

SAKEC Credits

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Abstract— The proposed idea of introducing a rewarding coin system, known as SAKEC Credits, aims to increase student participation and performance in various events and academic endeavors. The mechanism involves the distribution of SAKEC Credits to students who actively participate in events and activities organized by the institute. This could include events such as sports competitions, cultural festivals, technical seminars, debates, and more. By offering such a range of rewards, the institute can ensure that students are motivated to participate in events, which helps to create a more vibrant and engaged campus community. Moreover, the proposed mechanism involves the integration of a centralized database, an event management system, and a user-friendly mobile application to manage and distribute SAKEC Credits efficiently. This ensures that the distribution of credits is transparent, and students can easily track their credit balance and redeem them for rewards of their choice. The introduction of the SAKEC Credits system is expected to have a positive impact on the overall campus experience. By incentivizing student participation and performance in events, the institute can foster a culture of active engagement among students, which can lead to greater skill development and learning outcomes. This, in turn, can enhance the institute's reputation and attract more students and faculty to the campus.

Index Terms— SAKEC, students, academic endeavors, SAKEC Credits, events, incentivizing, transparent, credit balance, redeem, positive impact.

I. INTRODUCTION

The Introduction of a private credit system, known as SAKEC Credits, is proposed to incentivize and reward student participation in various events and activities organized by the institution. SAKEC Credits are regulated by the central authority of the institution and can be rewarded for attendance at college events, participation in college activities, representation of the college in events, and academic excellence. The distribution of SAKEC Credits provides a comprehensive record of student participation and achievement, creating a metadata repository that can be utilized for tracking attendance, progress, and historical achievements. The private credits can be redeemed for commodities or services available on the platform, such as food items in the canteen, committee merchandise, and academic resources and goodies. Investment is required to counter the real-world value of these commodities, which can be overcome by strategies such as advertisements, promotions, crowdfunding, alumni donations, or allocation of funds to facilitate transactions. The value of the private currency will be inferior to the real-world currency, which will prevent overspending. The process of procuring SAKEC Credits can also be regulated to manage their flow, and a simple equation can determine the value of a commodity in the private environment based on the total investment in the real world.

SAKEC Credits serve as an excellent tool for promoting student engagement and excellence, as they incentivize students to participate in events, activities, and research projects. By creating a culture of competition and achievement, students are encouraged to excel academically and engage in extracurricular activities, which leads to greater skill development and learning outcomes. The use of SAKEC Credits also provides a comprehensive record of student participation and achievement, which can be utilized for future reference and analysis. This data can be used to evaluate the effectiveness of events and activities, identify areas for improvement, and recognize students' contributions to the institution.

II. LITERATURE SURVEY

Kaur, Anshu Parashar, Kavisha Duggal, Sunita Sunita [1] proposed a blockchain-based system to manage educators' profiles and rewards. By storing educators' performance data and rewards on the blockchain, transparency, security, and immutability are ensured. This system aims to boost educators' performance and engagement, benefiting both educators and educational institutions.

One more exploration [2] took a gander at the impacts of well known portable game awards like focuses and virtual merchandise on player commitment. As per this outcome, comparative motivations might be used in the homeroom to support maintenance and commitment.

In a different vein, a bitcoin-based reward system [3] was suggested for crowd-sensing applications. This system addresses the shortcomings of traditional reward systems, ensuring fairness and privacy while incentivizing participation.

Basori, Rosihan Ari Yuana, Dwi Maryono [4] designed an Android app using a point-based reward system to enhance learning quality. It encouraged student participation in activities like attending lectures and discussions, significantly improving engagement and motivation.

M. Morsidi, S. Tajuddin, R. K. Patchmuthu and S. H. S. Newaz [5] proposed a blockchain to incentivize students to provide teaching feedback. The authors demonstrated a blockchain-based reward system and automation framework to ensure transaction integrity and immutability.

N. Pombo and H. Santos [6] proposed a gamified badge-based reward system aimed at enhancing learner engagement in academic activities. By incorporating gamification principles, this approach sought to make learning enjoyable and promote positive perceptions.

