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CSC 493

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Detailed Project Planning

The Berea College College African Student Association Website.

I.   **Background and Motivation**

As the current president of the African Students Association (ASA) Club at Berea
College, I hold a deeply-rooted commitment to fostering community, celebrating
diversity, and contributing positively to the student body. Berea College has ingrained in
its students the Great Commitments, one of which resonates profoundly with me: the
commitment to engage actively in promoting understanding and respect among all
people. This commitment has inspired me to conceptualize and embark on a project
aimed at creating a platform that celebrates our vibrant and diverse community –
developing a website for the ASA Club.

This project is not merely a way to enhance the online presence of the ASA Club but a
personal endeavor to give back to a community that has enriched my college experience.
The website will serve as a hub of information, interaction, and inclusivity, reflecting the
diverse tapestry of cultures, histories, and voices that make up the African continent and
its diaspora. It is my vision to create a space where members can share their stories, learn
from one another, and build a sense of unity and belonging.

I see this project as an opportunity to leverage my knowledge in technology and my
passion for community engagement to create a resource that will benefit ASA Club
members and the wider Berea College community. The website will not only showcase
the vibrancy of our club but also serve as a testament to the values of understanding and
respect that Berea College upholds. Through this initiative, I hope to leave a lasting

impact that will continue to support and inspire future generations of ASA Club members and Berea College students.

II.   Project Vision:

- ○ Create an Online Presence: Develop a user-friendly and visually appealing website to establish an online presence for the ASA Club.
- ○ Foster Community Engagement: Provide a platform for members to interact, share stories, and learn from one another.
- ○ Promote Events and Initiatives: Showcase upcoming events, initiatives, and accomplishments of the ASA Club.
- ○ Highlight Diversity and Inclusion: Celebrate the diversity of the ASA Club members and promote inclusivity.

III.   Project Scope

Website Development

- Designing and developing the website layout and structure.
- Creating content sections such as About Us, Events, Blog, Contact Us, and Member Login.
- Implementing interactive features like discussion forums, event RSVPs, and member profiles.
- Ensuring mobile responsiveness and cross-browser compatibility.
- Implementing SEO best practices.

Content Creation and Management

- Developing and curating content that highlights the club's mission, values, and activities.

- Managing and updating event information and club announcements.
- Overseeing member contributions to the blog and discussion forums.

User Experience and Accessibility

- Ensuring an intuitive and user-friendly interface.
- Implementing accessibility features to accommodate all users.

Testing and Quality Assurance

- Conducting thorough testing for functionality, usability, and performance.
- Addressing and resolving any identified issues or bugs.

Launch and Promotion

- Officially launching the website and promoting it to the club members and the broader Berea College community.
- Gathering feedback and making necessary adjustments post-launch.

IV. **Tentative Milestones and Timelines :**
- Project Kickoff: September 2023
- Design Phase and Front End Completion: September 2023
- Back End and Feature Integration: Late October 2023
- Testing and Quality Assurance: Early November
- Website Launch and Promotion: Mid - Late November

V. **Software Specification & Requirements**

The development of the African Students Association (ASA) Club Website requires a robust and versatile software environment that can handle various functionalities, user interactions, and content management. The following are the software specifications and requirements deemed necessary for this project:

Programming Languages:
- Frontend: HTML5, CSS3, and JavaScript (React or Angular for dynamic content)
- Backend: Python (Django or Flask), Node.js (Express), or PHP (Laravel)

Database Management System:
- Database: MySQL, PostgreSQL, or MongoDB for storing user data, posts, and event information

Content Management System (CMS):
- WordPress, Joomla, or Drupal for ease of content updates and management by non-technical users

Web Hosting & Domain:
- Secure and reliable hosting service (e.g., Bluehost, SiteGround)
- Domain name registration (preferably a .org or .edu domain)

User Authentication & Authorization:
- OAuth 2.0 or OpenID Connect for secure user authentication
- Role-based access control for different levels of user privileges (admin, member, guest)

Security:

- SSL/TLS encryption for secure data transmission
- Input validation and sanitation to prevent SQL injection and XSS attacks
- Regular security audits and updates to address vulnerabilities

User Interface & Experience (UI/UX):

- Responsive design for optimal viewing on various devices (desktop, tablet, mobile)
- Intuitive navigation and user-friendly interface
- Accessibility features to accommodate users with disabilities

SEO & Analytics:

- SEO-friendly URLs, meta tags, and sitemaps for better search engine ranking
- Integration with Google Analytics for tracking website traffic and user behavior

Email & Communication:

- SMTP integration for sending emails (e.g., notifications, newsletters)
- Contact form for direct communication with the club committee

Testing & Debugging:

- Cross-browser testing tools (e.g., BrowserStack, Selenium)
- Error logging and debugging utilities for backend development

Backup & Recovery:

- Regular automated backups of website data and content
- Disaster recovery plan in case of data loss or website downtime

Collaboration & Version Control:

- Git for version control, with a platform like GitHub, GitLab, or Bitbucket for collaborative development

Documentation:

- Comprehensive documentation of software architecture, codebase, and user guides for future maintenance and updates

Evaluation Method:
- Usability Testing: This method will be used to ensure that the website's user interface is intuitive and that the end-users can interact efficiently with the platform.
- Performance Testing: To ensure the site performs well under varying loads and the response times meet the expectations.
- Security Testing: Regular security audits and checks to ensure data protection and privacy.
- Functionality Testing: Ensuring that all features are working as intended and meeting specified requirements.

