DBMS ASSIGNMENT

Employee Communication Portal for sharing newsletters and announcements

Domain Description and Relevance:

The domain revolves around an employee communication portal designed to facilitate internal communication within an organization. It serves as a centralized platform for sharing newsletters, announcements, updates, and other relevant information with employees.

Content Sharing: The portal allows administrators and authorized users to publish and distribute newsletters, announcements, and other communication materials.

User Engagement: Employees can interact with the content by providing feedback, comments, likes, and subscriptions to specific categories of information.

Content Management: Administrators can manage and organize content, categorize information, and track user engagement metrics to assess the effectiveness of communication strategies.

The employee communication portal addresses the following needs and objectives within an organization:

Enhanced Internal Communication: In today's dynamic business environment, effective communication is crucial for fostering collaboration, alignment, and engagement among employees. The portal provides a centralized platform for disseminating timely and relevant information to all stakeholders.

Employee Engagement and Participation: By allowing employees to interact with content through feedback, comments, likes, and subscriptions, the portal encourages active participation and engagement, fostering a sense of belonging and involvement within the organization.

Transparency and Information Sharing: The portal promotes transparency by ensuring that important updates, announcements, and company news are accessible to all employees, regardless of their location or department.

Streamlined Communication Processes: By centralizing communication channels and streamlining the dissemination of information, the portal reduces reliance on traditional communication methods such as emails, memos, and meetings, thereby saving time and resources.

Alignment with Organizational Goals: Effective internal communication is aligned with organizational goals and objectives, helping to create a shared vision, promote cultural values, and drive employee performance and productivity.

Background Study and Requirement Analysis:

The background study for the domain involved gaining insights into corporate communication practices, employee engagement strategies, and the requirements of a communication portal. It included an analysis of user needs, functional requirements, non-functional requirements, and data management considerations.

Organizational Structure: The organization consists of multiple departments and teams spread across different geographical locations. The hierarchy includes executives, managers, and employees at various levels.
Existing Communication Channels: The organization primarily relies on emails, bulletin boards, and occasional meetings for internal communication. However, these channels lack efficiency and fail to reach all employees effectively.
Employee Demographics: The workforce comprises employees from diverse backgrounds, including different age groups, technical proficiencies, and job roles. There is a need for a communication portal that caters to the diverse needs of all employees.
Industry Trends: Trends in internal communication highlight the importance of digital workplace technologies, interactive platforms, and personalized content delivery to enhance employee engagement and productivity.
Stakeholder Identification: Key stakeholders include executives, department heads, HR personnel, and employees from various departments. Each stakeholder group has unique requirements and expectations from the communication portal.

Functional Requirements:

- Content Publishing: The portal should allow easy creation, editing, and publishing of newsletters, announcements, and updates.
- User Authentication: Secure login mechanisms and role-based access control are essential to ensure data security and user privacy.
- Feedback Mechanisms: Employees should have the ability to provide comments, and likes on published content to foster engagement and collaboration.
- Subscription Management: Users should be able to subscribe to specific content categories based on their interests and preferences.
- Search and Navigation: Intuitive search functionality and navigation features are crucial for users to find relevant information quickly and efficiently.
- Analytics and Reporting: Tools for tracking user engagement metrics, content performance, and generating reports to assess the effectiveness of communication strategies.

Non-functional Requirements:

- Security: The portal must implement robust security measures to safeguard sensitive data and prevent unauthorized access or data breaches.
- Scalability: The system should be scalable to accommodate growth in users, content volume, and system usage without compromising performance.
- Reliability: High availability and reliability are critical to ensure uninterrupted access to the portal and minimize downtime.
- Usability: The portal should feature an intuitive user interface, responsive design, and accessibility features to enhance user experience and adoption.
- Integration: Seamless integration with existing systems, such as HR databases and email servers, is necessary to streamline workflows and data exchange.

Regulatory and Compliance Requirements: Compliance with data protection regulations, privacy laws, and industry standards governing the handling of sensitive information and personal data is imperative to maintain trust and integrity.

User Acceptance Testing (UAT): User acceptance testing will be conducted to gather feedback, identify usability issues, and ensure that the portal meets the specified requirements before deployment.

Tables:

1.Users: Stores user information including full name, username, password, and email.

- user_id: VARCHAR(20) - PRIMARY KEY,NOT NULL uniquely identifying each user.
- role_id:VARCHAR(20) - FOREIGN KEY,NOT NULL,refers to the role in Roles table.
- full_name: VARCHAR(50) - NOT NULL,Stores the full name of the user.
- username: VARCHAR(50) - NOT NULL,Stores the username of the user.
- password: VARCHAR(20) - NOT NULL,Stores the password of the user.
- email: VARCHAR(100) - NOT NULL,Stores the email address of the user.

