

Vosc final System Requirements Document

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) 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.

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.

4.1.2 About Page

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

FR-8 Admin-editable content.

4.1.3 Events (Public View)

FR-9 Upcoming + Past events list.

FR-10 Event details including resources.

4.1.4 Projects / Showcase

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

4.1.5 Resources Page

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

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.

4.3 Authentication

FR-16 Member/Admin logins.

FR-17 Email + password.

FR-18 Forgot password flow.

FR-19 Access control based on role.

4.4 Member Area

4.4.1 Member Profile

FR-20 Profile with details.

FR-21 Editable GitHub and interests.

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.

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)

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
-

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
-

4.6.3 Manual Review Mode

FR-64 Admin can override score or leave notes.

FR-65 Final leaderboard must reflect manual admin changes.

4.7 Admin Area

4.7.1 Admin Dashboard

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

Applications Management

FR-27–30 Same as earlier.

Member Management

FR-31–32 Same as earlier.

Events Management

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

Content Management

FR-36 Edit homepage, about, resources.

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.

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

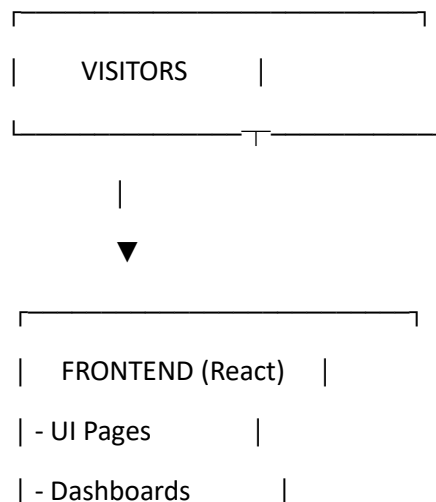
id, title, body, visible_to, created_at

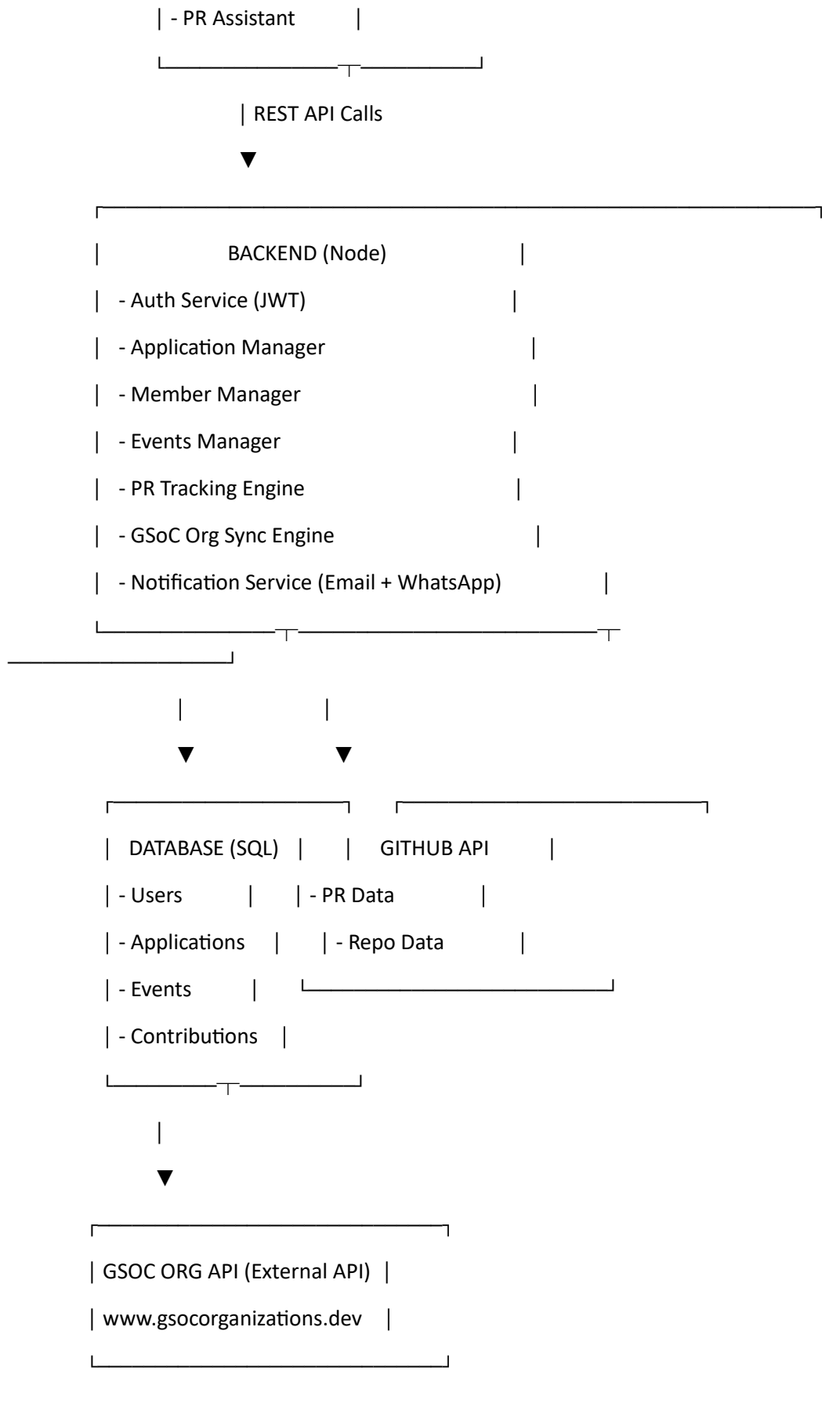
GSoC Org

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

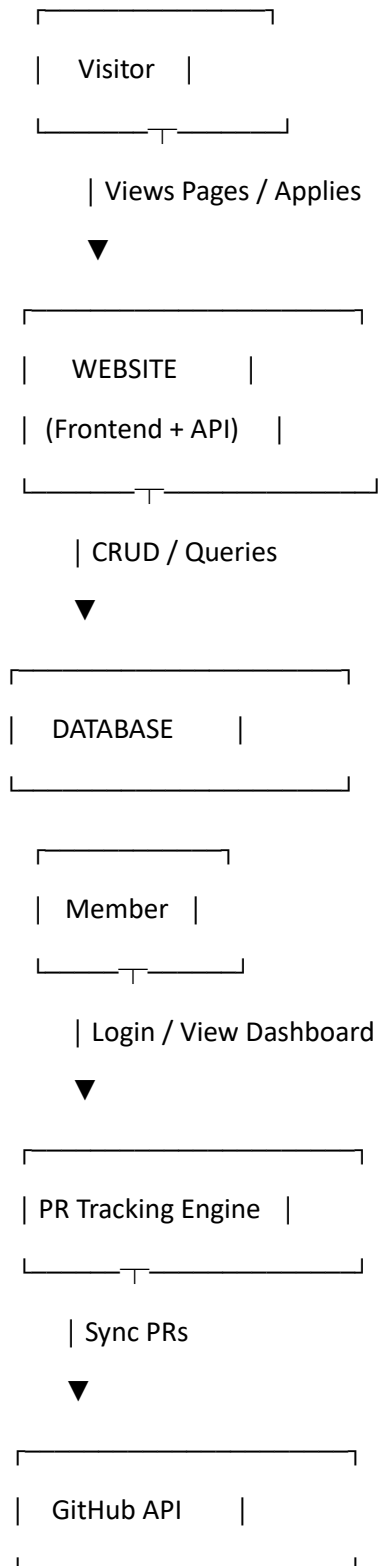
1. **System Architecture Diagram (ASCII)**
2. **DFD Level-0**
3. **DFD Level-1 (detailed)**
4. **ER Diagram (Conceptual)**
5. **Full UI Layout Wireframes**
 - Homepage
 - About Page
 - Events List
 - Event Details
 - Projects/Showcase
 - GSoC Organizations Browser
 - Join Application Page
 - Member Dashboard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

