## **3.2 ANALYSIS MODELS : SDLC Model to be applied**

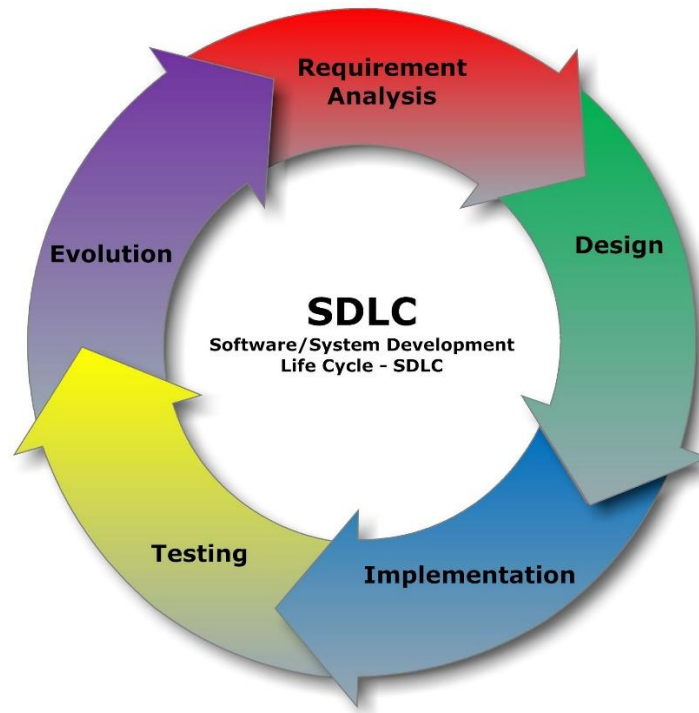


Fig 3.2 SDLC MODEL

SDLC Model is the combination of various tasks such as

- Evolution
- Requirement Analysis
- Design
- Implementation
- Testing

The methods within the SDLC model varies across organizations but standards such as ISO/IEC 12207 shows processes that defines the lifecycle for software and maintaining the software.