J. Tyni, A. Turunen, J. Kahila, R. Bednarik and M. Tedre [7] proposed Reward Types in Popular Recreational and Educational Mobile Games, a study that analyzed reward types in mobile games. Recreational games had a higher variety of rewards compared to educational games. This insight could guide the integration of diverse in-game rewards in educational settings.

J. Ding and Y. Du [8] investigated ways of making undergrads award frameworks better. This paper talks about their thoughts and discoveries on further developing how universities reward their understudies. The specialists shared their work and experiences at the meeting.

S. Tang, L. Jia, and J. Shui [9] researched what absolute rewards mean for the inspiration of workshop members in colleges. The paper dives into their discoveries with respect to the association among remunerations and inspiration in this specific situation. The analysts talked about their work and bits of knowledge at the gathering.

M. W. Call, E. Fox and G. Sprint [10] review zeroed in on utilizing game-like components to urge software engineering understudies to start and finish their programming tasks sooner. The paper talks about how they coordinated gamification into programming devices to accomplish this objective.

III. PROBLEM STATEMENT

A. Problem Statement

Propelling understudies to partake effectively in their schooling is one of the primary issues that organizations and educators need to manage. This absence of drive can bring about fatigue, shoddy scholarly execution, and a reduced craving to study. Absence of inspiration among understudies makes them less inclined to partake effectively in their schooling, and that implies that opportunities for self-awareness and advancement are lost. Moreover, understudies' inspiration levels might be influenced by private battles like pressure or stress. Absence of want among understudies might make them perform less scholastically than their friends, bringing about more unfortunate imprints and subsequently limiting their future possibilities. Organizations and teachers are continuously searching for new ways to deal with rouse understudies and lift support in the instructive cycle.

B. Objectives

The Objective of SAKEC Credits is to increase student participation and performance in various events and academic endeavors within an institute. By implementing a rewarding coin system, SAKEC Credits aims to motivate students to actively engage in activities organized by the institute, such as sports competitions, cultural festivals, technical seminars, debates, and more.

C. Scope

SAKEC Credits system components, such as the rewarding coin system, event management system, credit distribution, tracking, and reward redemption functionalities. Integration with a centralized database and user-friendly mobile application. Support for various types of events, including sports competitions, cultural festivals, technical seminars, debates, and more. Financial transactions or monetary value associated with the credits (credits are used as a rewarding mechanism and not as a form of currency). Specific event details and logistics that are handled outside the system (e.g., event venues, scheduling).

IV. METHODOLOGY

The first step is for the student to finish the registration procedure or connect into the application. Our comprehensive application includes a variety of modules that address different functionalities. For instance, there are separate login sites designed for various user groups and administration, committee, and other modules. First-time users must complete the registration process; once done, they can easily use the app using their login information. Each division offers unique capabilities.

Notably, the institutional portal app gives multiple committees the ability to create events. They can then use the app to obtain sponsorship assistance and credit. The administrator evaluates these requests after receiving them and decides whether to approve or reject the proposed event. Additionally, the administrator has the authority to assign a certain quantum or credits. The capacity to determine an event's status, including whether it has been publicized or aggressively advertised for registration, is granted to students. The institute first grants students a certain number of credits. Notably, participation in activities or outstanding accomplishments may lead to the accrual of more credits. These credits have real financial worth and can be wisely used by students to pay for food expenses at the canteen or to buy necessities like stationery. This strategic strategy successfully encourages increased student participation in a wide range of extracurricular activities.