Dependency:
- Programming Languages and Database Management System: The choice of backend programming language depends heavily on the selected database system for compatibility and seamless integration.
- Web Hosting & Domain: Securing a domain and hosting is a prerequisite for deploying the website, dependent on the development progress.
- User Authentication & Authorization: This requirement is dependent on the backend language, database management, and frontend development for secure and integrated functionality.

Priority:
- Essential: Programming languages, Database Management System, Web Hosting & Domain, User Authentication & Authorization, Security, and UI/UX design.
- High: CMS, SEO & Analytics, Email & Communication, Multimedia, Testing & Debugging, and Backup & Recovery.
- Middle: Accessibility features, Image and Video Optimization, and Gallery features.
- Low/If Time Permits: Additional features like forums, member profiles, and advanced multimedia integration.

Requirement Revision History:

- Initial Draft: The initial requirement draft laid out the fundamental software specifications and requirements focusing on essential and high-priority items.
- Revisions: Subsequent revisions may include the addition or modification of requirements based on feedback or changes in project scope.
- Rationale for Revisions: Any revisions will be made with the aim of aligning the project more closely with the users' needs, ensuring technological feasibility, and adapting to any constraints or opportunities that arise during the development phase.

VI.   Software Design

A well-crafted software design allows for smoother development, enhanced functionality, and optimal user experience. Below is a comprehensive software design for the ASA Club website:

System Architecture:

Three-Tier Architecture:

Presentation Layer (Frontend): Handles the user interface, ensuring a responsive and intuitive experience across devices.

Logic Layer (Backend): Houses the application's logic, processes user requests, manages data, and communicates between the frontend and the database.

Data Layer (Database): Manages storage, retrieval, and modification of data.

Database Design:

Relational Database Management System (RDBMS):

Tables:

- Users: To store member information (Name, Email, Role, Profile Picture, etc.)
- Events: Details of upcoming and past events (Event Name, Date, Description, Images, etc.)
- Posts: Blog or news articles, updates, announcements.
- Comments: Comments associated with posts or events.
- Media: Catalog of images, videos, and other media.

Relationships:

- One-to-many relationships between Users and Posts (A user can create multiple posts).
- Many-to-many relationship between Users and Events (For event RSVPs).
- One-to-many relationship between Posts and Comments.

Frontend Design:

- Home Page: Highlights upcoming events, recent posts, member spotlight, and quick links.
- Events Page: Calendar view, list of events, detailed individual event pages.
- Blog/News Page: List of articles, filters by category, and search functionality.
- Media Gallery: Thumbnails of photos and videos, categorized by event.
- About Page: History of ASA, mission statement, and committee members.
- Contact Page: Contact form, social media links, and location map.
- Member Portal: User profiles, event RSVPs, and personal notifications.

Backend Design:

- Server: RESTful API endpoints to handle CRUD operations for posts, events, users, and comments.
- Middleware: Authentication and authorization checks, input validation, error handling, and request processing.
- Business Logic: Data processing, event scheduling, notification sending, and other core functionalities.

Security Protocols:

- Authentication: Secure login with JWT or session-based authentication.
- Authorization: Role-based permissions, ensuring admins can edit/add events and posts, while members can RSVP and comment.
- Data Encryption: All sensitive data (e.g., passwords) stored encrypted using hashing algorithms.
- Input Validation: Ensure all user inputs are validated to prevent malicious attacks like SQL injections.

User Experience (UX) and User Interface (UI) Design:

- Navigation: Clear and intuitive navigation menus, breadcrumbs for page hierarchy.
- Responsiveness: Fluid grid layouts to ensure the site looks good on all devices.
- Themes & Styles: Incorporate cultural motifs and colors representing the African continent for a unique identity.
- Accessibility: Design elements like high contrast, alt text for images, and keyboard navigability for accessibility.

Performance Optimizations:

- Caching: Implement caching strategies to reduce server load and increase speed.
- Compression: Use tools like GZIP to compress site assets, improving load times.
- Image & Video Optimization: Use modern formats (like WebP) and optimize media for faster loading without sacrificing quality.

Integration & Extension:

- API Integrations: Integrate third-party services for email notifications, calendars, or social media sharing.
- Plugins: Incorporate plugins or extensions for added functionalities like event countdowns or interactive maps.

This design serves as a blueprint for the ASA Club website, aiming to provide members with a seamless and enriching online experience while capturing the vibrant essence of the African Students Association at Berea College.