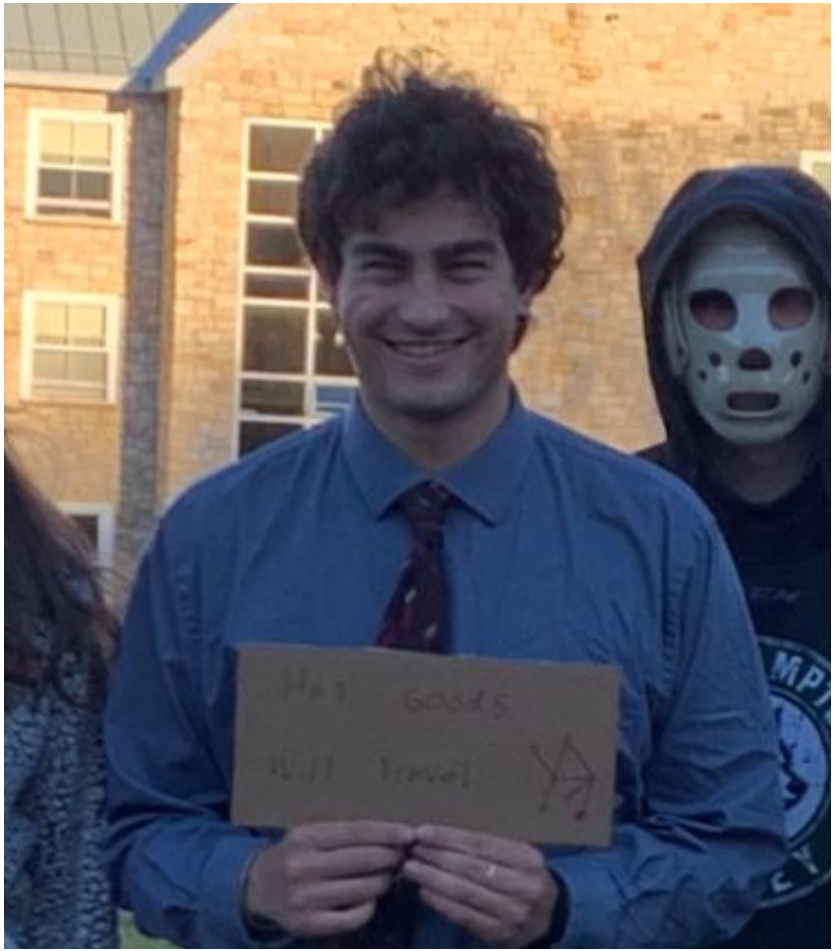
PQRC Database

Charlie Reinhardt

Agenda

1. The Problem
2. Our Database Design
3. Usage
4. Wrapping Up



The Problem

PQRC Course & Software Coverage Fall 2022

Courses

Bio 101 General Biology

Sunday 5-11p
Monday 10a-12p, 5 -11p
Tuesday 3-7p, 9-11p
Wednesday 10a-12p, 4-8p, 9-11p
Thursday 12-2p, 6-11p
Friday 10a-12p

Chem 103 General Chemistry

Sunday 5-11p
Monday 5-11p
Tuesday 3-7p, 9-11p
Wednesday 10a-11a, 5-8p, 9-11p
Thursday 12-2p, 5-11p
Friday 3-4p

Econ 100 Intro to Economics

Sunday 2-4p, 5p-11p
Monday 10a-2p, 3-11p
Tuesday 10a -11p
Wednesday 10a12p, 1-3p, 4-11p
Thursday 10a-5p, 7-11p
Friday 10a -2p

Econ 200 Quantitative Methods

Sunday 2-4p, 5p-7p, 9-11p
Monday 12-2p, 3-6p, 7-11p
Tuesday 10a -2p, 6-11p
Wednesday 1-3p, 5-7p, 8-11p
Thursday 10a-12p, 2-4p
Friday 10a -12p