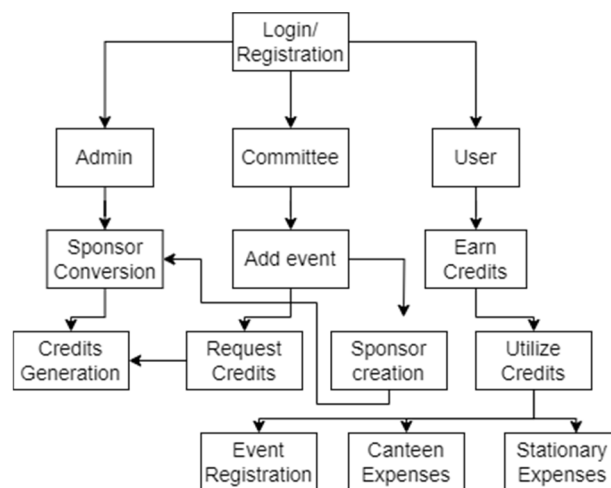


Fig. 4.1. System Architecture of the Proposed System

A. Algorithms

a. Atomic Approval Transaction Processor For Sakec Credit System

The procedures taken to put this algorithm into practise are as follows:

1. Destructure 'amount', 'email', and 'event' from the 'UserData'.
2. Retrieve committee credits balance asynchronously.
3. Calculate 'committee sum' as the sum of committee credits and parsed amount.
4. Retrieve event credits balance asynchronously for each event'.

5. Calculate 'event sum' as the sum of evens credits and parsed amount.
6. Generate a random 'result' string to use as a unique transaction ID.
7. Calculate 'sum' as the difference between the current 'credits' balance and parsed amount.
8. Prevent the default action of the event to avoid unwanted behavior.
9. Try the following:
 - a. *Use a batch write operation to ensure atomicity and consistency:*
 - o Add a new transaction document to the 'transactions' collection with:
 - o ID: result
 - o Reason: Concatenate the first part of the email and "Committee Request"
 - o Credits : amount
 - o Deposit: False
 - o Date: Current date
 - o Update the 'status' field of the 'requests' collection document for the 'event' to 'Approve'.
 - o Update the 'value' field of the 'credits' collection document to 'sum'.
 - o Update the 'credits' field and add a new transaction to the 'committees' collection document for 'email':
 - o Append a new transaction :
 - o ID: result
 - o Reason: Concatenate "Request Granted for" and the event
 - o Credits : amount
 - o Deposit: True
 - o Date: Current date
 - o Update the 'credits' field of the 'events' collection document for the 'event' to 'event sum'.
 - o Commit the batch operation.
 - b. If successful, display a success message.
 - c. Reload the window to reflect changes.
10. If an error occurs during the process, log the error for debugging purposes.

B. Consolidated Sponsor Conversion Process With Atomic Transaction Management In Sakec Credit System

The procedures taken to put this algorithm into practise are as follows:

1. Generate a random 'result' string to use as a unique transaction ID.
2. Calculate 'sum' as the sum of current 'credits' balance and parsed amount.
3. Prevent the default action of the event to avoid unintended behavior.
4. Try the following:
 - a. *Use a batch write operation to ensure atomicity and consistency:*
 - o Add a new transaction document to the 'transactions' collection with:
 - o ID: result
 - o Reason: Concatenate data.name and "Sponsor Deposit"
 - o Credits : amount
 - o Deposit: True
 - o Date: Current date
 - o Update the 'converted' field of the 'sponsors' collection document for 'data.name' to 'true'.
 - o Update the 'value' field of the 'credits' collection document to 'sum'.
 - o Append a new transaction object to the 'transactions' array field of the 'committees' collection document for 'data.email':
 - o ID: result
 - o Reason: Concatenate data.name and "Sponsor Deposit"
 - o Credits: amount
 - o Deposit: True
 - o Date: Current date
 - o Commit the batch operation.
 - b. If successful, display a success message.
5. If an error occurs during the process, log the error for debugging purposes.

