Report

College Festival Management Web Application Development

Sampreeth ke Trophies

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1 Overview

The College Cultural Festival Management Web Application aims to provide a comprehensive platform for managing various aspects of a university cultural festival. The system caters to different user roles including external participants, students, volunteers, organizers, and database administrators. The system facilitates event browsing, registration, volunteer management, logistics handling, and real-time updates on event winners. This report outlines the design and implementation details of the system.

2 Technology Stack

- **Backend**: PostgreSQL database with Django framework
- **Frontend**: Django templates using HTML and CSS
- **Language**: Python for backend development

3 Schema Design

The schema designed for the system includes tables to store information about events, participants, volunteers, organizers, logistics, and user accounts. Additional tables are included as necessary to support specific functionalities. Below are all the entities used and their attributes:

- Events
- External Participants
- Students
- Users
- Venues
- Volunteers
- Accommodations
- Event results
- Organizer keys
- Participant_accommodations

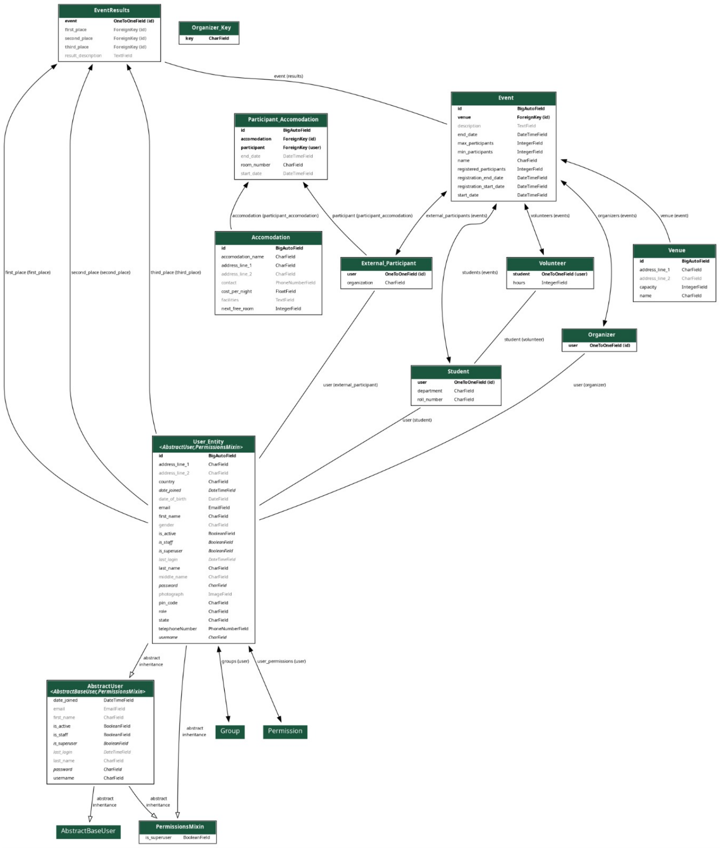


Figure 1: ER diagram

4 Forms

Front-end form interfaces are designed using Django templates with HTML and CSS. Forms are provided for **user registration, login, creation of an event, addition of winners by organizers**. The forms are intuitive and user-friendly, facilitating seamless interaction with the system. **CSRF** tokens have been used to authenticate forms whenever necessary to prevent cross site forgery attempts by malicious users. This token is included in forms to verify that the request is coming from the authenticated user on a form meant for that user itself and not from a malicious source.

5 Roles

- Student: Used by students belonging to our organization. They may volunteer or register for events as long as slots are available.
- Organizer: Used by organizers assigned to the events. They need to obtain a unique organizer key from the database administrator before registering on the website. They can view the logistics of the events they are managing, add/modify the results of events, and create new events.
- External Participant: Used by students of other organizations, they can view events, register for them, and view details of events they have already registered for.
- Database administrator: Has absolute control over the database, can add/delete various users, events and modify their details, also needs to manage organizer keys to provide keys to only trusted organizers to maintain website security.

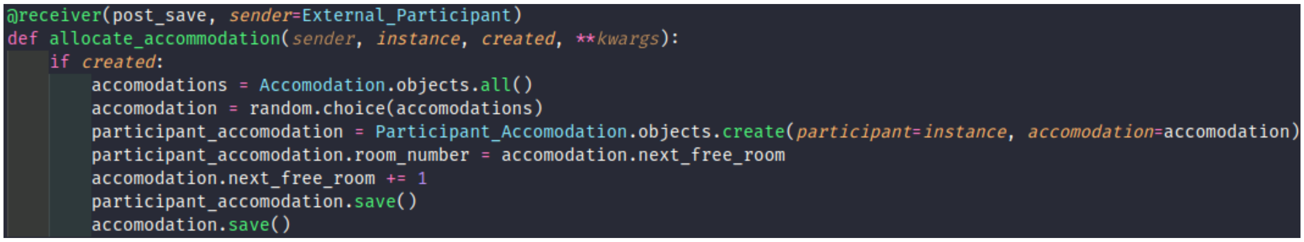
6 Access Control

Each page on our website requires the user to be logged in before he can access the page. Before any page is rendered, the role of the currently logged-in user is checked in order to make sure they have rights to access the page. Accessing any page using cross site requests redirects the user to their home page.

