

# Vosc final System Requirements Document

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## 1. Purpose

This website is the **central platform** for the Open Source Community at VCE.

It will:

- Present the club, its events, projects, and achievements.
- Manage membership applications, interviews, approvals, and onboarding.
- Track each member's **open-source contributions** including PRs and issues.
- Provide a full-featured **Admin Panel** for managing users, events, PR analytics, and content.
- Integrate with the **GSoC Organizations API** (via [www.gsocorganizations.dev](http://www.gsocorganizations.dev)) to help students explore past organizations.
- Provide a **PR Quality Assistant** that reviews PRs before members actually submit them.
- Send **instant email + WhatsApp notifications** for PR updates.
- Handle **event-based PR competitions** such as Bug Blitz / Bug Bounty with automatic leaderboard generation.

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## 2. Scope

The system includes:

### **Public-Facing**

- Homepage
- About Page
- Events Page
- Project Showcase
- GSoC Organizations Browser
- Resources Page

### **User Management**

- Application form
- Application workflow (Pending → Interview → Accepted/Rejected)
- Member accounts, login, and dashboards

### **Contribution Analytics**

- Global PR tracking (GitHub API)
- Per-user contribution analytics
- Event-specific PR ranking/leaderboards

### **Communication System**

- Email notifications
- WhatsApp notifications

### **Admin Tools**

- Applications Management
  - Member Management
  - Events Management
  - Content Management
  - PR Analytics and Leaderboards
  - GSOC Org sync dashboard
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## **3. User Roles**

### **1. Visitor**

General public; can view pages but cannot access member/admin dashboards.

### **2. Applicant**

User who applies via the Join form; pending admin approval.

### **3. Member**

Approved user with login rights and contribution tracking.

### **4. Admin / Core Team**

Full control: approve applicants, manage events, track PRs, announcements, leaderboards.

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## **4. Functional Requirements**

### **4.1 Public Area**

#### **4.1.1 Homepage**

**FR-1** Hero Section: club name, tagline, mission, CTA buttons.

**FR-2** About Preview: small summary + Read More button.

**FR-3** Events Preview: upcoming + recent events.

**FR-4** Project Showcase: key internal and external contributions.

**FR-5** Join Section: encourage applying.

**FR-6** Footer: contact, social links, copyright.

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#### **4.1.2 About Page**

**FR-7** Detailed Who We Are, What We Do, Structure, Mentors.

**FR-8** Admin-editable content.

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#### **4.1.3 Events (Public View)**

**FR-9** Upcoming + Past events list.

**FR-10** Event details including resources.

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#### **4.1.4 Projects / Showcase**

**FR-11** All major projects with GitHub links and team.

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#### **4.1.5 Resources Page**

**FR-12** All learning links including Git, GitHub, GSOC, Open Source guides.

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### **4.2 Application & Accounts**

#### **4.2.1 Application Form**

**FR-13** Full form with academic + GitHub + interests.

**FR-14** Store application → PENDING status.

**FR-15** Notify Admins immediately.

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#### **4.3 Authentication**

**FR-16** Member/Admin logins.

**FR-17** Email + password.

**FR-18** Forgot password flow.

**FR-19** Access control based on role.

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#### **4.4 Member Area**

##### **4.4.1 Member Profile**

**FR-20** Profile with details.

**FR-21** Editable GitHub and interests.

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#### **4.4.2 Member Dashboard**

**FR-22** Welcome section.

**FR-23** Contribution Stats pulled automatically:

- Total PRs
- Merged PRs
- Open PRs
- Issues opened
- Latest 5 contributions

**FR-24** Events participation.

**FR-25** Internal announcements.

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#### **NEW FEATURES (MANDATORY)**

##### **4.4.3 GSoC Organizations Browser**

**FR-40** Integrate with <https://www.gsocorganizations.dev> API.

**FR-41** Show all orgs by category, year, tags.

**FR-42** Search for organizations by tech stack.

**FR-43** Each org page includes:

- Description
  - Technologies
  - Past ideas list
  - Links to repos
  - Contribution guidelines
  - Difficulty level (from API)
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##### **4.4.4 PR Quality Assistant (Before Submitting PR)**

