All feedback changes for PT1 Part 2:

1) *A journal or author or paper would not only contribute to exactly 1 row of statistics.*

Thank you for letting us know - we have fixed this! We have updated all of the requested database relations to be many-to-many in the diagram, and additionally updated the relations in the schema by adding tables.

2) *Add year to the primary key of Statistics?*

We agree; this should definitely be added. We've made this edit also, both to the diagram and the schema.

3) *Missing FKs in*

    a) *Journals,*

No one-to-many relations available. There were previously one-to-many relations available, but this has since changed due to (1).

    b) *COVID-19_Papers,*

No one-to-many relations available. See 3a.

    c) *Authors, and*

No one-to-many relations available. See 3a.

    d) *Vaccination tables in the schema.*

We have added an FK, linking to States with the line

"State: VARCHAR(20) [FK to States.State_Name]"

- thanks!

4) *Your Vaccination tables were mentioned twice in the schema.*

We have deleted the copy!

Relational Schema:

Review the content of ER & UML taught in class. For this stage, discuss with your teammates and create a conceptual design (Entity-Relationship Diagram *or* UML Diagram) of the project database.

Your relational schema should be formatted as follows:

R(A:Domain [PK], B:Domain [FK to table.column], C:Domain,...)

PK: Indicates that the column is a primary key for the table

FK: Indicates that the column is a foreign key referencing the primary key of table.column.

Domain: INT, Decimal, VARCHAR(X),....

R(A, B, C)

```
Website_Login_Credentials(
username:VARCHAR(15) [PK],
email:VARCHAR(100),
age:INT,
phoneNumber:REAL)


COVID-19_Testing(
covidTestingIndex:VARCHAR(40) [PK],
date:VARCHAR(8),
state:VARCHAR(14) [FK to States.State_Name],
fips:INT,
cases:INT,
deaths:INT)
```

COVID-19_paper_statistics(
year:INT [PK],
month:INT [PK],
number_papers:INT,
licensed_papers:INT,
number_arxiv:INT,
number_authors:INT,
hottest_topics:VARCHAR(20),
frequent_topics:VARCHAR(20),
contributors:INT,
journals:INT)

Journals(name:VARCHAR(20) [PK],
number_papers:INT,
licensed_papers:INT,
number_arxiv:INT,
number_authors:INT,
contributors:INT,
clicks:INT)

COVID-19_Papers(
cord_uid:VARCHAR(8) [PK],
source:VARCHAR(20),
title:VARCHAR(50),
doi:VARCHAR(50),
pubmed_id:INT,
license:VARCHAR(10),
abstract:VARCHAR(1000),
publish_time:VARCHAR(10),
mag_id:INT,
arxiv_id:INT,
url:VARCHAR(512),
clicks:INT,
number_search:INT)

```
authors(
name:VARCHAR(20) [PK],
number_papers:INT,
licensed_papers:INT,
number_arxiv:INT,
contribution:INT,
clicks:INT)

Hospital(
HOSPITAL_NAME:VARCHAR(50) [PK],
HOSPITAL_TYPE:VARCHAR(20),
HQ_ADDRESS:VARCHAR(20),
HQ_CITY:VARCHAR(20),
HQ_STATE:VARCHAR(2),
HQ_ZIP_CODE:INT,
COUNTY_NAME:VARCHAR(20),
NUM_LICENSED_BEDS:INT,
NUM_STAFFED_BEDS:INT,
NUM_ICU_BEDS:INT,
ADULT_ICU_BEDS:INT,
PEDI_ICE_BEDS:REAL,
BED_UTILIZATION:REAL,
AVG_VENTILATOR_USAGE:REAL,
Potential_Increase_In_Bed_Capac:INT,
AVG_VENTILATOR_USAGE:REAL,
Latitude:REAL,
longitude:REAL,
STATE_NAME: VARCHAR(20) [FK to States.State_Name])

Website_Login_Credentials(
username:VARCHAR(50),
email:VARCHAR(50),
age:INT,
phoneNumber:INT
)

States(
State_Name:VARCHAR(14) [PK],
```

State_Coordinate:REAL,
State_Population:INT,
State_Birth_Rate:REAL,
State_FIPS:INT
)

Vaccination(
Date:VARCHAR(8) [PK],
location:VARCHAR(20) [PK],
State: VARCHAR(20) [FK to States.State_Name]
total_vaccinations:INT,
total_distributed: INT,
people_vaccinated:INT,
people_fully_vaccinated_per_hundred:REAL,
total_vaccinations_per_hundred:REAL,
people_fully_vaccinated:int,
people_vaccinated_per_hundred:REAL,
distributed_per_hundred:REAL,
share_doses_used:REAL
)

JournalsContainsPapers(
journal:VARCHAR(20) [PK], [FK to Journals.name],
paperCordUid: VARCHAR(8) [PK], [FK to COVID-19_Papers.cord_uid]
)

The relationship between the Journals releasing the papers and the information on the papers being released.