7 Triggers/Queries

We have used Django backend processing to process SQL queries and set up triggers, no explicit SQL queries or triggers have been used. The implementations of triggers are functionality dependent. For example:

- In admin, When creating and saving models (objects), we have overridden the save function in order to implement appropriate constraint checks and allocate resources (such as accommodation) when required.
- During OTP authentication, we have a separate thread running, that validates the OTP and deletes unverified accounts.
- We have also used signals to handle necessary updates when particular models are saved / deleted. These get mapped to triggers in the database.



```
@receiver(post_save, sender=External_Participant)
def allocate_accommodation(sender, instance, created, **kwargs):
    if created:
        accomodations = Accomodation.objects.all()
        accomodation = random.choice(accomodations)
        participant_accomodation = Participant_Accomodation.objects.create(participant=instance, accomodation=accomodation)
        participant_accomodation.room_number = accomodation.next_free_room
        accomodation.next_free_room += 1
        participant_accomodation.save()
        accomodation.save()
```

Figure 2: Snippet of code used to define a signal

8 Features provided

External Participant

- Register with OTP
- View Events
- Register for event (if slots available)
- View details of registered events
- View Accommodation details

Student

- Register with OTP
- View Events
- Register for event (if slots available)
- Volunteer for events (if not registered for that event)
- View details of registered and volunteered events

Organizer

- Register with unique Organizer key only known to database administrator

- View events organized by the current organizer
- Add results for events
- View logistics of events

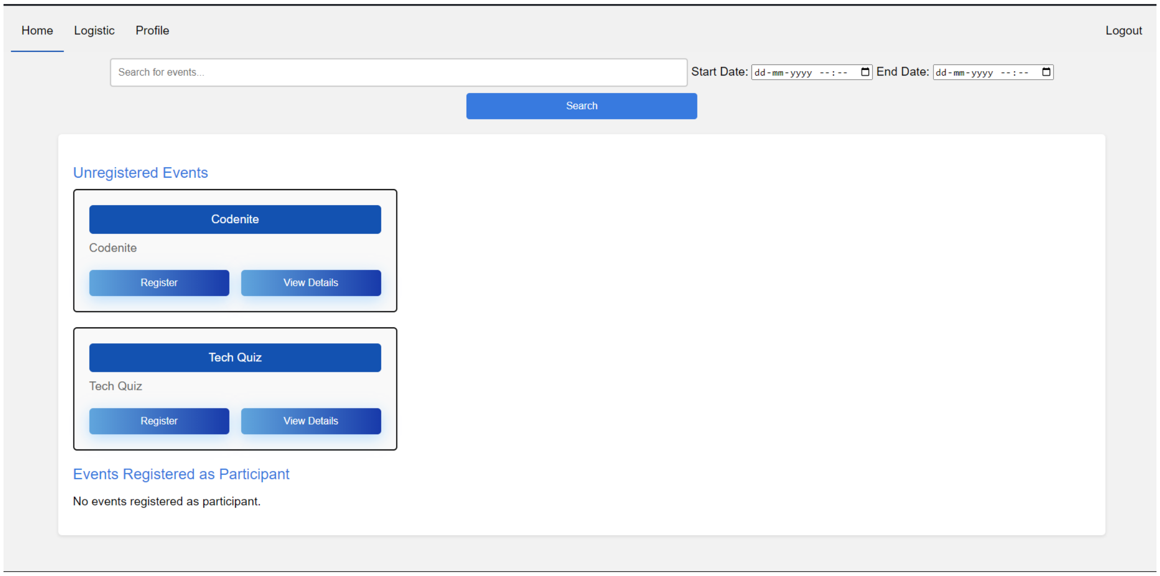
Database Administrator

- Access the entire database and its relations
- Can create / modify / delete entities
- Can filter / sort / search in different relations by appropriate attributes

9 Extra Features

- Organizer keys to prevent any user from registering as organizers.
- OTP-based registration employing multi-threading for OTP authentication and user deletion upon time-out, thereby enhancing security measures and mitigating bot-driven spam.
- CSRF tokens to prevent cross site forgery
- Dynamic views on all pages.
- Dynamic constraint checking, such as closing registration after maximum participants are registered.
- Storing passwords using sha256 encryption for added security.

10 Screenshots



Unregistered Events

Codenite

Tech Quiz

Events Registered as Participant

No events registered as participant.