**FR-44** Members can paste PR diff / commit link / description.

**FR-45** Website analyses for:

- Linting
- File structure
- Commit hygiene
- Broken links
- Formatting

- Conventional commit format
- FR-46** Provide suggestions to improve PR for acceptance.
- FR-47** Members must pass this check before event submissions.
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## **4.5 PR Tracking System (MANDATORY)**

### **4.5.1 Global GitHub PR Sync**

**FR-50** Track ALL PRs raised by ALL members across ANY public GitHub repository.

**FR-51** Website syncs every 5–10 minutes.

**FR-52** Store PR details:

- Repo
  - Link
  - Status (open/merged/closed)
  - Created date
  - Labels
  - Reviews count
  - Reviewer comments
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### **4.5.2 Notification System**

**FR-53** Whenever PR status changes → send:

- Email alert
- WhatsApp alert

**FR-54** Notification Types:

- PR opened
  - PR updated
  - PR merged
  - PR closed
  - Review requested
  - Review submitted
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## **4.6 Event-Based PR Competitions**

### **4.6.1 Automatic PR Event Tracking**

**FR-60** For events like Bug Blitz, Bug Bounty, ContribThon:

- Admin creates event with date range and scoring rules.
- System tracks all member PRs submitted during that period.
- Filters based on whitelisted repos if needed.

**FR-61** Score rules (configurable):

- PR merged → +X points
  - PR open → +Y points
  - PR closed without merge → -Z points
  - Review comments addressed → +pts
  - Complexity scoring (small/medium/large)
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#### 4.6.2 Leaderboard

**FR-62** Auto-generate leaderboard sorted by points.

**FR-63** Show stats per member:

- Total PRs
  - Total merged
  - Score
  - Repos contributed
  - Rank
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#### 4.6.3 Manual Review Mode

**FR-64** Admin can override score or leave notes.

**FR-65** Final leaderboard must reflect manual admin changes.

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### 4.7 Admin Area

#### 4.7.1 Admin Dashboard

**FR-26** Pending applications, member count, PR analytics, event analytics.

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#### Applications Management

**FR-27–30** Same as earlier.

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#### Member Management

**FR-31–32** Same as earlier.

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## **Events Management**

**FR-33–35** Create/edit/delete + PR-tracking settings.

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## **Content Management**

**FR-36** Edit homepage, about, resources.

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## **PR Analytics (Admin)**

**FR-70** Global PR graph: daily, weekly, monthly.

**FR-71** Per-member detailed PR logs.

**FR-72** Repo heatmap: which repos have most contributions.

**FR-73** Identify inactive members automatically.

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## **5. Non-Functional Requirements**

- **NFR-1 Usability:** Clean UI with animations and clarity.
  - **NFR-2 Performance:** GitHub sync should not slow UI.
  - **NFR-3 Security:** Password hashing, admin audit logs.
  - **NFR-4 Reliability:** Should handle 500+ concurrent users.
  - **NFR-5 Maintainability:** Modular, API-driven design.
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## **6. High-Level Data Model (Updated)**

### **User**

id, name, email, password\_hash, role

### **MemberProfile**

user\_id, branch, year, github\_username, interests, contribution\_stats

### **Application**

id, name, email, github, reason, status, interview\_details

### **Event**

id, title, type, description, date\_range, tracking\_rules

### **Contribution**

id, member\_id, repo, pr\_link, status, score, event\_id, metadata

### **Announcement**

`id, title, body, visible_to, created_at`

### **GSoCOrg**

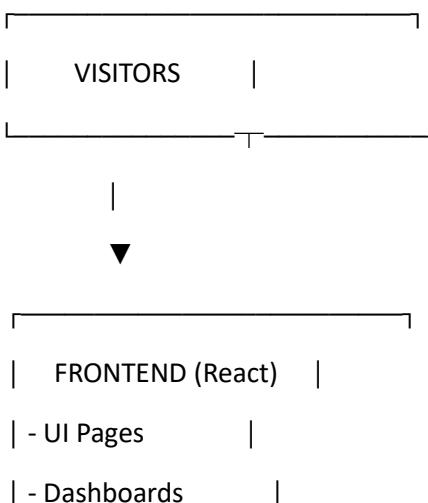
`id, name, tags, tech_stack, repo_links, description, last_synced`

