

Enhancement of Scaler Platform to provide a structured, flexible & guided learning program

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Company Profile: InterviewBit Technologies Private Limited

- ▶ Scalar Academy previously Interviewbit Academy, ranked among top 10 startups (India) in 2020 is a E-learning platform to empower and accelerate the tech career.
- ▶ InterviewBit is one of the most popular interview preparation websites for coding interviews targeting college students, experienced professionals and tech leaders.
- ▶ InterviewBit was founded by ex-Facebook and Fab.com executives Abhimanyu Saxena and Anshuman Singh.
- ▶ It's five core capabilities: structured and flexible curriculum, mentoring and quick doubt solving, collaborate with global community, develop real world projects, learn from industry leaders.

Problem Statement

- ▶ Improving the user experience on Scaler platform by adding more features and functionalities.
- ▶ Boost and enhance the performance of Scaler platform by automated content caching at user level.
- ▶ Building features such as automated reward system, global leaderboard from redis cache, toggle problem tags, session reminder notifications, renew user subscription interface etc.

- ▶ Develop a shareable user profile page which includes features such as overall performance, achievement, badges earned and topic wise problem stats.
- ▶ Rebuilt the global leaderboard for all contests and create a global leaderboard card which displays badges earned and maximum coding streak.
- ▶ Deploy the working model sufficing these tasks on production using tech stacks such as RubyonRails, React.js and Redux.

Objectives

- ▶ To automate reward mailer system for continuous streak of 30, 45 and 60 days and flexible for adding more days.
- ▶ To build global leaderboard system for all type contest.
- ▶ To build user profile page representing the overall performance during the course curriculum.
- ▶ To build automated user interface for session reminder notifications and renew user subscription.
- ▶ To deploy the entire working model on production using Ubuntu linux OS, RubyonRails, React and Redux tech stacks.

Literature Review

- ▶ Ruby on Rails (RoR) has instantly grown because of the advent of version 1.0. With the popularization of RoR, increasingly more advancement apparatuses supporting RoR rose. In this paper [1], authors think about and dissect a few principles RoR improvement instruments dependent on our experience of utilizing those apparatuses, which can help RoR engineers select the most reasonable devices as per their specialized foundation and programming inclination.
- ▶ In this paper [4], authors have suggested an investigation of the evolution and variances in the 'Ubuntu Linux' Operating System (OS). Ubuntu is an Open Source operating system which aims to provide modifiable OS according to the end-users need. They have conducted quantitative analysis on various distributions of Ubuntu to explore its unpredictability and improvement for the duration of the time.

- ▶ Nowadays React is the best mainstream web system that has plucked up significance over several frameworks, for example, Angular, Vue, etc. This is a result of its performance of Virtual DOM, whose fundamental goal is to improve the overall performance of the application. The paper [3] depicts a period of productive hunt consideration that can be used for scanning through articles in a large informational gathering.
- ▶ With the advancement in market interest for systems defined by low-latency and the importance on the use of commodity hardware and software, in [2] author describes a real-time enterprise operating system. In response to the requirement for accelerated access, the Java and IBM Linux Technology collaborated to provide the first open-source real-time Linux kernel including Java assistance.

Tools & Technologies

Tools

- ▶ Mailcatcher, Webpack, Git client, Rails console
- ▶ Google Chrome, Developer tools

Languages

- ▶ Ruby on Rails v5.4
- ▶ HTML, CSS, SaaS
- ▶ React, Redux, JavaScript

Technology

- ▶ Ubuntu OS v20.04.1 LTS (Focal Fossa)
- ▶ DBeaver v7.2 SQL client software, Slack v4.7.0 collaborative environment

Flow chart of work done

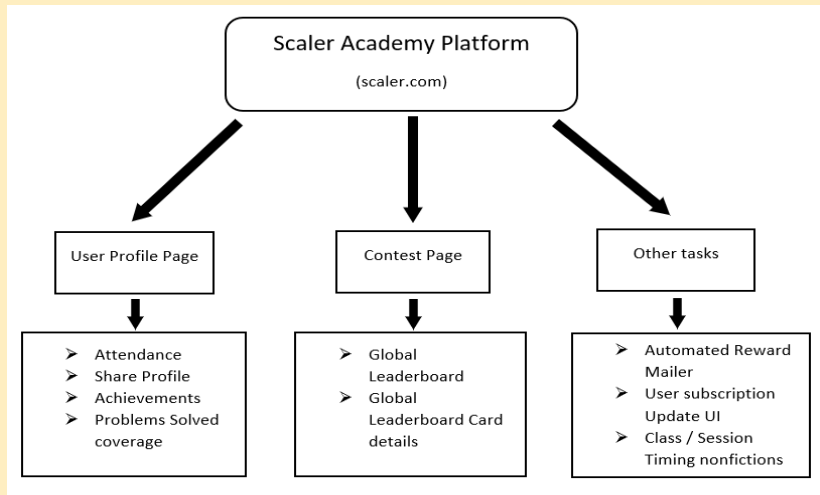


Figure: 1. Represents flow chart of work done

Solution Approach

1. Academy Profile Stats

- ▶ We need to develop a user profile page where they can see their progress report including overall performance, topic wise problem stats and achievements during the course curriculum.
- ▶ In Figure 2, the user profile page is shown with some additional features such contest ranks, badges earned, third party profiles and sharing profile on other platforms.