Figure 3: External Participant Homepage

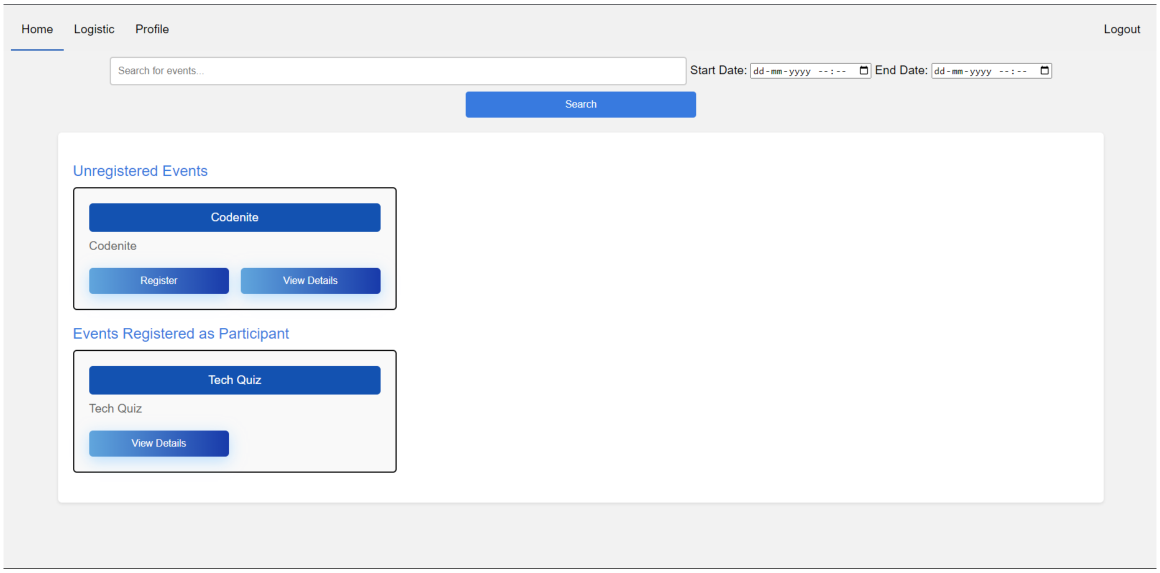
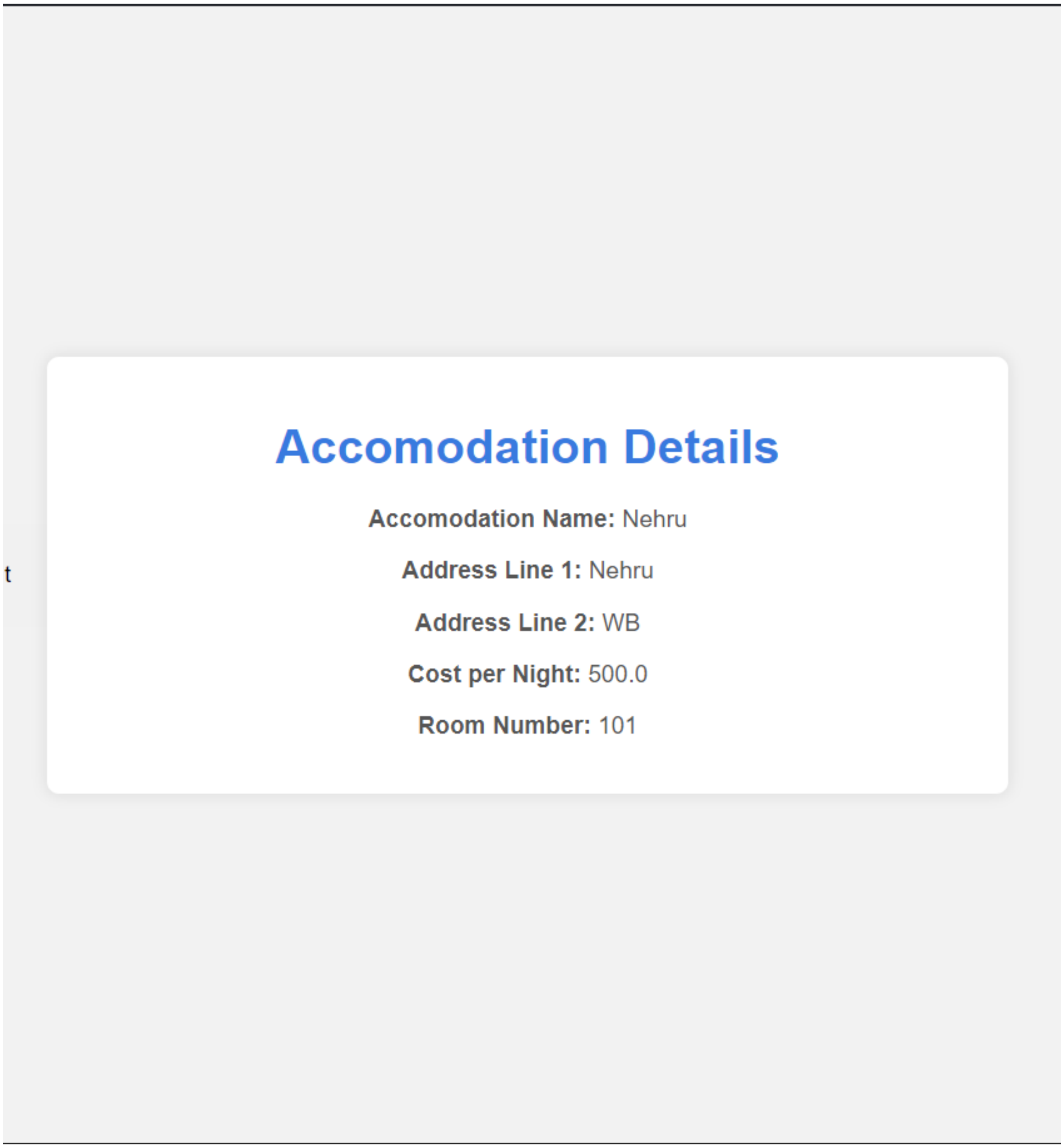


