



International School

Capstone Project 2

CMU-SE 451

Database Design

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Intelligence IT Job Finding - The Recruitment System support with Chatbot

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PROJECT INFORMATION

Project acronym	Intelligence IT Job Finding		
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REVISION HISTORY

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1.0	20/03/2024	Update Database Design Document	Dat, Nguyen Thanh	

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1. Introduction

1.1. Purpose

Place information system's database design document describes structure of database and file structure of system. Database Design document will introduce all attribute the System that will help developer and tester base on this design to implement and test.

1.2. Goal

To create database tables most accurate.

1.3. Scope

This Database Design Document provides the basic for “Smart Recruitment System” Database design.

It describes both logical and physical definition, non-functional issues, and the database interfaces; storage aspects are defined in the physical database design sections.

The tables performance considerations requirements. The following topics are covered in this document:

- Assumptions and decisions on database design.
- Entity-mapping.
- Table column definitions.
- Primary, unique and foreign key definitions.
- Column and row level validation rules (check constraints).
- Rule for populating specific columns (sequences, derivations, demoralized (column)).
- Interfaces and dependencies with other components.
- Data access description.

The database design for “Demark – Decentralized Market” is composed of definitions for database objects derived by mapping entities to tables attributes to columns, unique identifiers to unique keys and relationship to foreign keys.

During design, these initial definitions are enhanced to support the functionality described in the functional specification/ user stories and defined in the primary and supporting modules of the application high level design.

1.4. Data storage platforms

- Data of application is stored in MongoDB database
- In MongoDB , data structure is stored as tables that the database objects that behave as containers for the data, in which the data will be logically organized in collections and documents format.

1.5. Definition, Acronyms and Abbreviations

Abbreviations	Description	Comment
PK/FK	Primary/ Foreign Key	Use to indicate a file is a Primary or Foreign key in a table
ERD	Entity Relationship Diagram	Show the relationship between entities in the system