2. Automated Reward Mailer

- ▶ A one time reward system for completing a continuous of 30, 45, 60, and 90 days coding streak shown in Figure 3.
- ▶ A Cron job runs daily around 8 pm which increments/decrements the streak day by one/half if the user score above/below the threshold score respectively.

3. Classroom Rank and Missed contests

- ▶ If a user unable to participate then it shows as "absent" which is obscure. Also we need to add trophy for top 3 participants.
- ▶ Figure 4, for a user represents, if some user did not participated in the contest it show as "missed" which is quite meaningful and we have also added trophy for top 3 contestants.

4. Scaler Academy Class Notification

- ▶ We don't have any method to automatically notify students about the re-scheduling of class/session timings.
- ▶ In Figure 5, We develop a automated message portal where mentor can choose between sending a message or not to notify the students for that class.

5. Global Leaderboard and Card

- ▶ The problem is a user can not access previously held contests leaderboard. Hence, we need an efficient solution which can show the contest result Global Leaderboard for any contests.
- ▶ The contest data were initially present in redis-cache and fetch from there. We develop a state based Global Leaderboard which automatically update the data to cloud at the end of contest shown in Figure 6.

6. Toggle Topic View

- ▶ We added a toggle button for showing/hiding the problem topic tags in the navigation bar shown in Figure 7, which toggles between show and hide the problem topics.

