Database Design

Step 1 Build Conceptual Data

1 Identify entity types

1.1 Tangible or Intangible Things

User, Language

1.2 Resources

Dictionary, Course, Learner Ranking

1.3 Roles Played

Teacher, Leaner

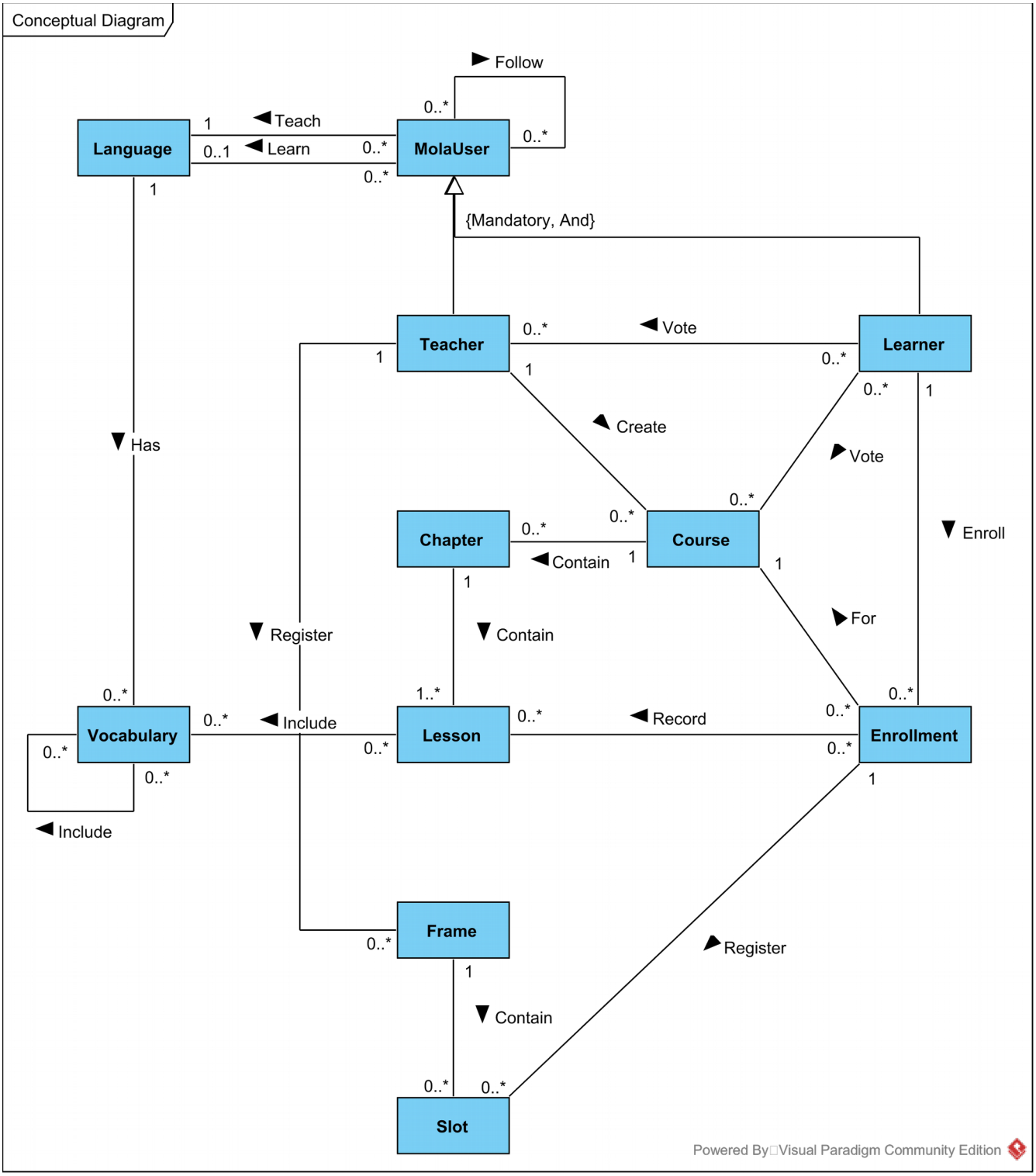
1.4 Events

Time frame, Time slot, Enroll

1.5 Summary

Entity name	*Description*	*Aliases*	*Occurrence*
User	General term describing all person that use MOLA to teach and learn.	MolaUser	
Language		Language	
Teacher	People who use MOLA to teach language and get money.	Teacher	
Learner	People who use MOLA to learn language and pay money.	Learner	
Course	A series of lectures or lessons in a particular subject.	Course	Each course is created by one Tutor. A Tutor can create many course. Many Student can learn a course.
Lesson	An amount of teaching given at one time.	Lesson	Each course has none (free style) or many lessons (structure).
Learner Ranking	A record of a student's work, showing courses taken and grades achieved.	Report, (officially Transcript)	For each student, each course has at most one report. A report can record many lesson progress and many slot.
Dictionary	A list of word definition and its pronunciation.	Vocabulary	
Time frame	A specified period of time in which teacher is planned to take place.	Frame	A Tutor can register many session. A session can has none or many slot.
Time slot	A meeting of a Tutor and a Student to conduct a lesson.	Slot	Each slot attended by a single Tutor and a single Student. Each slot is recorded by one report.

2 Identify relationship types



3 Identify and associate attributes with entity or relationship types

Entity name	*Attributes*	*Nulls*	*Description*

MolaUser	name
	  firstName
	  lastName
	address
	  street
	  district
	  city
	  state
	  country
	gender
	birthday
	email[]
	telNo[]
	/punctuality
		
		No
		No	