## 4. SYSTEM DESIGN

### 4.1 SYSTEM ARCHITECTURE

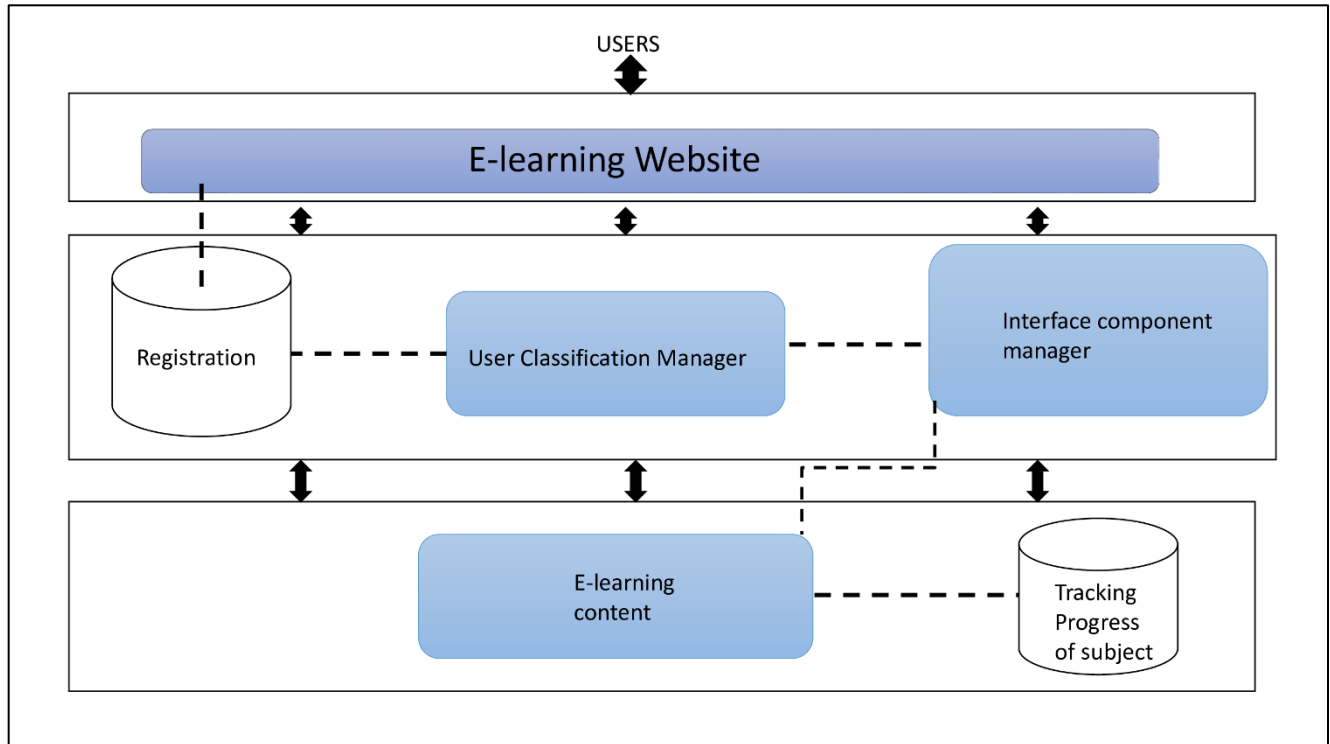


Fig 4.1 System Architecture Diagram

## 4.2 DATA FLOW DIAGRAM

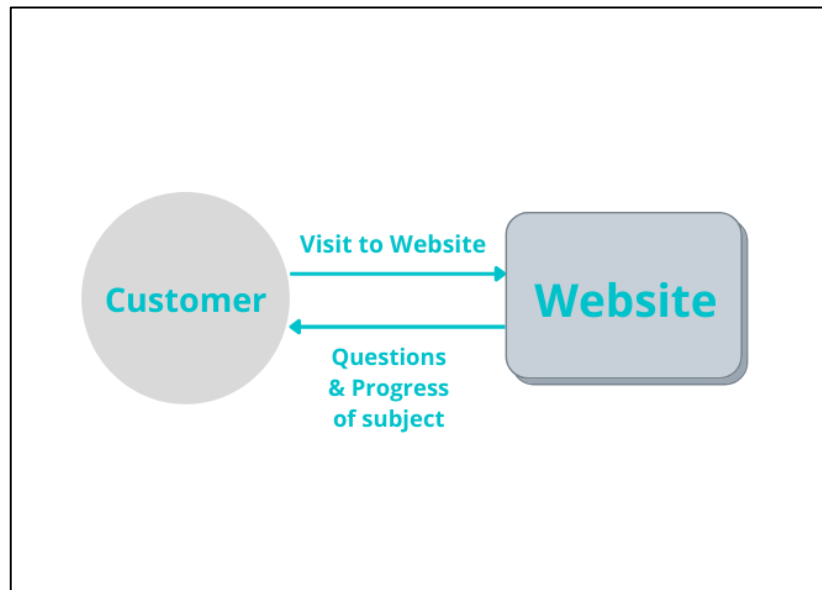


Fig 4.2 Data Flow Diagram

## 4.3 UML DIAGRAM

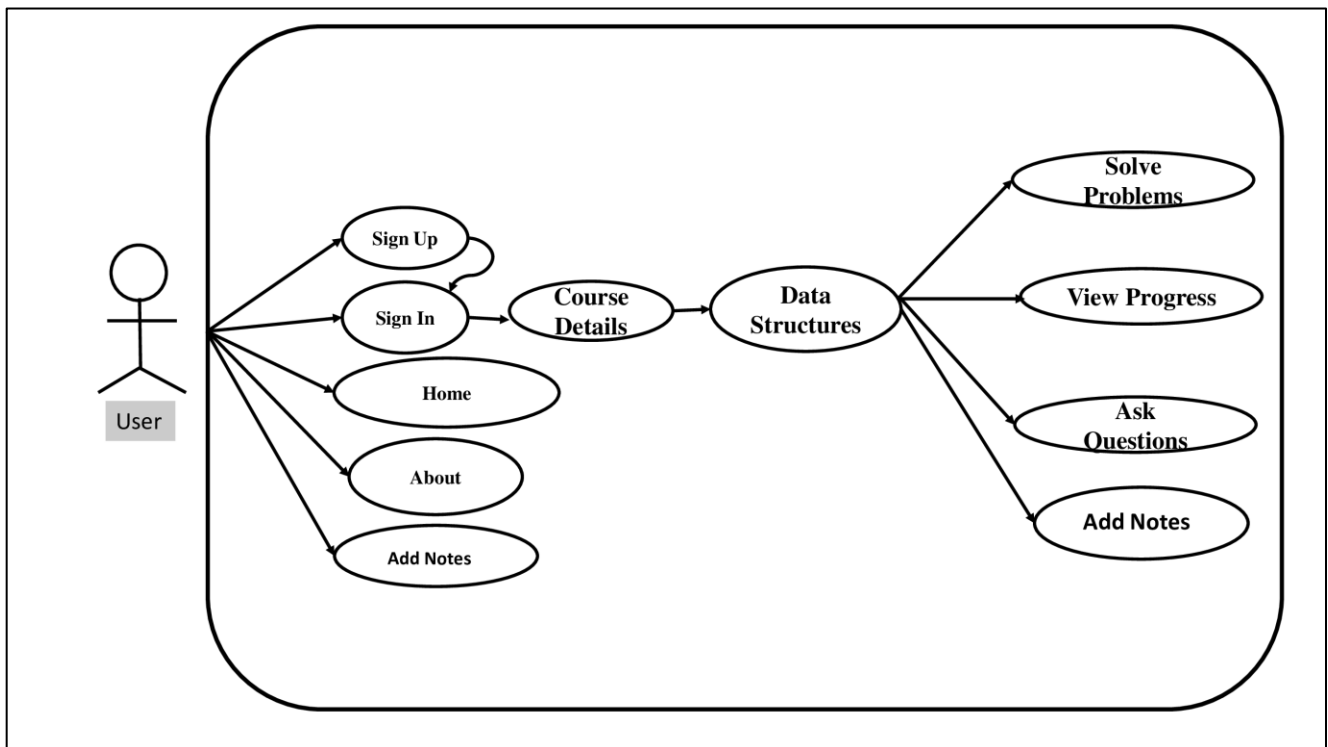


Fig 4.3 UML Diagram

## 5. PROJECT PLAN

### 5.1 PROJECT SCHEDULE

#### 5.1.1 Project Task Set

Major tasks in the making of this website are:

Task 1:

Registration

Task 2:

User Interface

Task 3:

Login

Task 4:

Contact us section

Task 5:

Notes tab

#### 5.1.2 Timeline Chart

Sr. No.	Week	Activity
1	2 <sup>nd</sup> Week of January, 2022	Introduction to topic with Domain
2	3 <sup>rd</sup> Week of January, 2022	
3	4 <sup>th</sup> Week of January, 2022	Introduction, Problem Statement



4	1 <sup>st</sup> Week of February, 2022	Finalization of Project Domain and Title
5	2 <sup>nd</sup> Week of February, 2022	Problem Statement, Literature Review
6	3 <sup>rd</sup> Week of February, 2022	
7	4 <sup>th</sup> Week of February, 2022	Requirements Gathering
