

Software Requirement Specification for Apex Automation

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Project Title: Apex Automation

Component	Tech Stack
Backend	Express JS, Node JS
Frontend	React JS
Database	MongoDB
API	RESTful API

S.No	Phase	Status
1.	Planning and Requirement Gathering	In Progress ▾
2.	Design and UI/UX Prototyping	Not Initiated ▾
3.	Database Design and Implementation	Not Initiated ▾
4.	Backend Development	Not Initiated ▾
5.	Integration and Testing	Not Initiated ▾

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1. System Description:

Apex Automation is a comprehensive web-based application designed to streamline college operations, including faculty management, club activities, departmental functions, and maintenance. Utilizing the MERN stack, it offers a robust, scalable platform for efficient academic and administrative workflows, integrating seamlessly with existing systems for user management, scheduling, event management, and maintenance requests.

2. System Features:

2.1 User Management:

- Ensure faculty members can register and log in securely using their email and password.
- Implement different access levels for faculty members, allowing for specific permissions and administrative capabilities.
- Integrate with third-party authentication providers like Google, allowing faculty members to log in using their existing accounts.

2.2 Approval Process

- Faculty members fill out an online form with details of their apex request, including the amount and purpose.

- Submitted requests are sent to the HOD for initial approval. After the HOD approves, the management team reviews the requests.
- Requests over 5000 are forwarded to the Chairman for final approval, while the management team approves requests of 5000 or less.

2.3 Notifications and Alerts

- Email notifications:
 - At every stage, the management group, the chairman, the HOD, and the faculty receive automated email alerts.
- App notification(API):
 - Real-time notifications within the application to keep users informed about the status of their requests.

2.4 Financial Tracking:

- Total Amount Calculation:
 - The system calculates the total amount requested over a specified period.
- Time Period Records:
 - Generate reports that summarize financial requests over yearly, monthly, and weekly time frames.
 - Visual representation (charts/graphs) for better understanding.

2.5 Security Features:

- Data Encryption:
 - Encrypt sensitive data both during transmission and storage.
- Audit Logs:
 - Record all changes made to requests, including who made the change and when.
- User Authentication:
 - Role-based access control to ensure only authorized users can access certain features.

2.6 Data Management and Reporting:

- CRUD Operations:
 - Create, read, update, and delete operations for managing apex requests and related data.
- Data Validation:
 - Ensure accuracy and integrity of data during form submissions.

2.7 Dashboard and Tracking:

- Faculty Dashboard:
 - Monitor the status of submitted requests and review annual, monthly, and weekly financial records.
- HOD Dashboard:

- Oversee and manage departmental requests, with access to comprehensive yearly, monthly, and weekly records.
- Management Dashboard:
 - Access and manage all organizational requests, with detailed insights into yearly, monthly, and weekly financial summaries.
- Chairman Dashboard:
 - Review and approve requests exceeding 5,000, with full access to all apex requests and detailed financial records, including yearly, monthly, and weekly summaries.