C. Seamless credits allocation and transaction management for registered user in SAKEC credit system

The procedures taken to put this algorithm into practise are as follows:

1. Prevent the default action of the event to avoid unintended behavior.
2. Destructure 'registration_fee', 'committee_email', and 'name' from the 'data'.
3. Retrieve committee credits balance asynchronously.
4. Calculate 'committee sum' as the difference between committee credits and parsed registration_fee.
5. Retrieve event credits balance asynchronously.
6. Calculate 'event sum' as the difference between event credits and parse registration_fee.
7. Generate a random 'result' string to use as a unique transaction ID.
8. Try the following:
 - a. Use a batch write operation to ensure atomicity and consistency:
 - o Add a new transaction document to the 'transactions' collection with:
 - o ID: result
 - o Reason: Concatenate email and "Registration Reward"
 - o Credits: registration_fee
 - o Deposit: False
 - o Date: Current date
 - o Update the 'credits' and 'transactions' fields of the 'committees':
 - o Decrement 'credits' by registration_fee
 - o Append a new transaction object with:
 - o ID: result
 - o Reason: Concatenate "Reward to", email, "for", and name
 - o Credits: registration_fee
 - o Deposit: False
 - o Date: Current date
 - o Update the 'credits' and 'transactions' fields of the 'events' collection document for 'name':
 - o Decrement 'credits' by parse registration_fee
 - o Append a new transaction object with the same details as above.
 - o Update the 'credits' and 'transactions' fields of the 'users' collection document for 'email':
 - o Increment 'credits' by parse registration_fee.
 - o Append a new transaction object with:
 - o ID: result
 - o Reason: Concatenate "Reward from", committee_email, "for", and name
 - o Credits: registration_fee
 - o Deposit: True
 - o Date: Current date
 - o Commit the batch operation.
 - b. If successful, display a success message.
9. If an error occurs during the process, log the error for debugging purposes.

V. IMPLEMENTATION

A. User Module

The user module is designed to provide a seamless experience to students using the app. The onboarding screen guides the user through the registration process, and upon successful completion, the student is redirected to the home screen, where they can view various events. Clicking on an event takes the user to the event details page, where they can learn more about the event and register for it. The app provides a registration success prompt, and if the user is already registered for an event, they will receive a prompt notifying them of their registration status. The user credit transaction history screen allows users to keep track of their transactions, and the user profile screen enables users to manage their profile information. Finally, a logout prompt is provided to allow users to securely sign out of the app.

B. Admin Module

The admin module is designed to provide complete control to the administrator. The admin login page ensures secure access to the dashboard, where the administrator can manage various committees, events, sponsors, and requests. The committees page lists all the committees, and the committee events screen displays the events associated with each committee. The committee add event screen allows the administrator to add events to specific

committees, and the disable committee screen allows the administrator to disable a committee if not needed. The add sponsor screen enables the administrator to add new sponsors, and the view sponsor screen provides an overview of all the sponsors. The admin generated coin page allows the administrator to generate virtual coins and manage transactions through the coin transaction screen. The view request screen displays all the requests, and the approved request screen shows the requests that have been approved, whereas the rejected request screen displays the requests that were rejected. This module empowers the administrator to manage the app effectively and efficiently.

C. Committee Module

The committee module provides access to committee members for managing their respective events. The committee login page ensures secure access to the committee dashboard. The committee's event screen allows the committee members to add new events, and the view event screen provides an overview of all the events managed by the committee. The event management page enables committee members to manage events and make changes as required. The committee add sponsor screen allows the committee members to add new sponsors, and the committee view sponsor screen provides an overview of all the sponsors associated with the committee. The committee add request screen enables committee members to add new requests related to their events, and the committee view request screen provides an overview of all the requests made by students. The committee's recent transaction screen displays all the recent transactions related to the committee's events. This module helps the committee members to manage their events and associated tasks efficiently.