AuthorsWritePapers(
author:VARCHAR(50) [PK], [FK to authors.name],
paperCordUid: VARCHAR(8) [PK], [FK to COVID-19_Papers.cord_uid]
)

The relationship between the authors who are writing the papers and the authors of the papers that are being released.

JournalToStatistic(
journalName:VARCHAR(20) [PK], [FK to Journals.name],
statYear:INT [PK], [FK to COVID-19_paper_statistics.year],
statMonth:INT [PK], [FK to COVID-19_paper_statistics.month],
)

The relationship between the journals and paper statistics.

PaperToStatistc(
paperID:VARCHAR(8) [PK], [FK to COVID-19_Papers.cord_uid],
statYear:INT [PK], [FK to COVID-19_paper_statistics.year],
statMonth:INT [PK], [FK to COVID-19_paper_statistics.month],
)

The relationship between the paper itself and paper statistics.

AuthorToStatistic(
author:VARCHAR(50) [PK], [FK to authors.name],
statYear:INT [PK], [FK to COVID-19_paper_statistics.year],
statMonth:INT [PK], [FK to COVID-19_paper_statistics.month],
)

The relationship between paper authors and paper statistics.

Cardinality for relationship tables: 2

ASSUMPTIONS

- **For COVID-19_paper_statistics to Journals or authors or COVID-19 papers, we assume that there can be no Journals or authors or COVID-19 papers at all in our system, hence the zero to many relationships.**
- **We assume that each hospital must be located in one state and one state only, and we assume that one state can have no hospital registered in our system, hence the one mandatory and zero to many relationships.**
- **We assume for each COVID-19 Testing, it must be counted in one state and each state can have NULL or many testing information registered in our system.**
- **We assume the vaccination must be counted per state, and each state can be NULL or many vaccination information, hence the one mandatory and zero to many relationships.**

Website_Login_Credentials	
PK	**username**
	email
	age
	phoneNumber

Vaccination	
PK	**date**
PK	**location**
	total_vaccinations
	total_distributed
	people_vaccinated
	people_fully_vaccinated_per_hundred
	total_vaccinations_per_hundred
	people_fully_vaccinated
	people_vaccinated_per_hundred
	distributed_per_hundred
	share_doses_used

executes in

States	
PK	**State Name**
	State_Coordinate
	State_Population
	State_Birth_Rate
	State_FIPS

Locates in

COVID-19_Testing	
PK	**covidTestingIndex**
	date
	state
	fips
	cases
	deaths

within

Hospital	
PK	**HOSPITAL_NAME**
	HOSPITAL_TYPE
	HQ_ADDRESS
	HQ_CITY
	HQ_STATE
	HQ_ZIP_CODE
	COUNTY_NAME
	NUM_LICENSED_BEDS
	NUM_STAFFED_BEDS
	NUM_ICU_BEDS
	ADULT_ICU_BEDS
	PEDI_ICU_BEDS
	BED_UTILIZATION
	AVG_VENTILATOR_USAGE
	Potential_Increase_In_Bed_Capac
	AVG_VENTILATOR_USAGE
	latitude
	longtitude
	STATE_NAME

Journals	
PK	**name**
	number_papers
	licensed_papers
	number_arxiv
	number_authors
	contributors
	clicks

contributes to

contain

COVID-19_Papers	
PK	**cord_uid**
	source
	titile
	doi
	pubmed_id
	license
	abstract
	publish_time
	author
	journal
	mag_id
	arxiv_id
	url
	cllicks
	number_search

COVID-19_paper_statistics	
PK	**year**
PK	**month**
	number_papers
	licensed_papers
	number_arxiv
	number_authors
	hottest_topics
	frequent_topics
	contributors
	journals

contributes to

authors	
PK	**name**
	number_papers
	licensed_papers
	number_arxiv
	contribution
	clicks

contributes to

writes