3. Workflow and Management:

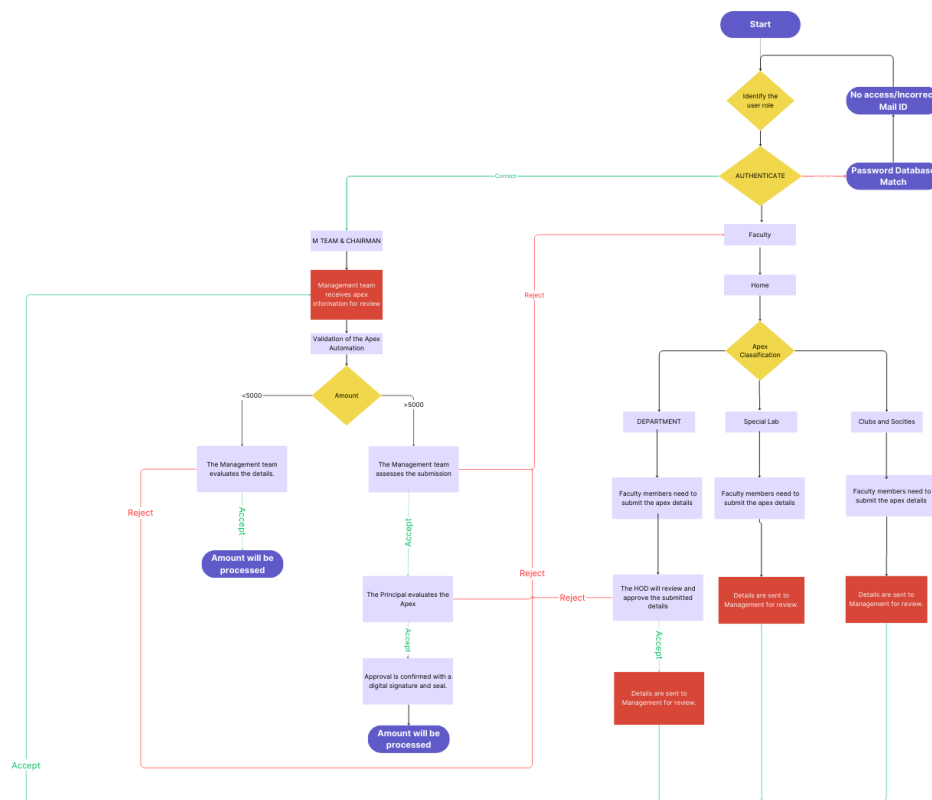


Fig. 3.1: Workflow Chart

3.1 System Workflow:

- The system identifies the user's role to determine if the user is faculty or accessing from home.
- The system checks the entered password against the database. If the password matches, access is granted and the user proceeds to the next step; otherwise, access is denied and the process ends.
- The user, whether a faculty member or accessing from home, proceeds to the apex classification.
- The apex details are classified into categories such as Department, Special Lab, or Clubs and Societies to ensure they are directed to the appropriate reviewing authority.
- Faculty submits apex details; HOD reviews and either approves or rejects, then forwards approved details to management.
- Faculty members submit apex details, which are sent directly to the management team for review. (Applicable to Clubs and Societies as well.)
- The management team reviews and validates the apex information to ensure accuracy and completeness.
- The management team reviews the apex amount. If under 5,000, they decide. If it is over 5,000, the Principal reviews it. Approved amounts are processed; rejected submissions end the process.
- Approvals allow continuation; rejections end the process. The process concludes once the amount is processed, following all approvals.

4. System Users:

- **Faculty Members:** Submit apex requests, track status, and view their request records.
- **HODs:** Approve requests, manage departmental requests, and access departmental records.
- **Management Team:** Approve requests ≤ 5000 , forward > 5000 to Chairman, and view all records.
- **Chairman:** Approve requests > 5000 , and access all requests and detailed records.
- **System Administrator:** Manage roles, monitor performance, and ensure data security

5. Assumptions and Dependencies:

- Users have correct login credentials, and the authentication database is reliable.
- The system correctly assigns and recognizes user roles, ensuring appropriate workflow routing.
- Faculty submits apex details accurately and on time, and HOD and management teams review promptly.
- The system's digital signature and seal functionalities work properly, handling rejections and approvals effectively.

6. Functional Requirements:

6.1 User Authentication:

- Secure registration and login for faculty, HODs, management teams, and the chairman.
- Role-based access control with specific permissions for each user type.
- OAuth integration for login with third-party services like Google .

6.2 Apex Request Management:

- Faculty members submit apex requests, including details such as amount and purpose. The system should validate input and ensure all necessary information is provided.
- HODs review requests, with the ability to approve or reject them. Requests under ₹5000 are forwarded to the management team, while requests above ₹5000 are sent to the Chairman.

6.3 Notifications and Alerts:

- Email Notifications:
 - Automated emails are sent to the management group, chairman, HOD, and faculty at each stage of the request process to keep all parties informed.
- App Notifications (API):

- Real-time in-app notifications update users instantly about their request statuses, ensuring they receive immediate information and can act promptly.

6.4 Approval Workflow:

- **Automated Forwarding:** Upon HOD approval, the system automatically forwards requests based on the amount. Implement workflows using job queues or similar mechanisms.
- **Notifications:** Send notifications at each stage—submission, approval, and rejection—through email or in-app alerts. Utilize a notification service or library to handle this.

6.5 Dashboard and Tracking:

- **Faculty Dashboard:** Display a list of submitted requests with statuses and allow faculty to view detailed records. Include filters for yearly, monthly, and weekly views.
- **HOD Dashboard:** Provide tools to manage and review departmental requests, with access to departmental records and summaries.
- **Management Dashboard:** Offer an overview of all requests with management capabilities and access to comprehensive records.

- Chairman Dashboard: Enable review and approval of high-value requests, with access to all records and summaries.

6.6 Security Features:

- Data Encryption: Use HTTPS and encryption for data in transit and at rest. Implement secure data storage practices.
- Audit Logs: Maintain logs of all system activities to track changes and access.
- Rate Limiting: Prevent abuse by implementing rate limits on requests to the system.

6.7 . Data Management and Reporting:

- CRUD Operations: Allow creation, reading, updating, and deletion of requests. Implement database schemas and APIs to handle these operations.
- Calculations and Reports: Calculate totals and display records by year, month, and week. Automate report generation and provide export options (PDF, Excel).