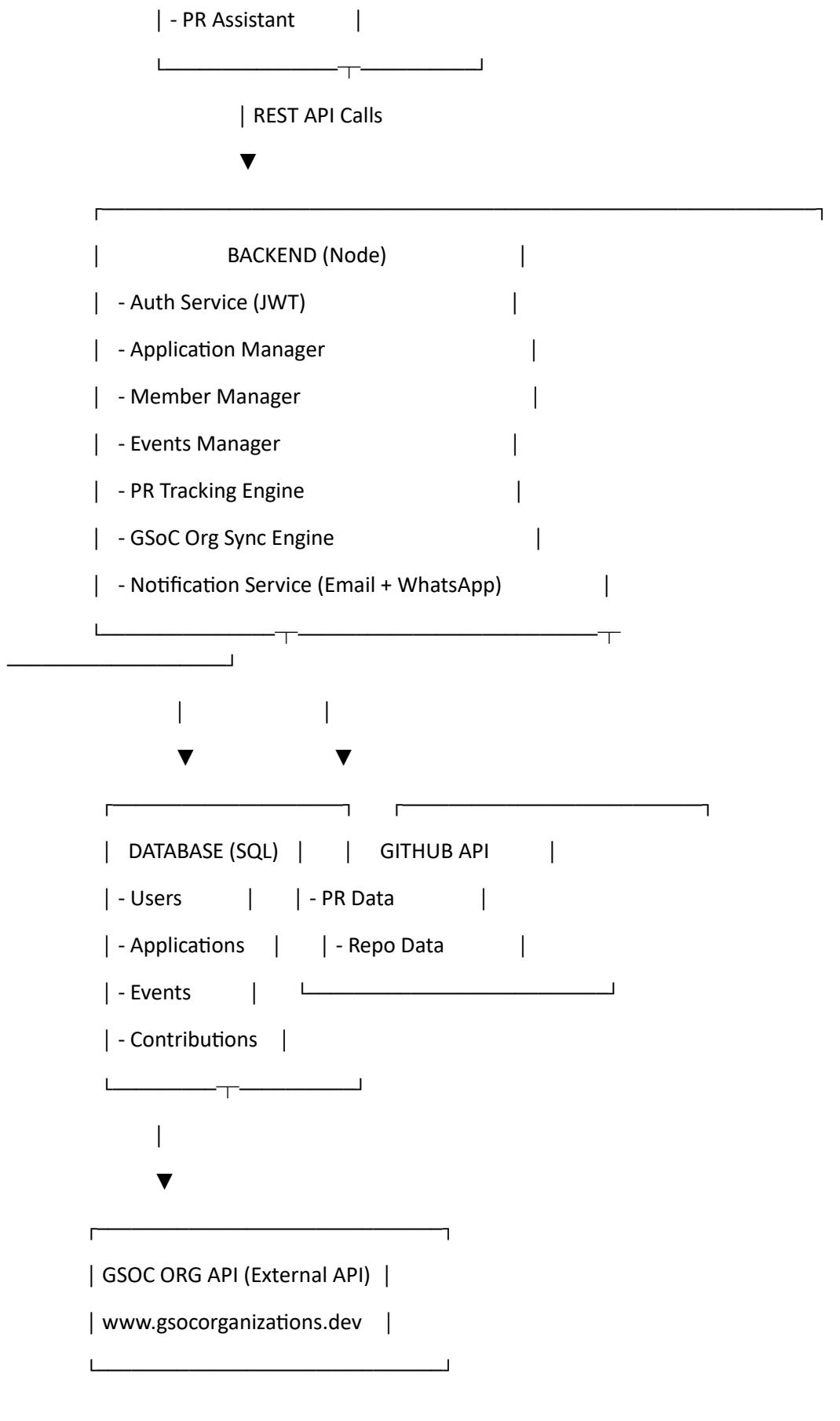
#### **1. System Architecture Diagram (ASCII)**