Teacher	/follower
	vote
	  /count
	  /average
			Leaner who follow to receive new feed

Leaner	/following		Following teacher

Course	title
	subject
	level
	description
	createDate
	publishDate
	status
	vote
	  /count
	  /average
		No
		No
		No
		No
			E.g. travel, academic, business…
			
			E.g. active, inactive, banned...

Lesson	title description duration createDate	No No	
Enrollment	enrollDate progress score	No No	Percentage of completion, e.g. 80%.
Vocabulary	word definition[] pronunciation[]	No No	
Frame	fromTime toTime	No No	

Entity name	*Attributes*	*Nulls*	*Description*
Slot	fromTime toTime teacherLoginTime leanerLoginTime	No No	
Vote	createDate comment score	No No	

4 Determine attribute domains

5 Determine candidate, primary, and alternate key attributes

Entity name	*Candidate key*	*Primary key*	*Alternate key*
User	email telNo	email	telNo
Tutor			
Student			
Course	courseNo	courseNo	
Lesson			
Report			
Vocabulary			
Session			
Slot			
Vote	createDate comment	createDate comment	

6 Consider use of enhanced modeling concepts (optional step)

7 Check model for redundancy

8 Validate conceptual model against user transactions

8.1 Transactions

Authenticated User

(a) List all courses created by a named tutor.

Tutor → Course

(b) List all lessons included in a particular course.

Course → Lesson

(c) List all tutors by a language.

Language → Tutor

(d) List all course by a language.

Language → Tutor → Course

Tutor

(e) List all registered slots by a named tutor.

Tutor → Session → Slot

(f) List all enrolled students by a named course.

Course → Enrollment → Student

(g) Identify the course is registered in a slot

Slot → Enrollment → Course

Student

(h) List all courses enrolled by a named student.

Student → Enrollment → Course

(i) List all leaned lessons in a course for a student.