8	1 <sup>st</sup> Week of March, 2022	First Presentation about progress of project work
9	2 <sup>nd</sup> Week of March, 2022	Design
10	3 <sup>rd</sup> Week of March, 2022	
11	4 <sup>th</sup> Week of March, 2022	Coding
12	1 <sup>st</sup> Week of April, 2022	
13	2 <sup>nd</sup> Week of April, 2022	Final Presentations Of Project Work
14	3 <sup>rd</sup> Week of April, 2022	Submission of Project Report

# Crack With Us!

## TASKS



Fig 5.1 Timeline Chart

## 5.2 TEAM ORGANIZATION

### 5.2.1 Team Structure

Group Members	Contribution
<b>Mahesh Gaikwad</b>	Frontend
<b>Prathamesh Bhise</b>	Frontend
<b>Pranav Gaikwad</b>	Backend
<b>Yash Dusane</b>	Backend
<b>Aaditya Thorat</b>	Testing

### **5.2.2 Management reporting and communication**

- Assigning different tasks to each individual.
- Sharing new ideas with the members.
- Weekly discussion on project milestones.
- Tracking project progress.

## **6. PROJECT IMPLEMENTATION**

### **6.1 OVERVIEW OF PROJECT MODULES**

#### **1) User Management**

- a)Used to manage sign up/sign in functions.
- b)Stores the personal information of the user.