Figure 4: External Participant Homepage after Registering



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Accomodation Details

Accomodation Name: Nehru

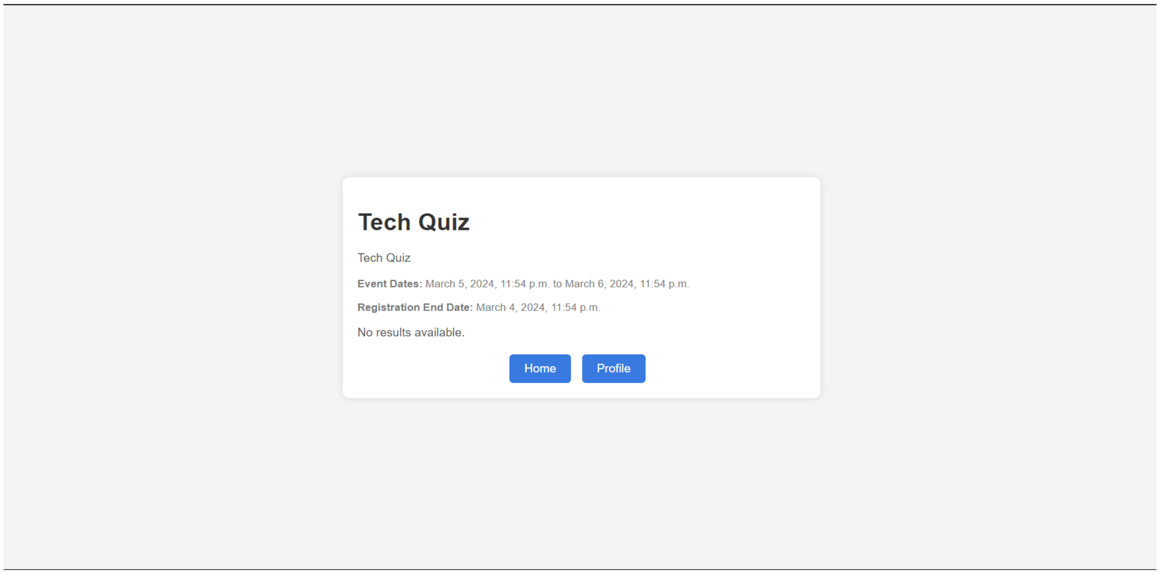
Address Line 1: Nehru

Address Line 2: WB

Cost per Night: 500.0

Room Number: 101

Figure 5: Logistics Page for External Participant



Tech Quiz

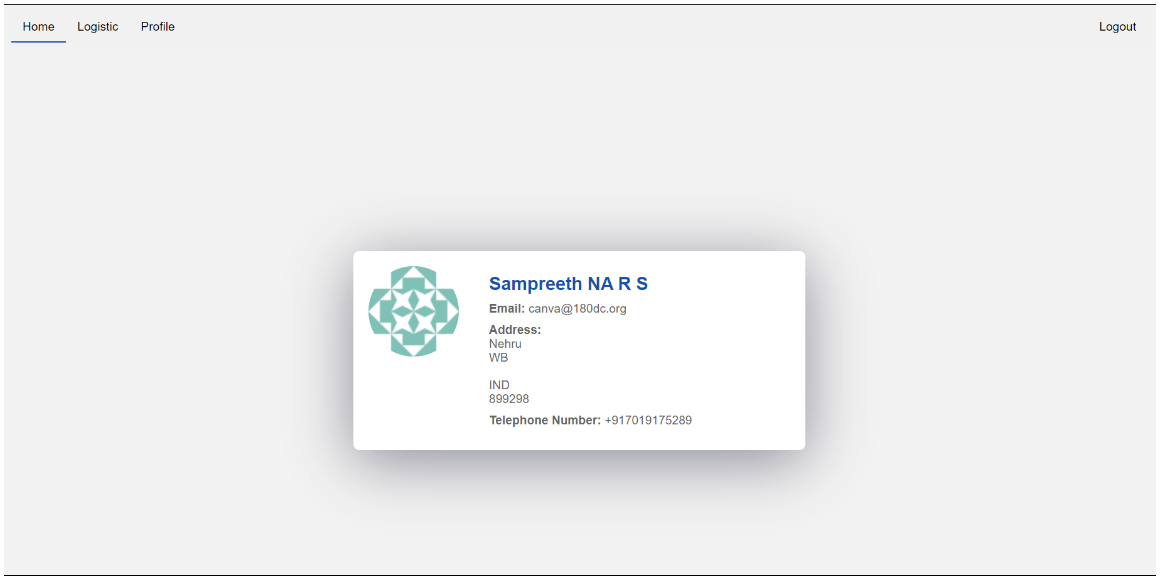
Tech Quiz

Event Dates: March 5, 2024, 11:54 p.m. to March 6, 2024, 11:54 p.m.

Registration End Date: March 4, 2024, 11:54 p.m.

No results available.