- 2. DFD Level-0**
- 3. DFD Level-1 (detailed)**
- 4. ER Diagram (Conceptual)**
- 5. Full UI Layout Wireframes**
  - o Homepage
  - o About Page
  - o Events List
  - o Event Details
  - o Projects/Showcase
  - o GSoC Organizations Browser
  - o Join Application Page
  - o Member Dashboard
  - o Admin Dashboard
  - o PR Tracking & Leaderboard Page

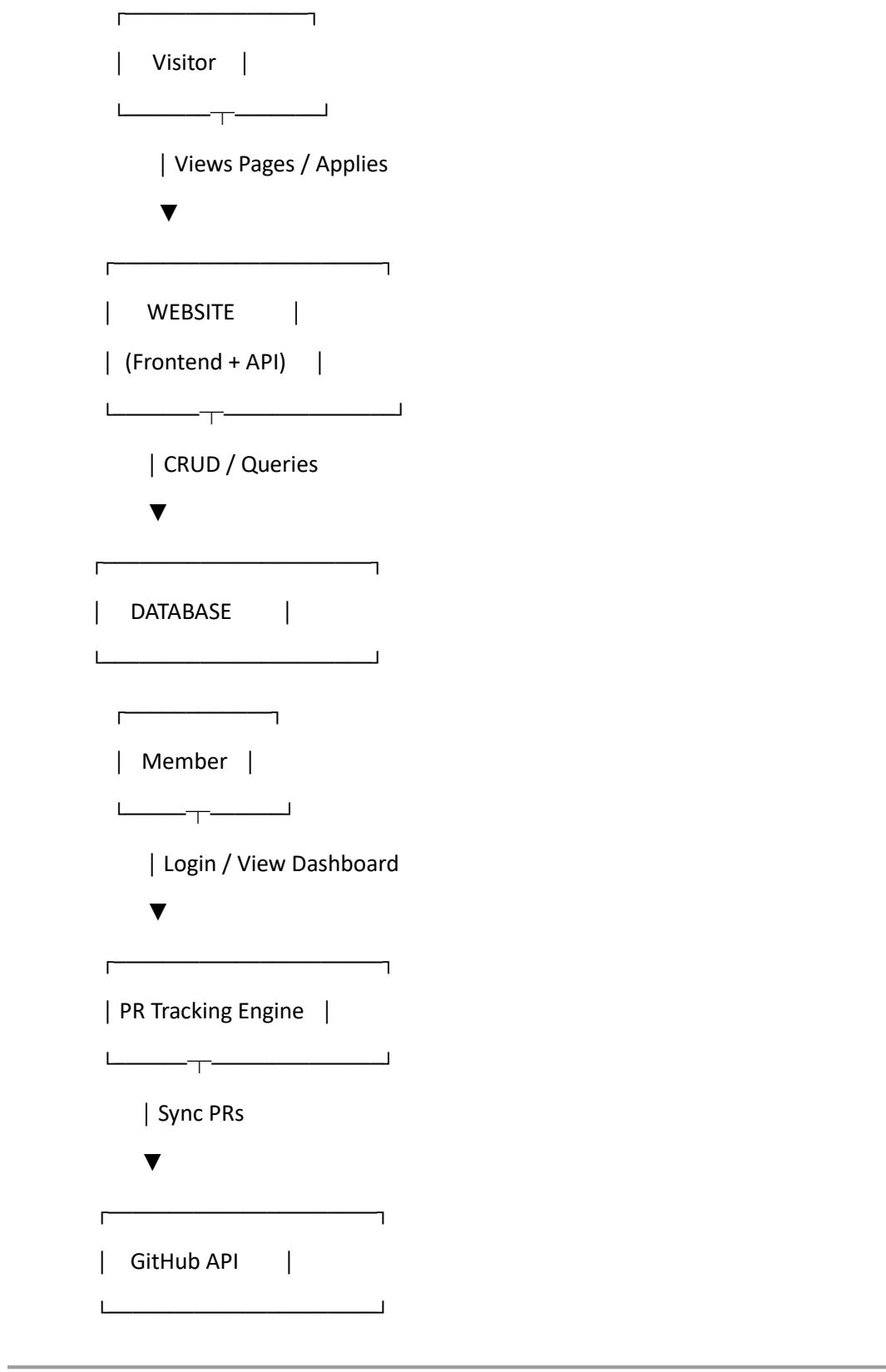
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#### **✓ 1. SYSTEM ARCHITECTURE DIAGRAM (ASCII)**