### **6.2 TOOLS AND TECHNOLOGIES USED**

#### **1) Frontend**

- ReactJS
- HTML
- CSS, SCSS
- BootStrap
- FontAwesome
- Google Fonts
- JavaScript
- NodeJS

#### **2) Database**

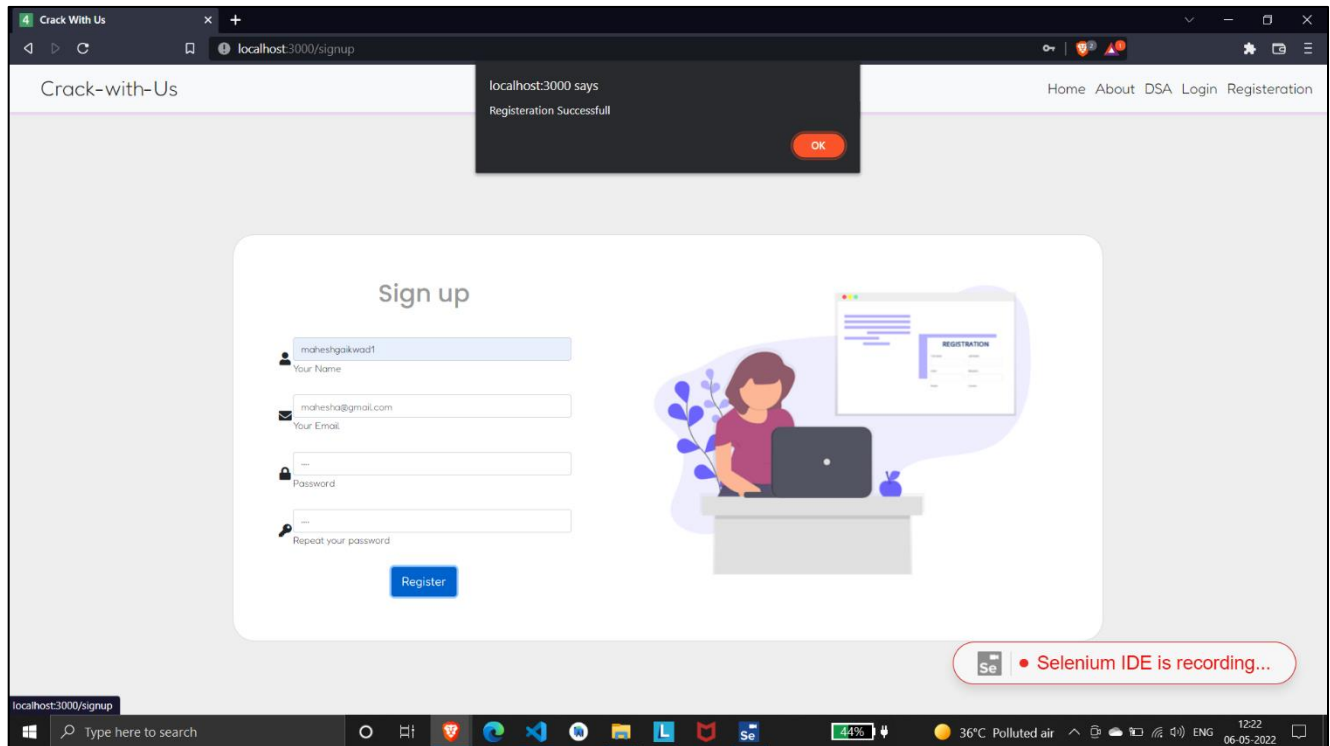
- MongoDB
- IndexedDB

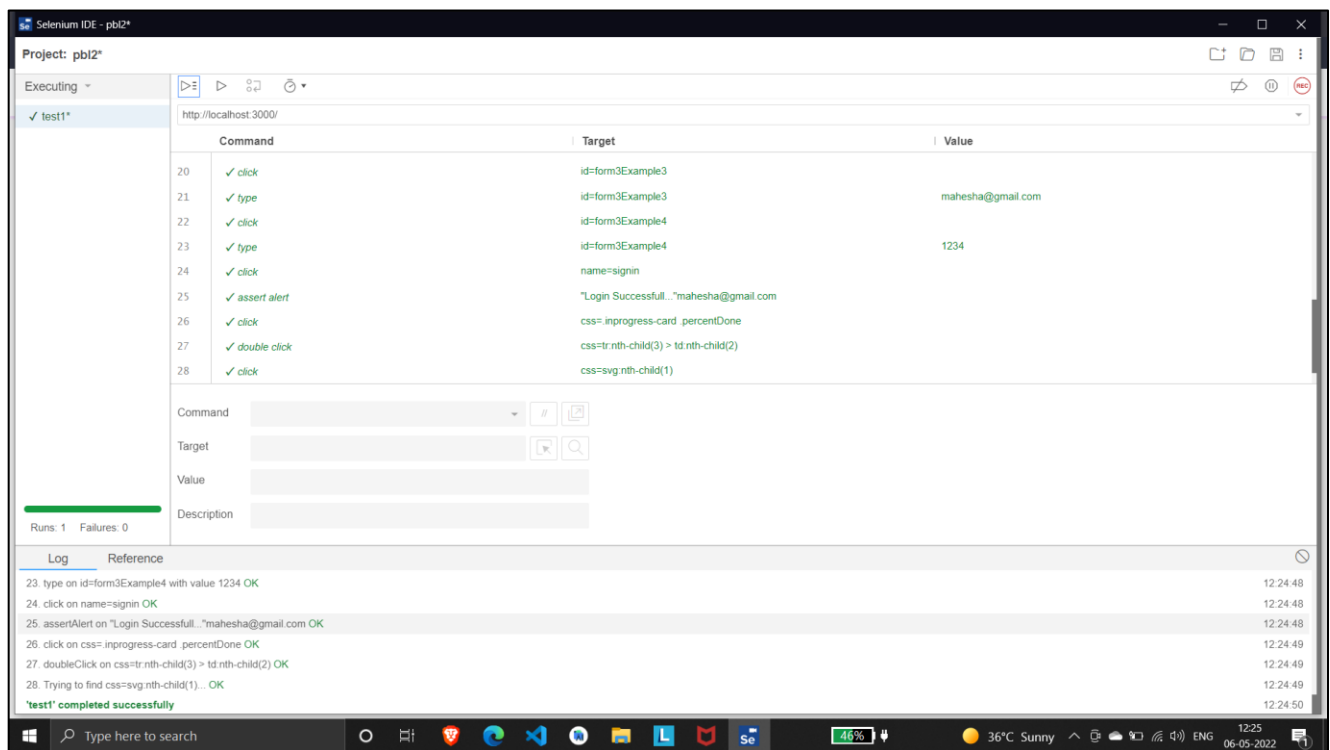
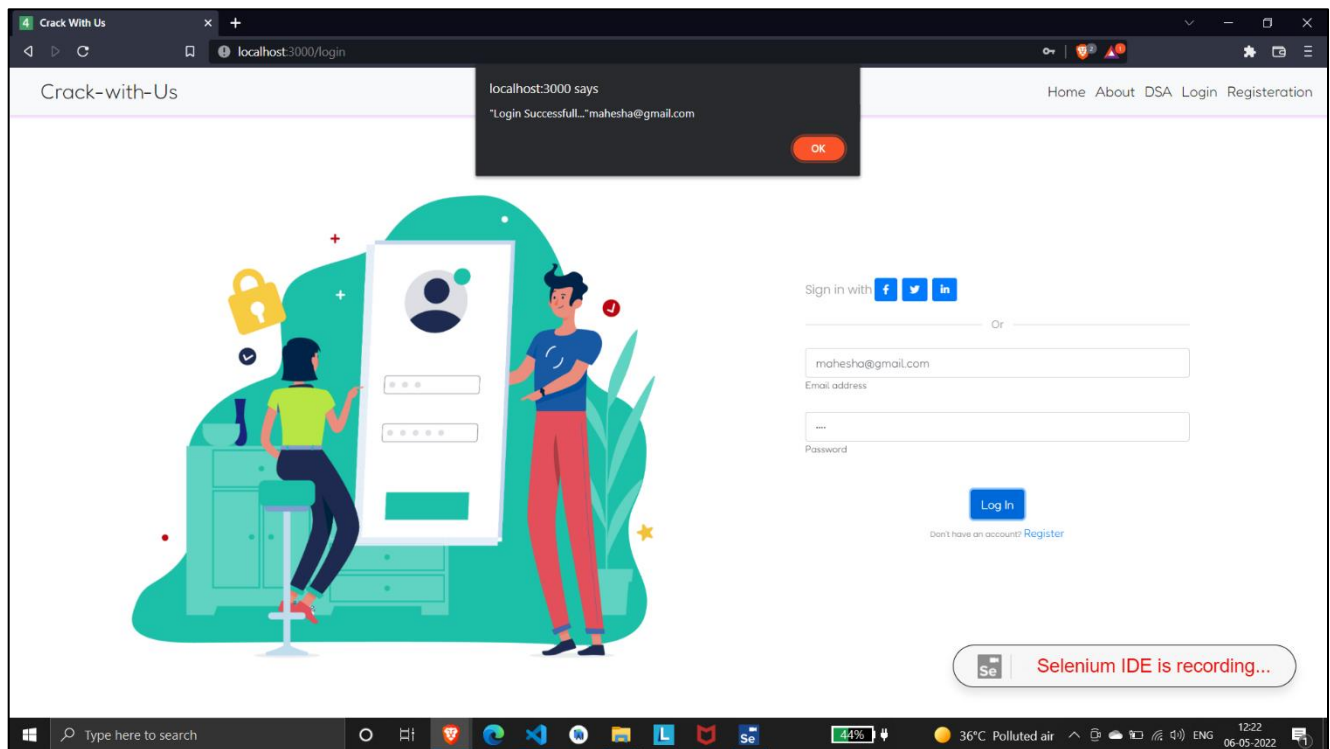
#### **3) Testing**