Figure 6: Event Details page



Sampreeth NA R S

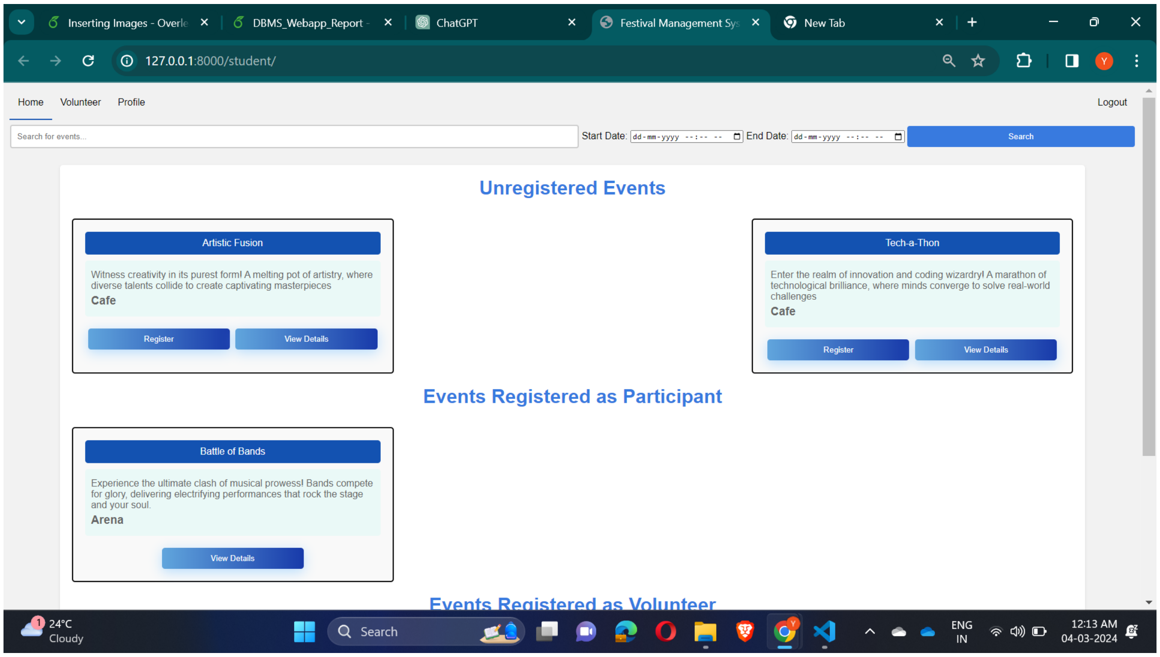
Email: canva@180dc.org

Address:
Nehru
WB

IND
899298

Telephone Number: +917019175289

Figure 7: External Participant Profile page



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127.0.0.1:8000/student/

Home Volunteer Profile Logout

Search for events... Start Date: dd-mm-yyyy --:-- -- End Date: dd-mm-yyyy --:-- -- Search

Unregistered Events

Artistic Fusion

Witness creativity in its purest form! A melting pot of artistry, where diverse talents collide to create captivating masterpieces

Cafe

Register | View Details

Tech-a-Thon

Enter the realm of innovation and coding wizardry! A marathon of technological brilliance, where minds converge to solve real-world challenges

Cafe

Register | View Details

Events Registered as Participant

Battle of Bands

Experience the ultimate clash of musical prowess! Bands compete for glory, delivering electrifying performances that rock the stage and your soul.

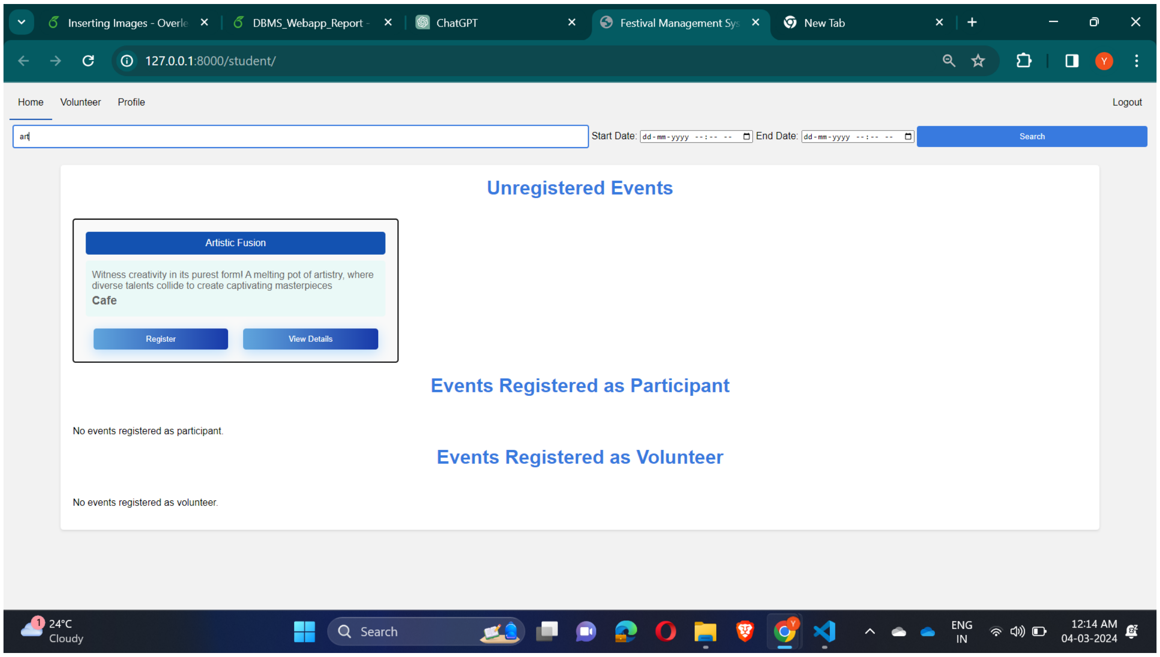
Arena

View Details

Events Registered as Volunteer

24°C Cloudy Search ENG IN 12:13 AM 04-03-2024

Figure 8: Student's Homepage



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127.0.0.1:8000/student/

Home Volunteer Profile Logout

art Start Date: dd-mm-yyyy --:-- -- End Date: dd-mm-yyyy --:-- -- Search

Unregistered Events

Artistic Fusion

Witness creativity in its purest form! A melting pot of artistry, where diverse talents collide to create captivating masterpieces