2. DATA FLOW DIAGRAM (DFD LEVEL-0)



3. DATA FLOW DIAGRAM (DFD LEVEL-1 — DETAILED)

(1) APPLICATION PROCESS

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Visitor ——fills form——► Application Module

Application Module ——stores——► DB (Applications)

Admin ——reviews——► Application Module ——updates——► DB

Admin ——accepts——► Auth Module —► Email/WhatsApp Invite

## (2) PR TRACKING SYSTEM

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Cron Job —► PR Sync Engine —► GitHub API

Github API —► PR Sync Engine —► DB (Contributions)

DB Change —► Notification Service —► Email + WhatsApp

Member Dashboard —► Reads from DB (PR Stats)

## (3) GSOC ORG EXPLORER

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User —► GSOC Browser Page

GSOC Browser —► GSOC API

GSOC API —► Data —► User UI

## (4) EVENT LEADERBOARD

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Admin Creates Event —► DB

PR Sync Engine —► Tag PRs by event time window

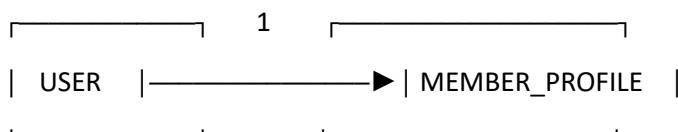
Leaderboard Engine —► Calculate Scores —► DB

User —► View Event Leaderboard

Admin —► Manual Adjustments

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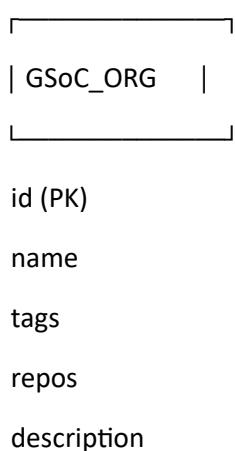
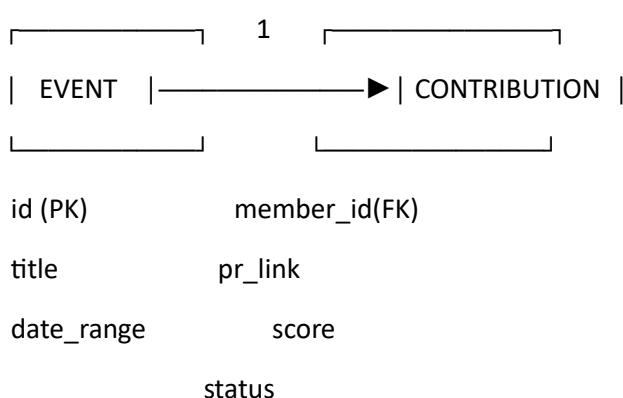
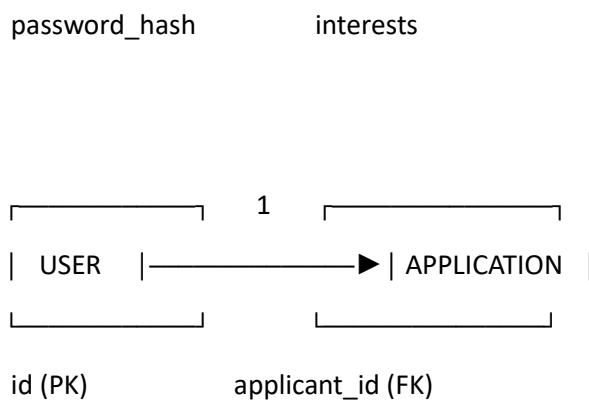
### 4. ER DIAGRAM (ASCII)