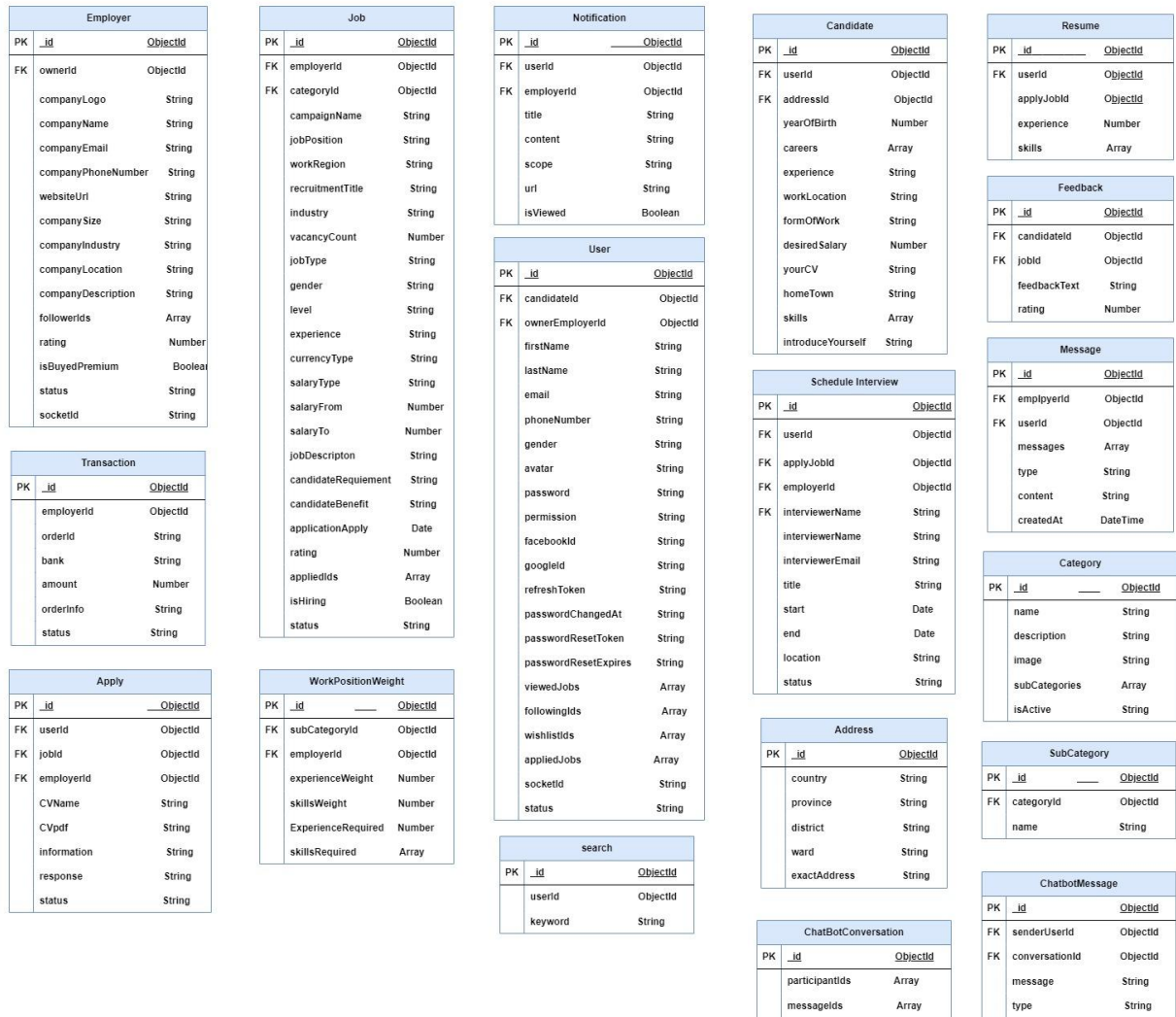
2. Database Design

2.1. Table Overview

No.	Table name	Short Description
1	User	This collection stores all information of Users
2	Candidate	This collection stores all information of Candidates
3	Employer	This collection stores all information of Employers

4	Job	This collection stores all information of Jobs
5	Schedule	This collection stores scheduled interviews for jobs
6	Message	This collection stores messages sent between candidate and employer
7	Category	This collection stores all information of Job Categories
8	Feedback	This collection This collection stores addresses of users, candidates, and employers
9	Resume	This collection stores resumes of candidates
19	Notification	This collection stores notifications for users
11	Transaction	This collection stores transaction information
12	Apply	This collection stores job applications from candidates
13	Search	This collection stores search information for jobs
14	SubCategory	This collection stores information related to subcategories
15	WorkPosition Weight	This collection stores information related to the weight of work positions.
16	ChatbotMess age	This collection stores messages exchanged between the chatbot and users.
17	ChatbotConv ersation	This collection stores information about conversations between the chatbot and users.

2.2. Collection Diagram



2.3. Detail

2.3.1. User

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique ID of the document in MongoDB.	PK
firstName	String		Firstname of the user or individual.	Required
lastName	String		Lastname of the user or individual.	Required
email	String		Email address of the user, typically used for login.	Required, Unique
phoneNumber	String		Phone number of the user.	
avatar	String	default.png	Path or data of the user's profile picture.	Required
publicId	String		ID of the avatar field	Required
sex	String		Gender of the user (male, female, other).	
password	String		Hashed or encrypted password for security.	Required
permission	String	user	User's role or permissions in the system.	Required, Enum: user, admin
viewedJobs	Array	[]	List of jobs that the user has viewed.	
appliedJobs	Array	[]	List of jobs that the user has applied to.	
followingIds	Array	[]	List of user IDs that the user is	

			following.	
wishlistIds	Array	[]	List of job IDs that the user has added to their wishlist.	
candidateId	ObjectId		ID of the candidate in the case of recruitment.	
employerId	ObjectId		ID of the employer or related business.	
facebookId	String		User's ID on Facebook, if linked to the account.	Unique
googleId	String		User's ID on Google, if linked to the account.	Unique
refreshToken	String		Token used to refresh authentication tokens after expiration.	
passwordResetToken	String		Token used for resetting the password when requested.	
passwordResetExpiry	String		Expiry time of the password reset token.	
status	String	active	Account status (active, locked, etc.).	Required
createdAt	Date		Date and time when the document was created.	
updatedAt	Date		Date and time of the most recent update to the document.	

2.4.2 Candidate

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
userId	ObjectId		User's ID.	FK, Required

jobPosition	String		Job position or title.	Required
experience	String		Description of the experience related to the job.	Required
workLocation	String		Desired work location or job location.	Required
skills	Array	[]	Array containing skills related to the job.	Required
desiredSalary	Number		Desired salary for the job.	Required, Min: 0
yourWishes	String		Any additional wishes or preferences related to the job.	
introduceYourself	String		Brief introduction or description of the individual.	
createdAt	Date		Date and time when the document was created.	
updatedAt	Date		Date and time of the most recent update to the document.	