Cafe

Register | View Details

Events Registered as Participant

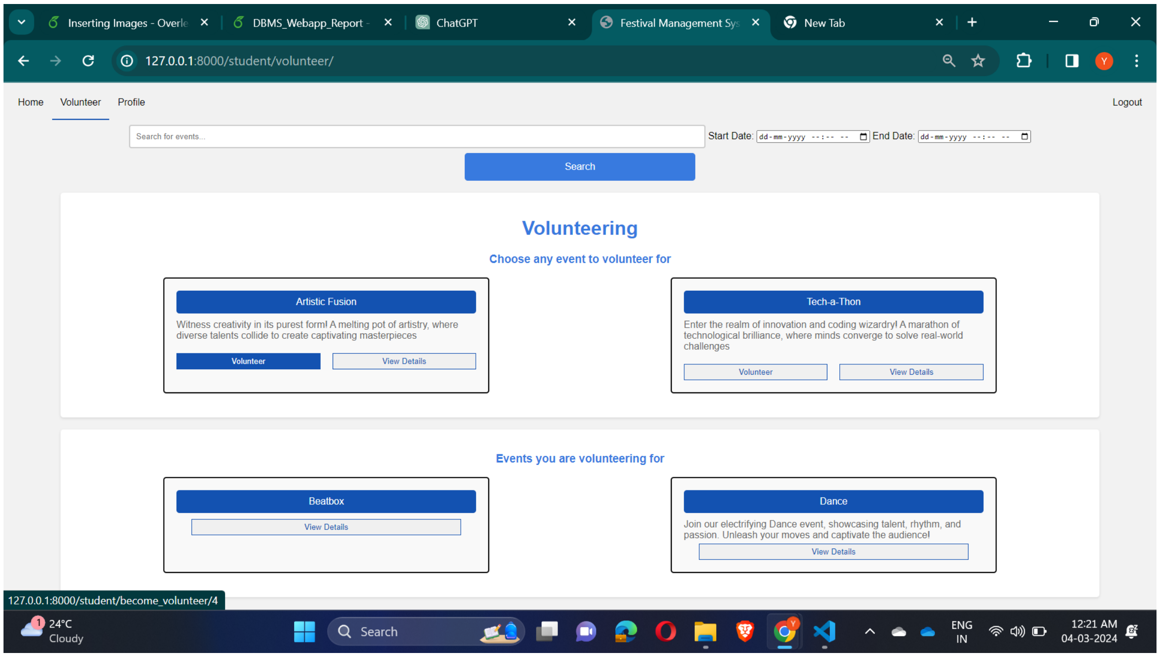
No events registered as participant.

Events Registered as Volunteer

No events registered as volunteer.

24°C Cloudy Search ENG IN 12:14 AM 04-03-2024

Figure 9: Search filter in action



Volunteering

Choose any event to volunteer for

Artistic Fusion

Witness creativity in its purest form! A melting pot of artistry, where diverse talents collide to create captivating masterpieces

Tech-a-Thon

Enter the realm of innovation and coding wizardry! A marathon of technological brilliance, where minds converge to solve real-world challenges

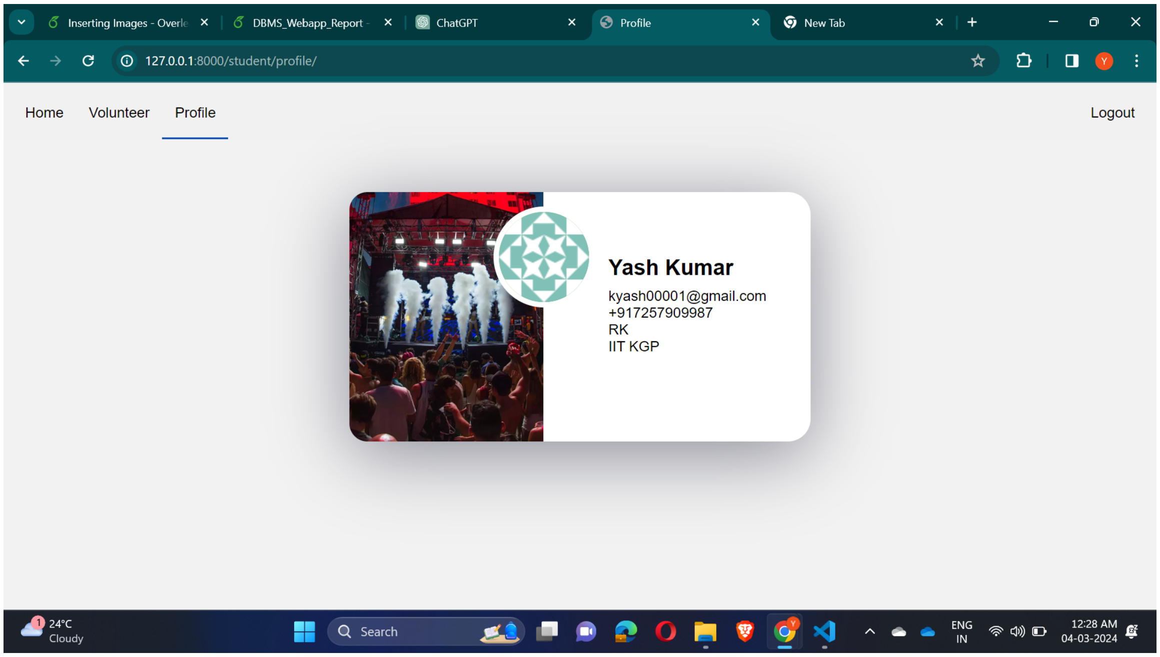
Events you are volunteering for

Beatbox

Dance

Join our electrifying Dance event, showcasing talent, rhythm, and passion. Unleash your moves and captivate the audience!