id (PK)                  member\_id (FK)

email                  github\_username

role                  branch, year

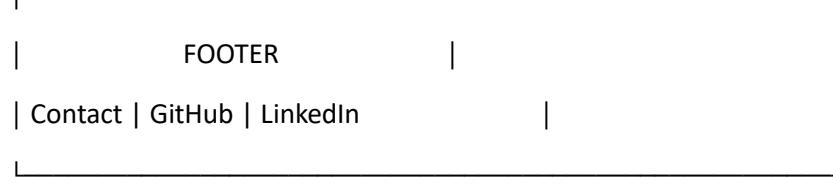
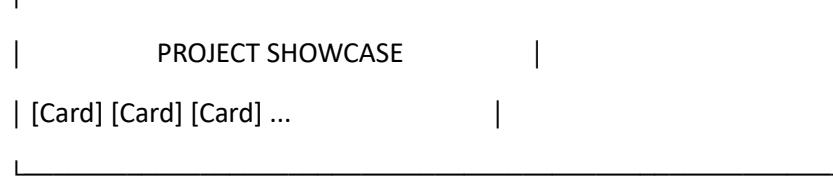
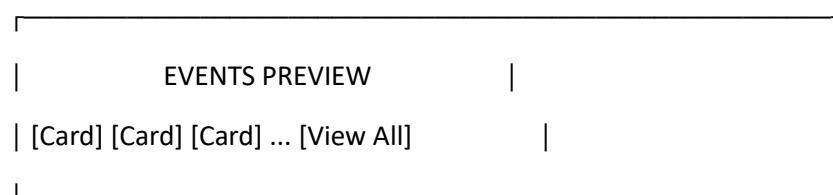
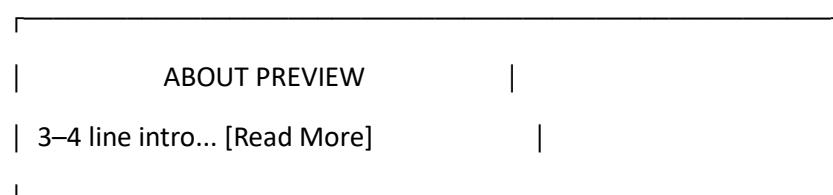
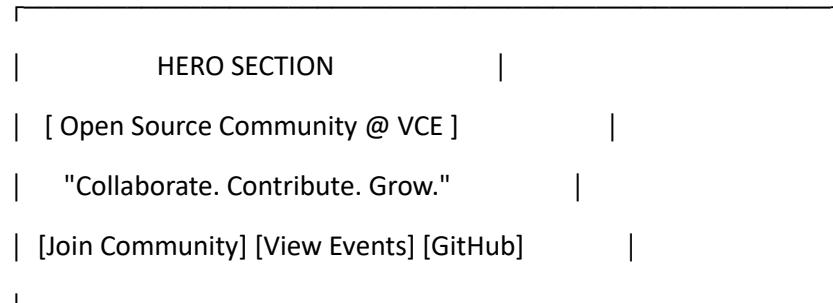



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5. FULL UI LAYOUT WIREFRAMES (ASCII)