1. Mobile Application for Students

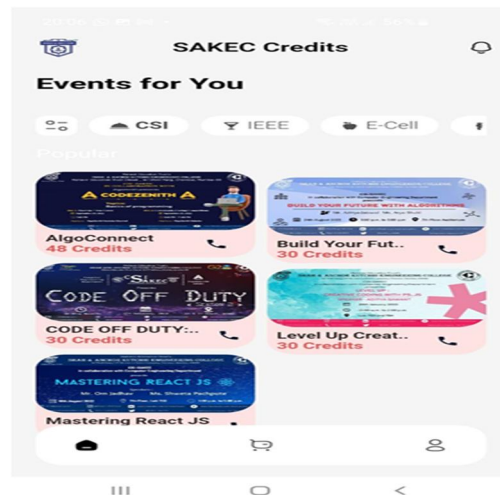


Fig 5.1 User Interface for Students

2. Web Interface for SAKEC Credits Admin

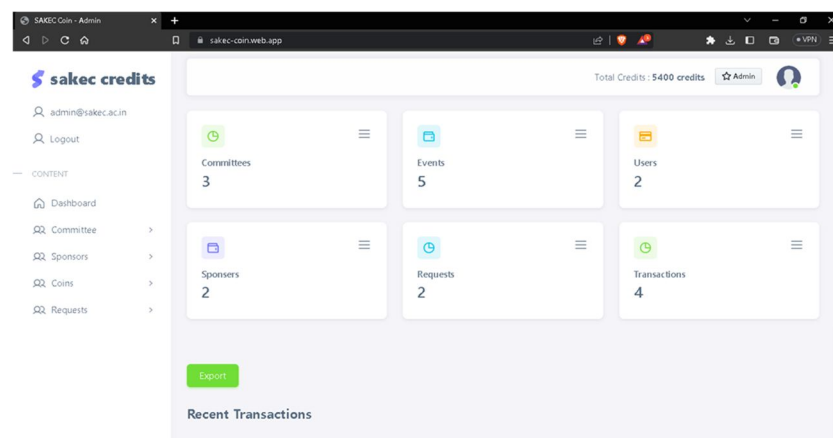


Fig 5.2 Admin Dashboard for SAKEC Credits

3. Web Interface for SAKEC Credits Committee

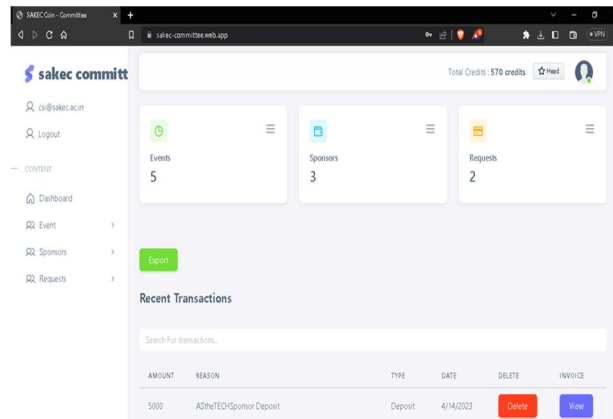


Fig 5.3 Committee Dashboard for SAKEC Credits

VI. CHALLENGES AND FUTURE SCOPE

The future scope for the SAKEC Credits project is quite promising. As more institutions adopt this approach, it is likely that students will increasingly seek out opportunities to participate in extracurricular activities and earn credits. Moreover, as the project evolves, there is a possibility for integrating the credits system with other initiatives, such as internship opportunities, professional development programs, and social initiatives, to further enhance the value and relevance of the credits system. Additionally, the SAKEC Credits project could potentially serve as a model for other institutions and organizations to implement similar credit systems, not only in education but also in other domains like social and environmental initiatives. Overall, the future scope of the SAKEC Credits project is vast and has the potential to transform the way students engage in extracurricular activities and develop important life skills.

CONCLUSION

The SAKEC Credits project is a program that can help the understudies and instructive organizations. The undertaking gives a prize to understudies for taking part in extracurricular exercises, like games or chipping in. This prize can spur understudies to be more taken part in their schooling, which can work on their scholarly execution. By partaking in extracurricular exercises, understudies can foster significant fundamental abilities, like authority, cooperation, and local area administration. These abilities can be valuable to understudies in their future vocations and individual lives. The SAKEC Credits undertaking can likewise help instructive organizations. By making a more powerful and useful learning climate, organizations can draw in and hold understudies. The undertaking offers a novel and imaginative way to deal with schooling that goes past conventional scholastics, which can be interesting to understudies. By and large, the SAKEC Credits task can make a mutually beneficial arrangement for the two understudies and instructive organizations.

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