✅ 1. SYSTEM ARCHITECTURE DIAGRAM (ASCII)





✓ 2. DATA FLOW DIAGRAM (DFD LEVEL-0)



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

(1) APPLICATION PROCESS

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

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

User —► GSoC Browser Page

GSoC Browser —► GSOC API

GSOC API —► Data —► User UI

(4) EVENT LEADERBOARD

Admin Creates Event —► DB

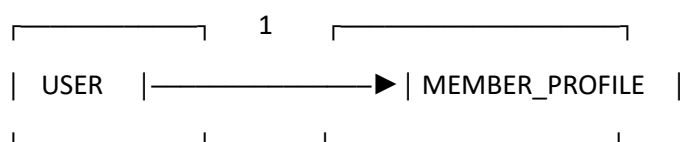
PR Sync Engine —► Tag PRs by event time window

Leaderboard Engine —► Calculate Scores —► DB

User —► View Event Leaderboard

Admin —► Manual Adjustments

✅ 4. ER DIAGRAM (ASCII)



id (PK)

member_id (FK)

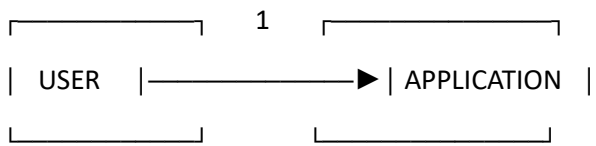
email

github_username

role

branch, year

password_hash interests

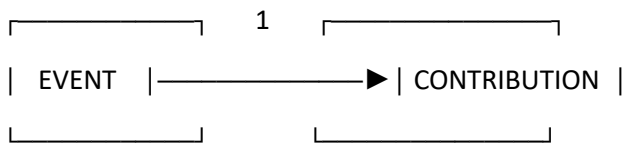


id (PK) applicant_id (FK)

status

reason

interview_details

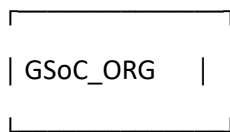


id (PK) member_id(FK)

title pr_link

date_range score

status



id (PK)

name

tags

repos

description

✅ 5. FULL UI LAYOUT WIREFRAMES (ASCII)

5.1 Homepage

HERO SECTION	
[Open Source Community @ VCE]	
"Collaborate. Contribute. Grow."	
[Join Community] [View Events] [GitHub]	

ABOUT PREVIEW	
3–4 line intro... [Read More]	

EVENTS PREVIEW	
[Card] [Card] [Card] ... [View All]	

PROJECT SHOWCASE	
[Card] [Card] [Card] ...	

FOOTER	
Contact GitHub LinkedIn	

5.2 About Page

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WHO WE ARE	
text...	
WHAT WE DO	
text...	
HOW WE WORK	
text...	
CORE TEAM / MENTORS (CARDS)	
[Photo][Name][Role][GitHub]	

5.3 Events List

EVENTS	
UPCOMING	
[EventCard] [EventCard] [EventCard]	
PAST	
[EventCard] [EventCard] [EventCard]	

5.4 Event Details

Event Title	
Date Type Status	
Description	
Resources (Slides / Repo / Recording)	
[Participate] / [View Leaderboard if active]	

5.5 Projects / Showcase

PROJECTS

[Card: Name | Description | GitHub]

[Card] [Card] [Card]

5.6 GSoC Organizations Browser

GSoC ORGANIZATIONS

Search: [textbox] Filter by tech: [dropdown]

[OrgCard: Name | Tags | Tech Stack]

[View Details]

Org Details:

Org Name

Description

Tech Stack

Past Ideas links

GitHub repos

5.7 Join Application Form

JOIN COMMUNITY

Full Name: []

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

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]	

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]	

5.10 PR Tracking & Leaderboard Page

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	
...	