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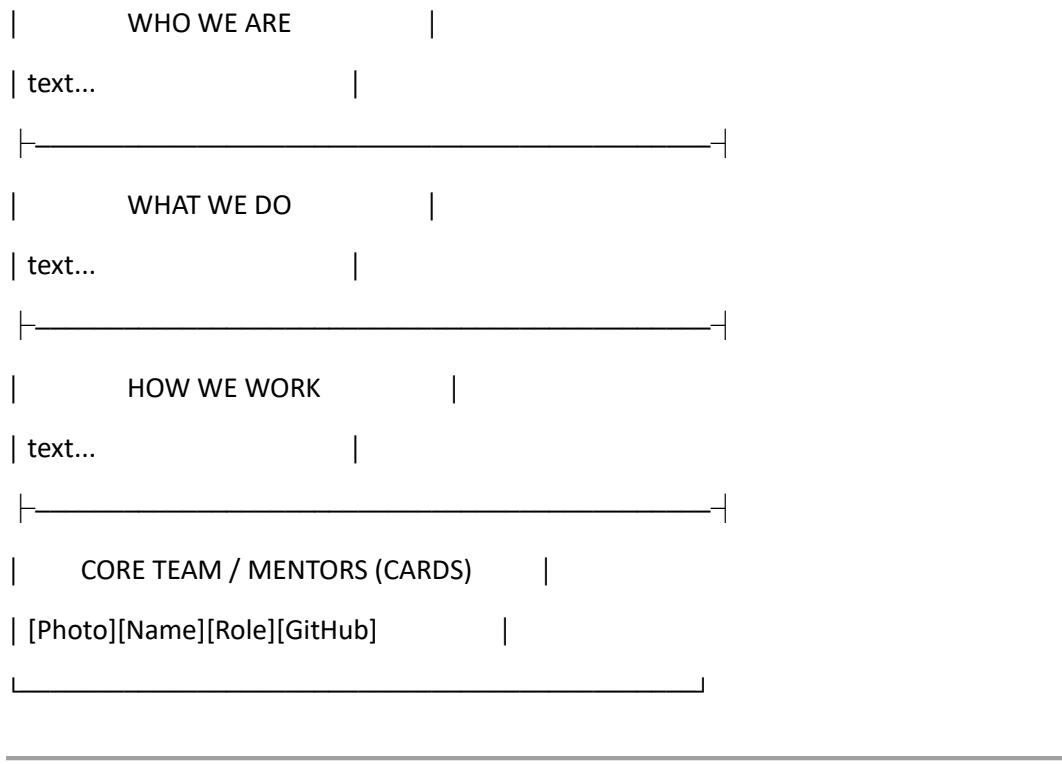
## 5.1 Homepage



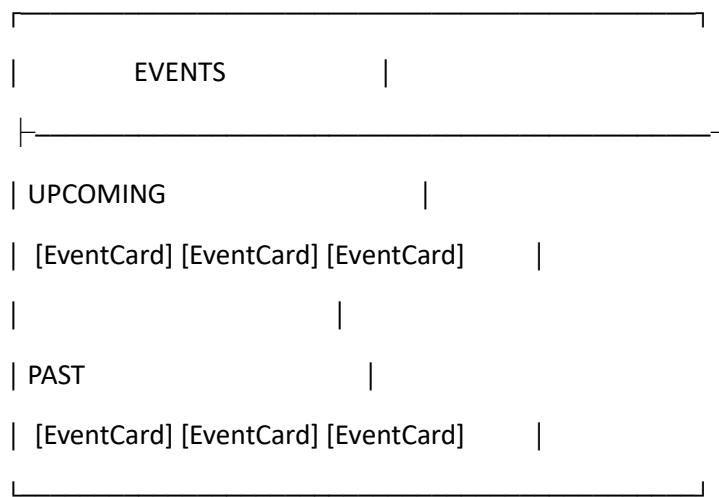
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## 5.2 About Page

