



Formerly DA-IICT

Converge

SOFTWARE ENGINEERING(IT-314)

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Group - 23

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Converge - Object Design Document

Group-23

1. User Management

- User

- Attributes

- username: String (unique)
 - email: EmailField (unique)
 - firstName: String
 - lastName: String
 - password: String (hashed)
 - date_joined: DateTimeField

- Methods

- create_user(username, email, password, firstName, lastName) – Creates new user account
 - authenticate(username, password) – Authenticates user login
 - generate_token(user_id) – Creates session token
 - validate_token(token) – Verifies token validity
 - logout(token) – Invalidates session token

- EmailOTP

- Attributes

- user: String (email reference)
 - otp: String (verification code)
 - purpose: String (register/password_reset)
 - created_at: DateTimeField
 - is_used: BooleanField

- Methods

- generate_otp(email, purpose) – Creates OTP
 - validate_otp(email, otp, purpose) – Verifies OTP
 - mark_as_used() – Marks OTP as consumed

2. Project Management

- Project

- Attributes

- name: String (required)
 - description: String
 - team_leader: ReferenceField(User)
 - team_members: ListField(DictField())
 - github_imported: BooleanField
 - github_repo_name: String
 - github_repo_url: String
 - created_at: DateTimeField
 - calendar_id: String

- Methods

- `create_project(name, description, team_leader)` -create project
- `add_members(member_list)` -add members in project
- `remove_members(member_list)` - remove member from project
- `import_github_repo(repo_url, token)` - import github repo in project
- `delete_project()`- delete project

3. Task Management

- Task

- Attributes

- `name: String (required)`
 - `description: String`
 - `project: ReferenceField(Project)`
 - `assigned_to: ListField(ReferenceField(User))`
 - `status: String (pending, in_progress, approval_pending, completed)`
 - `due_date: DateTimeField`
 - `dependencies: ListField(ReferenceField(Task))`
 - `related_files: ListField(ReferenceField(File))`
 - `created_at: DateTimeField`

- Methods

- `create_task(name, project, assigned_to)` – create a task
 - `update_status(new_status)` – update status
 - `add_dependency(task)` – add dependency
 - `remove_dependency(task_id)` - remove dependency
 - `approve_task()` - approve task
 - `reject_task()` - remove task

4. Communication System

- GroupChat

- Attributes

- `name: String (unique)`
 - `admin: String (user ID)`
 - `participants: ListField(StringField())`
 - `project_id: ObjectIdField`
 - `created_at: DateTimeField`

- Methods

- `create_group_chat(name, admin, participants)`-create group chat

- GroupMessage

- Attributes

- `chat: ReferenceField(GroupChat)`
 - `sender: String (user ID)`
 - `content: String`
 - `timestamp: DateTimeField`
 - `file_url: String (optional)`
 - `file_type: String`

- Methods
 - send_message(chat, sender, content) - send message
 - send_media_message(chat, sender, file_data) - send file in chat
 - delete_message() - delete message
- IndividualChat
 - Attributes
 - participants: ListField(StringField()) (2 users)
 - created_at: DateTimeField
 - project_id: String
 - Methods
 - create_individual_chat(participants) - create individual chat
 - send_message(sender,content) - send message

5. File Management

- File
 - Attributes
 - name: String (required)
 - s3_key: String
 - file_size: IntField
 - content_type: String
 - uploaded_by: ReferenceField(User)
 - project: ReferenceField(Project)
 - uploaded_at: DateTimeField
 - Methods
 - upload_file(file_data, project, user) -upload file
 - generate_download_url() -generate download url to download file
 - delete_file()- delete selected file

6. Meeting

- Meeting
 - Attributes
 - project: ReferenceField(Project)
 - title: String (required)
 - start_time: DateTimeField
 - end_time: DateTimeField
 - created_by: ReferenceField(User)
 - attendees: ListField(StringField())
 - google_event_id: String
 - Methods
 - create_meeting(project, title, start_time, end_time) - create meeting
 - update_meeting_details(title, start_time, end_time) - update meeting details
 - cancel_meeting() - cancel meeting
 - send_meeting_invites() -send meeting invitation

