OBJECT DESIGN
Group-17
Coding Learning Platform

Class: User

Represents a registered platform user with login, profile, and verification features.

Attributes:
- _id: ObjectId name: string
- em ail: string
- password: string
- githubId: string
- googleId: string
- isAccountVerified: boolean
- otpCode: string
- otpExpiry: Date
- resetToken: string
- resetExpiry: Date
- createdAt: Date
- updatedAt: Date

Methods:
- register(name, email, password): User   Creates a new user account.
- login(email, password): AuthToken   Validates credentials.
- logout():void   safely logs out the user.
- verifyAccount(token): boolean   Verifies user email account.
- initiateResetPassword(email): void   Sends reset password token.
- resetPassword(newPassword, resetToken): void   Resets password using token.
- updateProfile(userDetails): void   Updates name, email, photo etc.

Class: Roadmap

Stores a user's generated roadmap with modules, topics, and metadata.

Attributes:

- email: String (owner of the roadmap).
- createdAt: Date.
- RoadmapId: number
- Topic: string
- Level: string
- articles[]: object
- Videos[]: links
- isPinned: bool

Methods:
- updateRoadmap(roadmapData): void
- getSubtopic(moduleId, subtopicId): Subtopic
- pinRoadmap(roadmapId): void
- Search()

Class: Module

Represents one module or chapter in the roadmap.

Attributes:
- moduleId: String
- title: String
- description: String
- subtopics: List<Subtopic>

Methods:
- getSubtopic(subtopicId): Subtopic
- addSubtopic(subtopic): void
- removeSubtopic(subtopicId): void

Class: Subtopic

Represents a single subtopic inside a module.

Attributes:
- subtopicId: String
- roadmapID: string
- summary: String
- content: Object (videos, quizzes, articles)

Methods:
- updateContent(content)
- attachQuiz(quiz)
- lookupResources(resources)
- saveProgress()
- fetchProgress()
- generateSubtopicSummary(roadmapID, suntopicID)
- fetchSubtopicExplanation()

Class: Note

Purpose: Represents user notes attached to a roadmap subtopic.

Attributes:
- userId: ObjectId
- roadmapId: ObjectId
- moduleId: String
- subtopicId: String
- content: String

Methods:
- edit(content): void
- delete(): void
- download(): void

Class: Quiz

Attributes:
- roadmapId: String
- chapterId: String
- subtopicId: String
- Questions: object

Methods:
- generateQuiz(roadmapID, subtopicID, chapterID)

- fetchQuiz(roadmapID, suntopicID, chapterID)

Class : Chat

Represents a single chat inside the ai chat bot

Attributes:
- Id: number
- Title: string
- Messages: text
- userEmail: string
- roadmapID: string
- moduleID: string
- createdAt: date
- updatedAt: date

Methods:

- createChat()
- findByID()
- renameChat()
- deleteChat()