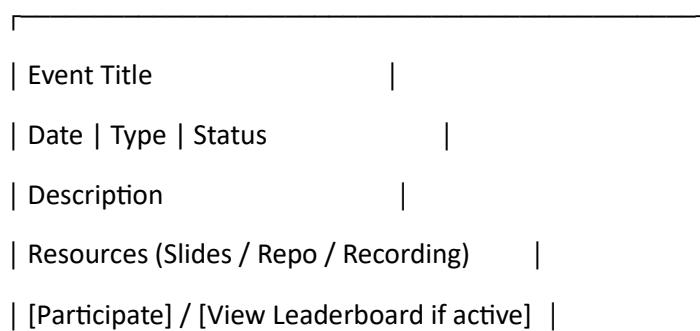




### 5.3 Events List



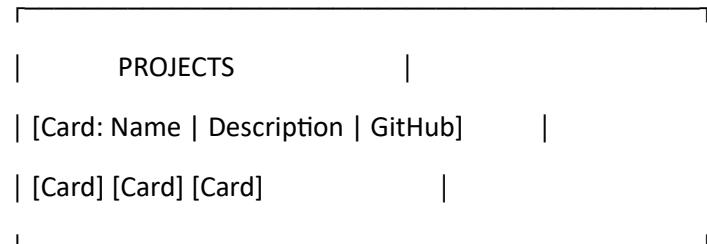
### 5.4 Event Details



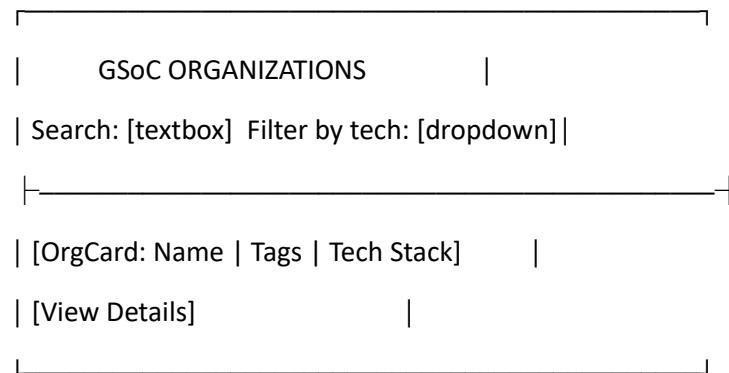


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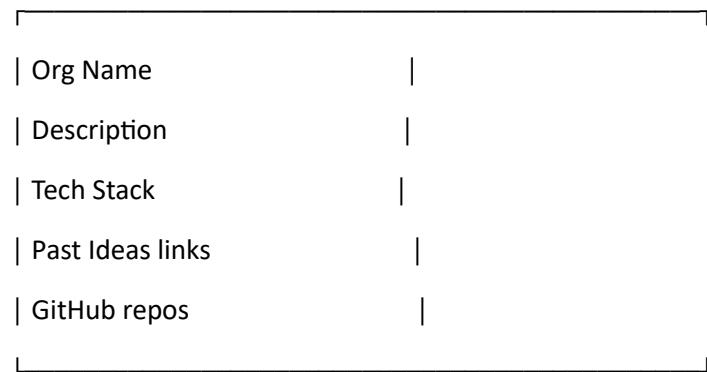
## 5.5 Projects / Showcase



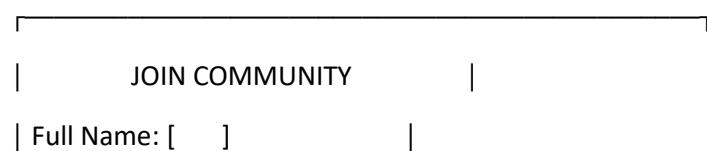
## 5.6 GSoC Organizations Browser



Org Details:



## 5.7 Join Application Form



Email: [ ]	
Roll No: [ ]	
Branch/Year: [ ]	
GitHub Username: [ ]	
Why do you want to join? [textbox]	
Areas of Interest: [multi-select]	
[Submit Application]	

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## 5.8 Member Dashboard

Welcome, Vishal!	
PR Summary:	
- Total PRs: XX	
- Merged PRs: XX	
- Issues: XX	
Latest Contributions: [List]	
Events Participation	
[Badge] [Badge]	
Announcements	
- New GSoC orgs listed...	
Tools	
[PR Quality Assistant] [GSoC Browser]	

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## 5.9 Admin Dashboard

ADMIN DASHBOARD	
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Pending Applications: 12	
Active Members: 74	
Total PRs: 420	
Events Running: 2	
[Manage Applications]	
[Manage Members]	
[Manage Events]	
[PR Analytics]	
[Content Editor]	
[GSoC Sync]	

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## 5.10 PR Tracking & Leaderboard Page

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EVENT LEADERBOARD					
Event: Bug Blitz					
Date Range: Nov 24–26					
Rank   Member   PRs   Merged   Score					
1   Vishal   14   10   120					
2   Rohan   11   7   90					
...					