(Student, Course) → Enrollment → Lesson

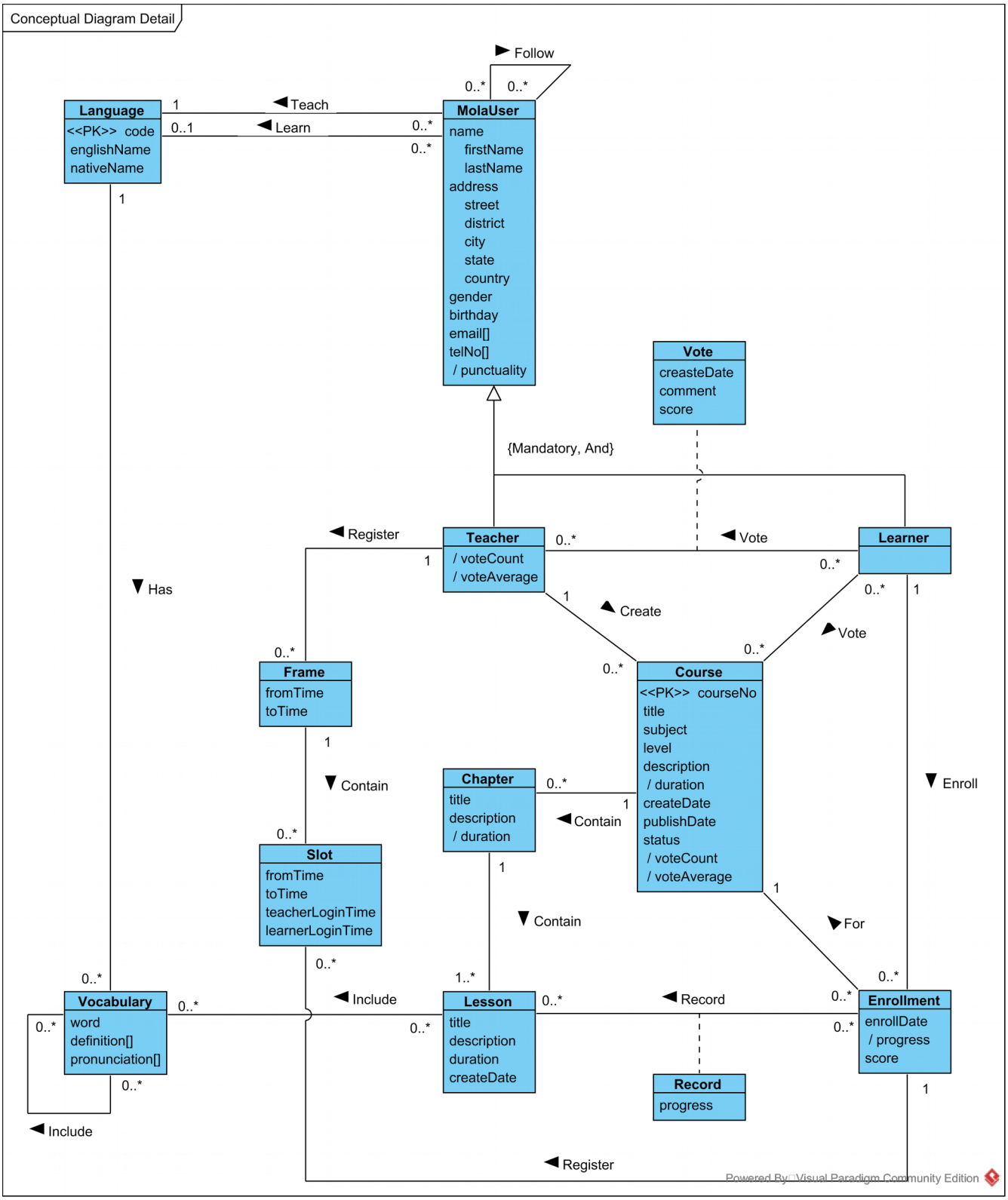
(j) List all available sessions by a named tutor.

Tutor → Session

(k) List all registered slots by a named student.

Student → Enrollment → Slot

9 Final Conceptual Diagram



Step 2 Build and Validate Logical Data Model

1 Derive relations for logical data model

2 Validate relations using normalization

3 Validate relations against user transactions

4 Check integrity constrains

5 Review logical data model with user

6 Merge logical data models into global (optional step)

7 Check for future growth