2.Roles: Defines various roles within the system, such as admin, user, author, etc.

- role_id: VARCHAR(20) - PRIMARY KEY,NOT NULL uniquely identifying each role.
- role_name: VARCHAR(50) - NOT NULL,Stores the role name of the user-(employee,creator,manager..)

3.Contents: Stores actual content items with attributes like title, content, author, and timestamps.

- content_id: VARCHAR(20) - PRIMARY KEY,NOT NULL uniquely identifying each content.
- title: VARCHAR(255) - NOT NULL,Stores the title of content.

- content: VARCHAR(255) - NOT NULL,Stores the content text.
- created_by: VARCHAR(20) - NOT NULL,FOREIGN KEY refers to the user in the Users table who created the content.
- content_type:VARCHAR(50),NOT NULL,content type-(newsletter,announcement).
- category_id:VARCHAR(20),NOT NULL,refers to category in Category table.
- created_at: DATETIME - NOT NULL,Stores the date and time of content creation.
- last_modified:DATETIME - NOT NULL,Stores the date and time of content creation.

4.Feedback: Captures feedback provided by users regarding content.

- feedback_id: VARCHAR(20) - PRIMARY KEY uniquely identifying each feedback entry.
- user_id: VARCHAR(20) - FOREIGN KEY referencing the Users table, indicating the user who provided the feedback.
- feedback_text: VARCHAR(255) - Stores the text of the feedback.
- feedback_time: DATETIME - Indicates the timestamp when the feedback was provided.

4.Comments: Stores comments made by users on content items.

- comment_id: VARCHAR(20) - PRIMARY KEY,NOT NULL uniquely identifying each comment.
- content_id: VARCHAR(20) - FOREIGN KEY,NOT NULLreferencing the Contents table, indicating the content item to which the comment is associated.
- user_id: VARCHAR(20) - FOREIGN KEY, referencing the user in Users table.
- comment_text: VARCHAR(255) - Stores the text of the comment.
- commented_at: DATETIME - Indicates the timestamp when the comment was made.
- last_modified: DATETIME - Indicates the timestamp when the comment was last modified.

5.Category: Lists different content categories.

- category_id: VARCHAR(20) - PRIMARY KEY,NOT NULL ,uniquely identifying each category.
- category_name: VARCHAR(50) - Describes the name of the category.

6.Likes: Records likes given by users to content items.

- like_id: VARCHAR(20) - PRIMARY KEY,NOT NULL uniquely identifying each like entry.
- content_id: VARCHAR(20) -FOREIGN KEY,NOT NULL referencing the Contents table, indicating the content item to which the like is associated.

- user__id: VARCHAR(20) - FOREIGN KEY,NOT NULL referencing the Users table, indicating the user.
- liked_at: DATETIME - Indicates the timestamp when the like was made.

7.Subscriptions: Manages user subscriptions to content categories.

- subscription_id: VARCHAR(20) - PRIMARY KEY,NOT NULL uniquely identifying each subscription entry.
- user_id: VARCHAR(20) - FOREIGN KEY,NOT NULL referencing the user in Users table.
- category_id: VARCHAR(20) - FOREIGN KEY,NOT NULL referencing the Category table, indicating the category to which the subscription is made.
- subscription_status_id: VARCHAR(20) - FOREIGN KEY,NOT NULL referencing the SubscriptionStatus table, indicating the status of the subscription.
- subscribed_at: DATETIME - Indicates the timestamp when the subscription was made.

Normalization Process:

The normalization process involves organizing the database tables to minimize redundancy and dependency issues. The steps taken to achieve normalization include:

- Ensured each table represents a single entity or relationship.
- Removing redundant data and organizing it into separate tables.
- Establishing relationships between tables using foreign keys.
- Applying appropriate data types and constraints to ensure data integrity and consistency.

First Normal Form (1NF):

- Ensured that each column contains atomic values, and there are no repeating groups or arrays within a row.
- Reviewed each table to ensure that each column holds atomic values.
- Ensured that there are no repeating groups or multi-valued attributes within a row.

Second Normal Form (2NF):

- Each non-key attribute is fully functionally dependent on the entire primary key, and there are no partial dependencies.
- Examined each table to identify partial dependencies.
- Ensured that each non-key attribute is functionally dependent on the entire primary key.

Third Normal Form (3NF):

- Identified the transitive dependencies in the tables.
- Separated attributes causing transitive dependencies into separate tables.
- Ensured that each table represents a single entity, and each non-key attribute depends only on the primary key.