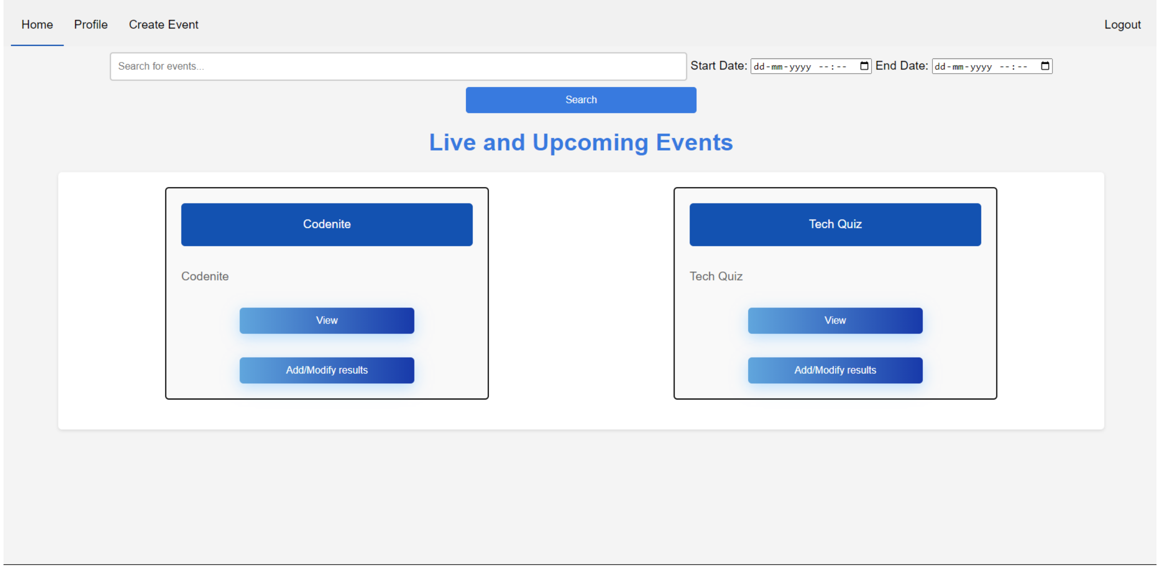
Figure 10: Student's Volunteering Page



Yash Kumar

kyash00001@gmail.com
+917257909987
RK
IIT KGP

Figure 11: Student's Profile Page



Live and Upcoming Events

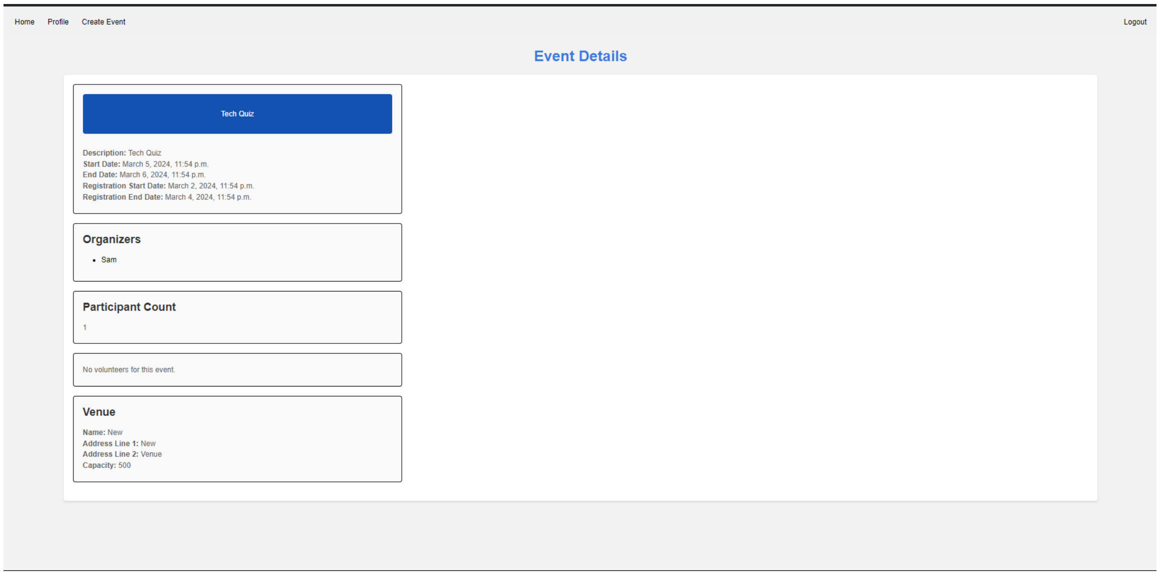
Codenite

Codenite

Tech Quiz

Tech Quiz

Figure 12: Organizer's Home page



Event Details

Tech Quiz

Description: Tech Quiz
Start Date: March 5, 2024, 11:54 p.m.
End Date: March 6, 2024, 11:54 p.m.
Registration Start Date: March 2, 2024, 11:54 p.m.
Registration End Date: March 4, 2024, 11:54 p.m.