2.4.3 Employer

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
userId	ObjectId (ref: "User")		User's ID associated with the company.	FK, Required
companyLogo	String		Path or data of the company's logo.	Required
publicId	String		Public ID or identifier for the company logo.	Required
companyName	String		Name of the company.	Required

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companyEmail	String		Email address associated with the company.	Required
websiteUrl	String		URL of the company's website.	Required
coverImage	String		Path or data of the cover image for the company.	
coverImagePublicId	String		Public ID or identifier for the cover image.	
companySize	String		Size or scale of the company.	Required
addressId	ObjectId		ID associated with the company's address.	Required
companyDescription	String		Description or overview of the company.	Required
followerIds	Array	[]	Array containing IDs of users who follow the company.	
rating	Number	4	Rating or score associated with the company.	Min: 1, Max: 5
socketId	String		Socket ID for real-time communication.	
isBuyedPremium	Boolean	false	Indicates whether the company has purchased premium status or not.	
status	String	active	Current status of the company.	Enum: ["pending", "active", "locked"]
createdAt	Date		Date and time when the document was created.	

updatedAt	Date		updatedAt (Date): Date and time of the most recent update to the document.	
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2.4.4 Job

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
employerId	ObjectId		Employer's ID associated with the recruitment campaign.	FK, Required
workRegion	ObjectId		Region or location where the work is based.	FK, Required
recruitmentCampaignName	String		Name or identifier for the recruitment campaign.	Required
recruitmentTitle	String		Title or name of the recruitment.	Required
industry	String		Industry associated with the recruitment.	Required
vacancyCount	Number		Number of job vacancies available.	Required
jobType	String		Type or category of the job.	Required
gender	String		Gender preference for the job (if applicable).	Required
level	String		Level or position of the job.	Required
experience	Number		Required experience for the job.	Required
currencyType	String		Type of currency for the salary.	Required
salaryType	String	VND	Type of salary (VND, USD).	Required
salaryFrom	Number		Minimum salary for the job.	
salaryTo	Number		Maximum salary for the job.	

jobDescription	String		Description of the job responsibilities.	
candidateRequirements	String		Requirements for potential candidates.	Enum: ["pending", "active", "locked"]
skills	Array	[]	Array containing skills required for the job.	Required
candidateBenefits	String		Benefits offered to candidates.	Required
applicationDeadline	Date		Deadline for submitting job applications.	Required
status	String		Current status of the recruitment campaign.	Enum: ["pending", "active", "expired", "reject"]
isHiring	Boolean	True	Indicates whether the company is actively hiring.	
appliedIds	Array	[]	Array containing IDs of candidates who have applied.	
rating	Number		Rating or score associated with the recruitment.	Min: 1, Max: 5
createdAt	Date		Date and time when the document was created.	
updatedAt	Date		Date and time of the most recent update to the document.	

2.4.5 Schedule

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
userId	ObjectId		User's ID associated with this entry.	FK, Required
applyId	ObjectId		Apply's unique identifier.	FK, Required
employerId	ObjectId		Employer's ID related to the entry.	FK, Required
title	String		Title or name associated with the entry.	Required
start	String		Start date or time associated with the entry.	Required
end	Date		End date or time associated with the entry.	Required
location			Location or address associated with the entry.	
interviewerName	String		Name of the interviewer.	Required
interviewerPhoneNumber			Phone number of the interviewer.	Required
interviewerEmail			Email of the interviewer.	Required
status	String	offline	Current status of the entry (online or offline).	
createdAt	Date		Date and time when the document was created.	
updatedAt	Date		Date and time of the most recent update to the document.	

2.4.6 Message

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
userId	ObjectId		User's ID associated with this entry.	FK
employerId	ObjectId		Employer's ID related to the entry.	FK
messages	Array of Objects		An array containing message objects.	
sender	String		Sender of the message.	Required
type	String	text	Type of the message (e.g., text, file).	Enum: ["text", "link"]
content	String		Content of the message.	Required
createdAt	Date		Date and time when the document was created.	
updatedAt	Date		Date and time of the most recent update to the	

2.4.7 Category

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
name	String		Name or label associated with the entry.	Required
image	String		Path or data of the image associated with the entry.	Required
publicId	String		Public ID or identifier for the image.	Required
description	String		Description or overview of the entry.	
subcategories	Array		An array containing names or labels	Required

			of subcategories associated with the entry.	
isActive	Boolean	true	Indicates whether the entry is currently active or not.	Default: true
createdAt	Date		Date and time when the document was created.	
updatedAt	Date		Date and time of the most recent update to the	