RESULTS

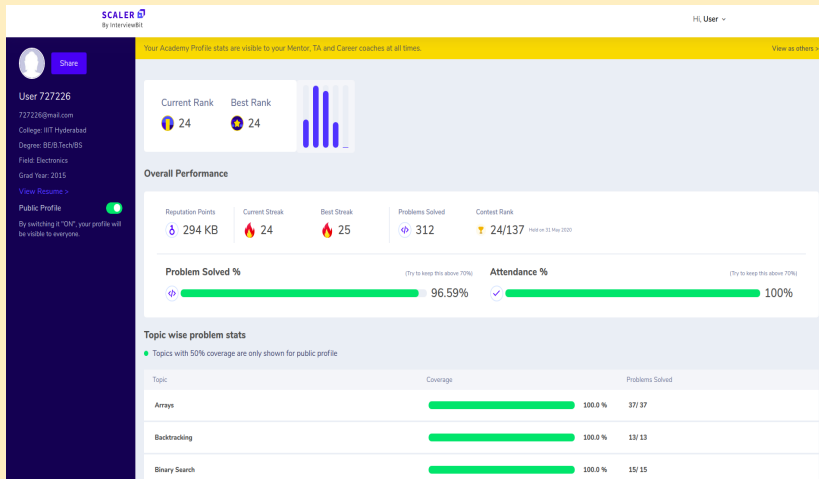


Figure: 2. User Academy Profile Stats

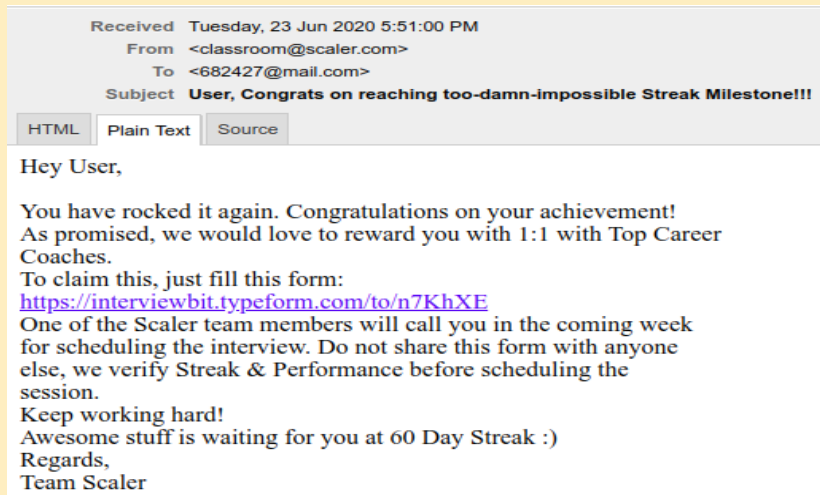


Figure: 3. Reward for completing 60 days coding streak

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





<div> Week 14</div> <div>Topics/Contests: Contest VII, Greedy 2, TA Session, Greedy Algorithms, TA Session, Heaps II</div>					
DAY	TOPIC/CONTEST	ATTENDANCE	ASSIGNMENT	HOMEWORK	CLASSROOM / CONTEST RANK
DAY 79 31 MAY	CONTEST VII  CONTEST	-	NO ASSIGNMENT	NO HOMEWORK	24 / 137
DAY	TOPIC/CONTEST	ATTENDANCE	ASSIGNMENT	HOMEWORK	CLASSROOM / CONTEST RANK
DAY 79 31 MAY	CONTEST VII  CONTEST	-	NO ASSIGNMENT	NO HOMEWORK	 MISSED
DAY	TOPIC/CONTEST	ATTENDANCE	ASSIGNMENT	HOMEWORK	CLASSROOM RANK
DAY 79 31 MAY	CONTEST VII  CONTEST	-	NO ASSIGNMENT	NO HOMEWORK	 24 / 137

Figure: 4. Classroom Rank and Missed Contest

WANT TO SEND NOTIFICATION MESSAGE?

YES NO



Team Scaler

BOT

12:09 PM

Scaler Academy Class Notification

Your Scaler Academy Class has been rescheduled

Topic Name: Searching

New Time: 16 July, 05:30 AM (IST)

Figure: 5. Scaler Academy Class notification

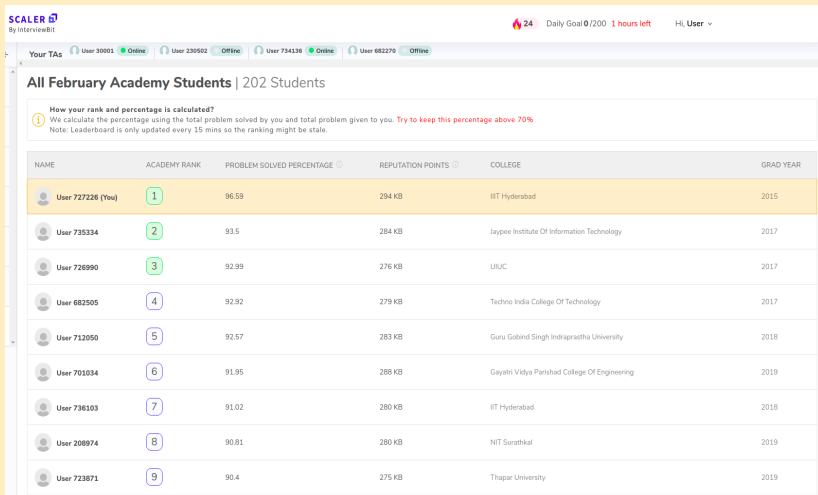


Figure: 6. Global Leaderboard for Contests

Contd...

All Problems 272		Unsolved 272	Solved 0
Days	Name of the Problems		Topic
<div>Get Response in 30 mins</div> <div>Raise Help Request when stuck and get help within 30 mins.</div>			
Day 76	Seats		Greedy Algorithm



All Problems 272		Unsolved 272	Solved 0
Days ⌵	Name of the Problems ⌵		Topic Show
<div><div> Get Response in 30 mins</div><div>Raise Help Request when stuck and get help within 30 mins.</div></div>			
Day 76	Seats		

Figure: 7. Toggle button for showing/hiding problem topics

CONCLUSION

1. The main objectives of my internship tasks was to enhance the user experience on Scaler platform and build features according to their need, feedback and company requirements.
2. All the tasks were performed under the guidance of my team leader. And the entire functionalities was deployed on portal.
3. Learnt many new technologies which are the future in this new era of revolutionising world. Moreover learnt new web technologies such as RubyonRails, JS, React.js and Redux.
4. My work was applauded by my mentor and Director of the company. As a result of the efforts I put into the internship was awarded with a Pre-Placement Offer.

REFERENCES



N. Feng, J. Xie, and Y. Wu.

Comparison of ruby on rails development tools.

In *2009 WRI World Congress on Software Engineering*, volume 4, pages 290–294, 2009.



D. Hart, J. Stultz, and T. Ts'o.

Real-time linux in real time.

IBM Systems Journal, 47(2):207–220, 2008.



A. Javeed.

Performance optimization techniques for reactjs.

In *2019 IEEE International Conference on Electrical, Computer and Communication Technologies (ICECCT)*, pages 1–5, 2019.



M. Tabassum and K. Mathew.

Software evolution analysis of linux (ubuntu) os.

In *2014 International Conference on Computational Science and Technology (ICCST)*, pages 1–7, 2014.

THANK YOU