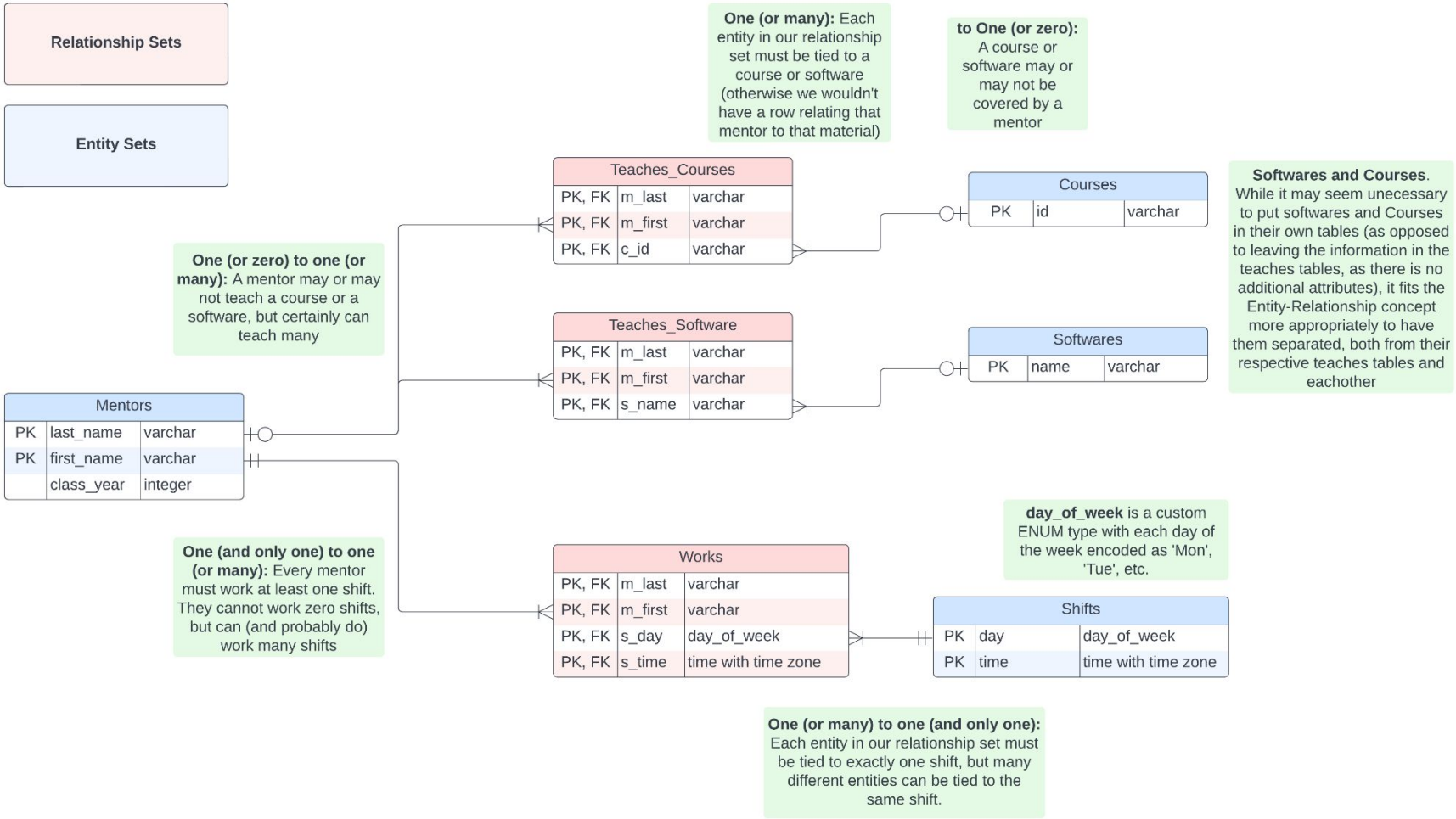
FALL 2022 SCHEDULE

	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00
SUN	CLOSED	CLOSED	CLOSED	CLOSED	Kristina Grace	Kristina Grace	CLOSED FOR MEETING	Trent Kristen	Trent Kristen	Annie Ganesh Jax Charlie Alexandra	Annie Ganesh Jax Charlie Alexandra	Hope Sam Ryann Jack B Alexandra	Hope Sam Ayanda Jack B
MON	Ben M Brenna	Ben M Brenna	Masashi Brenna	Masashi Charlie	Grace Charlie	Grace Brianna	Ben H Brianna Anja	Ben H Cassie Brianna Anja	Jax Anja Ned Cassie	Jax Ayanda Ned James Hailey	Chyanne Ayanda James Hailey Jax	Olivia Chyanne Jack S Cole Jax	Olivia Chyanne Jack S Cole
TUE	Brenna Hans	Brenna Hans	Kristen Masashi	Kristen Charlie	George Charlie	George Cassie	Ryann Cassie	Olivia Jack C Cody Ryann	Olivia Jack C Cody Hans James	Cai Hans Cody Hailey James	Matthew Hope Cai Hailey Sam	Matthew Hope Jack S Cole Sam	Hope Cole Jack S Sam

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1			Bio 101	Bio102	Chem103	Chem 104	CS140	CS 219	CS 220	CS 256	Econ 100	Econ 200	Econ 251	Econ 252	Math 135	Math 136
2	Matthew	Abell	0	0	0	0	1	1	1	1	0	0	0	0	1	1
3	Cole	Ames	1		1	1	1				1				1	1
4	Jack	Benjamin													1	1
5	Cody	Bryan	0	0	0	0	1	1	1	1	0	0	0	0	1	1
6	George	Charalambous	0	0	0	0	1	0	0	0	1	0	0	0	1	1
7	Grace	Cicchinelli					1	1	1	1					1	1
8	Jack	Cowan	0	0	0	0	1	1	1	1	0	0	1	1	1	1
9	Hope	Donoghue					1	1							1	1

The Goal

- Design a database
  - Mentor work schedules
  - Mentor course coverage
- Create a program that
  - generates a course coverage sheet


Relationship Sets
Entity Sets
One (or many): Each entity in our relationship set must be tied to a course or software (otherwise we wouldn't have a row relating that mentor to that material)
to One (or zero): A course or software may or may not be covered by a mentor
Teaches_Courses
PK, FK m_last varchar
PK, FK m_first varchar