Organizers

- Sam

Participant Count

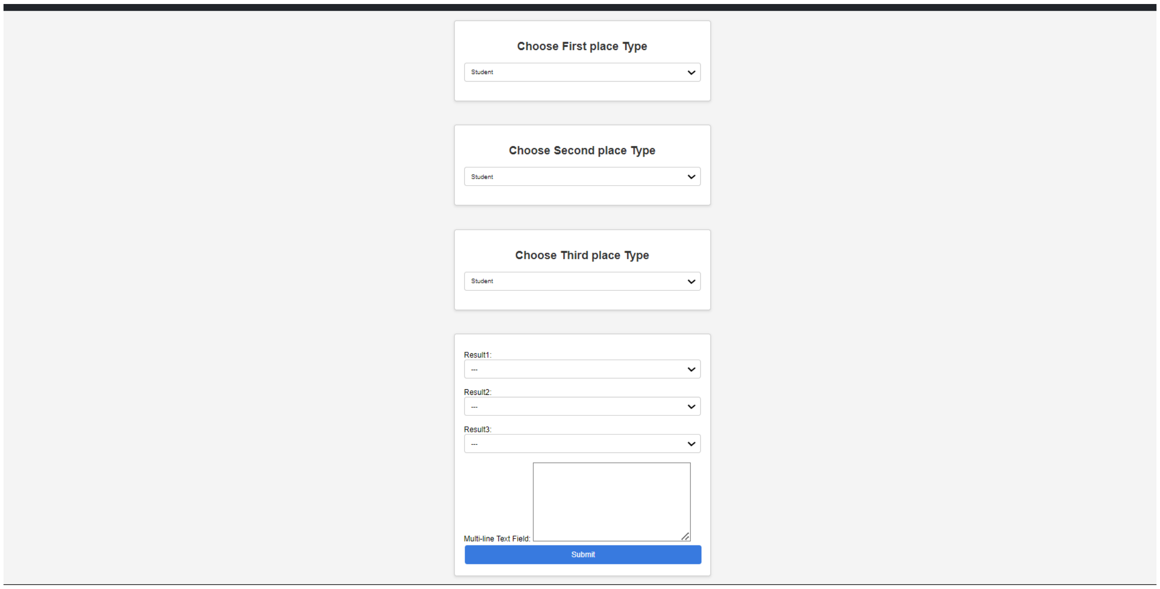
1

No volunteers for this event.

Venue

Name: New
Address Line 1: New
Address Line 2: Venue
Capacity: 500

Figure 13: Organizer's Event detail page



Choose First place Type

Student

Choose Second place Type

Student

Choose Third place Type

Student

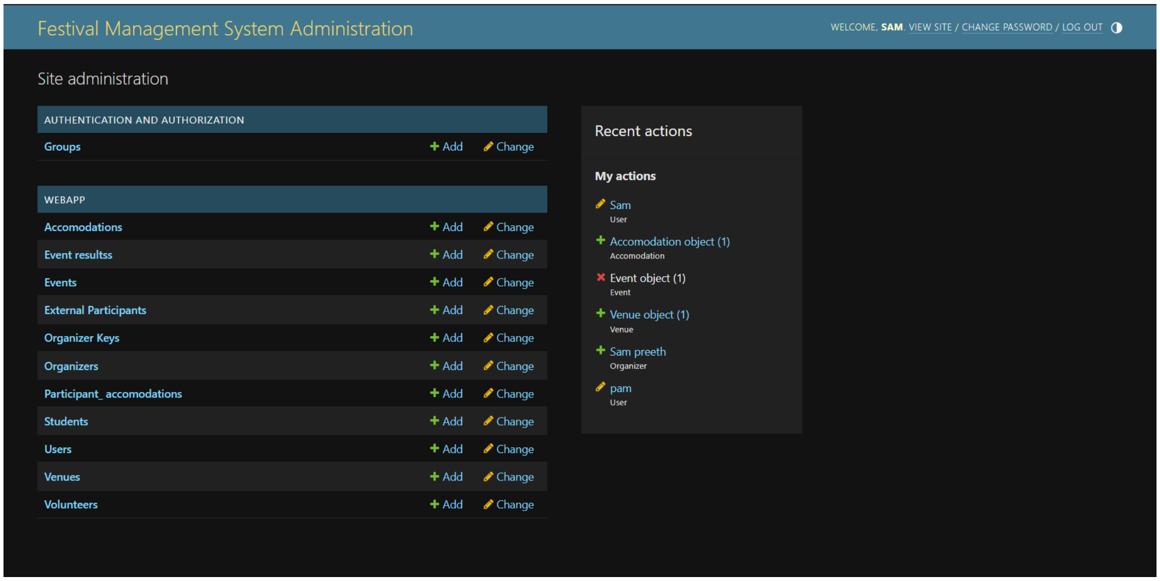
Result1: ---

Result2: ---

Result3: ---

Multi-line Text Field:

Figure 14: Organizer's Add result page



Festival Management System Administration

WELCOME, SAM. VIEW SITE / CHANGE PASSWORD / LOG OUT

Site administration

AUTHENTICATION AND AUTHORIZATION		
Groups	+ Add	Change

WEBAPP		
Accomodations	+ Add	Change
Event resultss	+ Add	Change
Events	+ Add	Change
External Participants	+ Add	Change
Organizer Keys	+ Add	Change
Organizers	+ Add	Change
Participant_accomodations	+ Add	Change
Students	+ Add	Change
Users	+ Add	Change
Venues	+ Add	Change
Volunteers	+ Add	Change

Recent actions

My actions

- Sam
  User
- + Accomodation object (1)
  Accomodation
- ✗ Event object (1)
  Event
- + Venue object (1)
  Venue
- + Sam preeth
  Organizer
- pam
  User

Figure 15: Admin's Home page