- Selenium IDE
- Responsive Checker

## 7. SOFTWARE TESTING

### 7.1 TEST CASES & TEST RESULTS



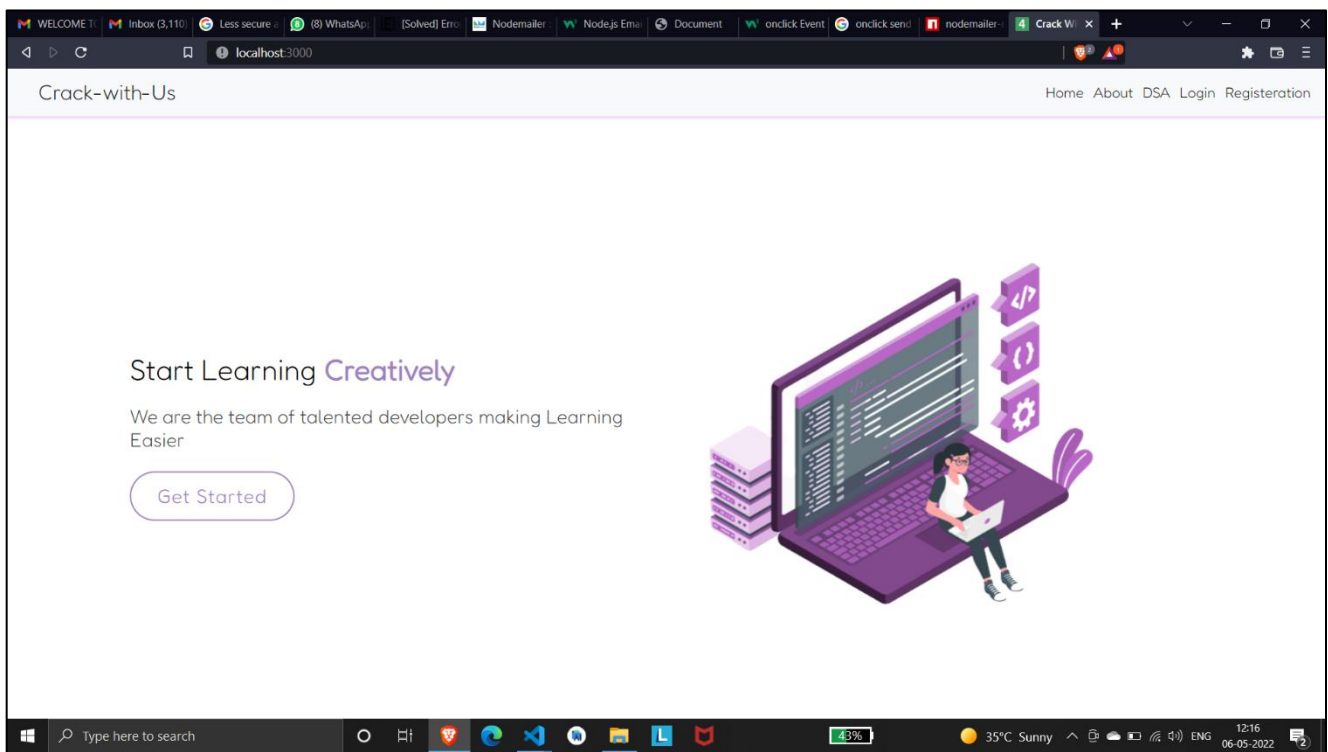


## 8.RESULTS

### 8.1 OUTCOMES

- A website where students can learn various topics of the subject and keep track of their progress.
- Students will also receive questions realated to the topic through mail daily.
- There will be no need of students to Login every time they want to study.
- Students will be able to make notes on the topic they are currently studying.

### 8.2 SCREENSHOTS



Crack-with-Us Home About DSA Login Registration

Your Gateway to crack DSA

Total Questions Solved : 1 (0.22% Done)

Array

[Solve Now](#)

Total Questions 36

35 More to go

3% Done

Matrix

[Start Now](#)

Total Questions 10

Not yet started

String

[Start Now](#)

Total Questions 43

Not yet started

Search & Sort

[Start Now](#)

Total Questions 36

Not yet started

Linked List

[Start Now](#)

Total Questions 36

Not yet started

Binary Trees

[Start Now](#)

Total Questions 35

Not yet started

BST

[Start Now](#)

Total Questions 22

Greedy

[Start Now](#)

Total Questions 35

BackTracking

[Start Now](#)

Total Questions 19

Topics/Array

[Pick Random](#)

Search Question

5/36 Done  
Question pushed to the table

	Q-Id	Questions
<input type="checkbox"/>	1	Find the maximum and minimum element in an array
<input type="checkbox"/>	3	Given an array which consists of only 0, 1 and 2. Sort the array without using any sorting algo
<input type="checkbox"/>	4	Move all the negative elements to one side of the array
<input type="checkbox"/>	5	Find the Union and Intersection of the two sorted arrays.
<input type="checkbox"/>	6	Write a program to cyclically rotate an array by one.
<input type="checkbox"/>	7	find Largest sum contiguous Subarray [V.IMP]
<input type="checkbox"/>	8	Minimise the maximum difference between heights [V.IMP]
<input type="checkbox"/>	9	Minimum no. of Jumps to reach end of an array