7. AI Integration

- AIChat Attributes:

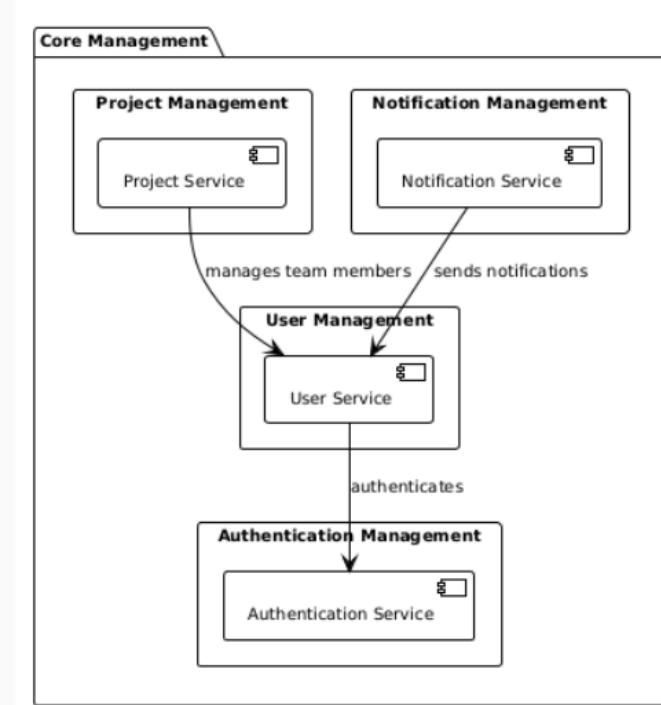
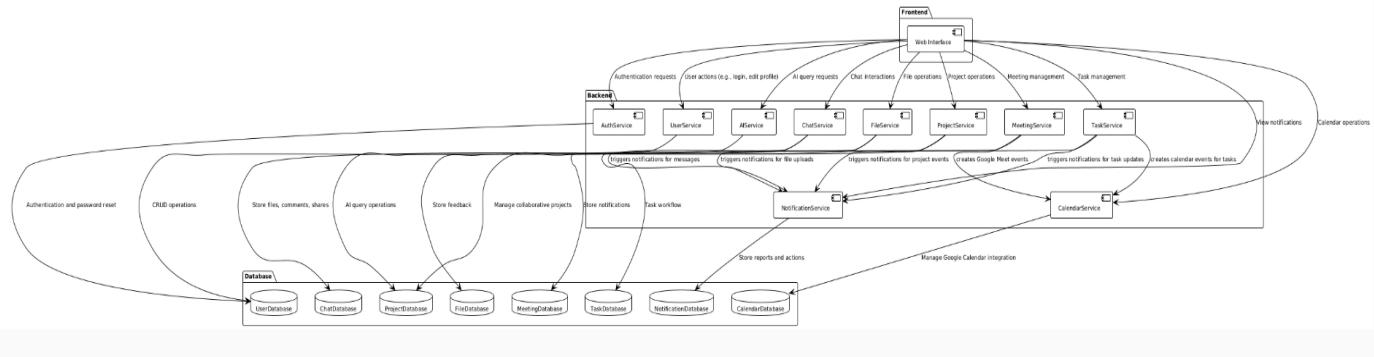
- Attributes

- title: string, required
 - user: string (user id), required
 - project_id: string, optional
 - created_at: datetime
 - updated_at: datetime

- Methods

- ai_chats (GET): list chats for authenticated user; optional filter by project_id
 - ai_chats (POST): create a new chat (title, optional project_id)
 - ai_chat_messages (GET): list messages for a chat (ownership check)
 - ai_chat_create_message (POST): create a message in a chat (sender, content, context)

Component Diagrams :



Object Diagram:

Object Diagram