2.4.8 Feedback

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
userId	ObjectId		User's ID associated with the feedback.	FK, Required
jobId	ObjectId		Job's ID related to the feedback.	FK, Required
employerId	ObjectId		Employer's ID related to the feedback.	FK, Required
images	String	[]	Array containing paths or data of images associated with the feedback.	
publicIds	String	[]	Array containing public IDs or identifiers for the images.	
feedbackText	Boolean	true	Text or content of the feedback.	Default: true
rating	Number		Rating or score associated with the feedback.	Min: 1, Max: 5
createdAt	Date		Date and time when the document was created.	

updatedAt	Date		Date and time of the most recent update to the	
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2.4.9 Resume

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
userId	ObjectId		User's ID associated with the resume CV.	FK, Required
applyJobId	ObjectId		Apply Job's ID related to the resume CV.	FK, Required
experience	Number	0	Description of the user's work experience.	Required
skills	Array	[]	Array containing skills associated with the user.	Required
createdAt	Date		Date and time when the document was created.	
updatedAt	Date		Date and time of the most recent update to the	

2.4.10 Notification

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
userId	ObjectId		User's ID associated with the notification.	FK, Required
employerId	ObjectId		Employer's ID related to the notification.	FK, Required
title	String		Title or heading of the notification.	Required

content	String		Content or message of the notification.	Required
isViewed	Boolean	false	Indicates whether the notification has been viewed or not.	Default: false
createdAt	Date		Date and time when the document was created.	
updatedAt	Date		Date and time of the most recent update to the document.	

2.4.11 Transaction

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
employerId	ObjectId		Employer's ID associated with the transaction.	FK, Required
orderId	String		Unique identifier or order ID for the transaction.	Required
bank	String		Bank information or method used for the transaction.	Required
amount	Number		Amount of money involved in the transaction.	Required
orderInfo	String		Additional information or details related to the order.	Required
status	String	pending	Status of the transaction.	Enum: ["pending", "success", "failure"]
createdAt	Date		Date and time when the document was created.	

updatedAt	Date		Date and time of the most recent update to the document.	
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2.4.12 Apply

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
userId	ObjectId		User's ID associated with the job application.	FK, Required
jobId	ObjectId		Job's ID related to the application.	FK, Required
employerId	ObjectId		Employer's ID related to the application.	FK, Required
CVName	String		Name of the Curriculum Vitae (CV) associated with the application.	Required
CVpdf	String		Path or data of the PDF document associated with the CV.	Required
information	String		Additional information or notes related to the application.	
status	String	notviewed	Current status of the job application.	Enum: ["notviewed", "viewed", "accepted", "rejected", "progressing"]
createdAt	Date		Date and time when the document was created.	
updatedAt	Date		Date and time of the most recent update to the	

2.4.13 Search

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
userId	ObjectId		User's ID associated with the search entry.	FK, Required
keyword	String		Keyword associated with the search entry.	FK, Required
createdAt	Date		Date and time when the document was created.	
updatedAt	Date		Date and time of the most recent update to the	

2.4.14 SubCategory

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
categoryId	ObjectId		Unique identifier for the category associated with the entry.	FK, Required
name	String		Name of sub category	Required
createdAt	Date		Date and time when the document was created.	
updatedAt	Date		Date and time of the most recent update to the	

2.4.15 WorkPositionWeight

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
subCategoryId	ObjectId		Unique identifier for the subcategory	FK, Required

			associated with the job requirement.	
employerId	ObjectId		Employer's ID associated with the job requirement.	FK, Required
experienceWeight	Number	0.5	Weight or importance assigned to the experience requirement.	
skillsWeight	Number	0.5	Weight or importance assigned to the skills requirement.	
experience	Number	0	Desired level or type of experience required for the job.	
skills	Array	[]	Desired level or type of experience required for the job.	
createdAt	Date		Date and time when the document was created.	
updatedAt	Date		Date and time of the most recent update to the	

2.4.16 ChatbotMessage

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
senderId	ObjectId		Identifier for the sender of the message.	FK, Required
conversationId	ObjectId		Identifier for the conversation associated with the message.	FK, Required
message	String		The content of the message.	Required
Type	String	Text	Message type (e.g. text, json, image, ...)	

createdAt	Date		Date and time when the document was created.	
updatedAt	Date		Date and time of the most recent update to the	

2.4.17 ChatbotConversation

Attributes	Datatype	Default	Description	Constraint
_id	ObjectId		Unique identifier for the document in MongoDB.	PK
participantIds	Array	[]	Array of identifiers of participants in the conversation.	
messageIds	Array	[]	Array of identifiers of messages in the conversation.	
createdAt	Date		Date and time when the document was created.	
updatedAt	Date		Date and time of the most recent update to the	

3. References