PK, FK c_id varchar
Courses
PK id varchar
Softwares and Courses. While it may seem unecessary to put softwares and Courses in their own tables (as opposed to leaving the information in the teaches tables, as there is no additional attributes), it fits the Entity-Relationship concept more appropriately to have them separated, both from their respective teaches tables and eachother
One (or zero) to one (or many): A mentor may or may not teach a course or a software, but certainly can teach many
Teaches_Software
PK, FK m_last varchar
PK, FK m_first varchar
PK, FK s_name varchar
Softwares
PK name varchar
Mentors
PK last_name varchar
PK first_name varchar
class_year integer
day_of_week is a custom ENUM type with each day of the week encoded as 'Mon', 'Tue', etc.
One (and only one) to one (or many): Every mentor must work at least one shift. They cannot work zero shifts, but can (and probably do) work many shifts
Works
PK, FK m_last varchar
PK, FK m_first varchar
PK, FK s_day day_of_week
PK, FK s_time time with time zone
Shifts
PK day day_of_week
PK time time with time zone
One (or many) to one (and only one): Each entity in our relationship set must be tied to exactly one shift, but many different entities can be tied to the same shift.

mentors(last_name, first_name, class_year)

courses(id)

softwares(name)

shifts(day, time)

teaches_courses(m_last, m_first, c_id)

teaches_softwares(m_last, m_first, s_name)

works(m_last, m_first, s_day, s_time)

Usage

Wrapping Up

- A lot of potential
  - attendance analytics
  - mentor biographies
  - shift switches
  - user-friendly UI
- Focus on design

```sql
-- find the times a particular course is taught
SELECT DISTINCT
    c_id, s_day, s_time
FROM
    teaches_courses JOIN works USING (m_last, m_first)
WHERE
    c_id = 'P101';
```

Understanding relational databases is sick!