<input type="checkbox"/>	10	find duplicate in an array of N+1 Integers





gaikwadmahesh7779@gmail.com

to me

\*\*\*

Fri, May 6, 12:04 PM (2 days ago)



Heyy User!!! Improve your skills with this Question recommended for you

Topic: "Array"

Problem: "Reverse the array"

Question Url : <https://practice.geeksforgeeks.org/problems/reverse-an-array/0>

Reply

Forward

3/36 Done

Q-Id	Questions	Status
1	Find the maximum and minimum element in an array	✓
3	Given an array of N integers, find the maximum and minimum element in the array.	✓
5	Find the maximum and minimum element in an array.	✓
6	Write a program to find the maximum and minimum element in an array.	✓
7	find the maximum and minimum element in an array.	✓
8	Minimise the maximum difference between heights [VIMP]	✓
9	Minimum no. of Jumps to reach end of an array	✓
10	find duplicate in an array of N+1 integers	✓
11	Merge 2 sorted arrays without using Extra space.	✓

Find the maximum and minimum element in an array

so in this i will use a for loop and using condition i will compare for max and min element

Save Close

## **9. CONCLUSIONS**

### **9.1 CONCLUSION**

A user-friendly website where students can learn and keep track of the progress they made while learning the subject is created. The project idea of E-learning website creation is implemented successfully.

### **9.2 FUTURE WORKS**

- The idea of sending e-mails to the user is yet to be finished as the website is to be hosted.
- Just like Data Structures & Algorithms more subjects can be added for students to learn.
- A live code runner for implementation of codes can be added.

### **9.3 APPLICATIONS**

- Students can develop their skills by just solving tricky questions related to the subject.
- Students can customize the level of questions they want to receive.
- Students can track the progress and they will receive questions as per their progress while learning.