

Database Application Project - Team 9

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1.A. The description of the database application.

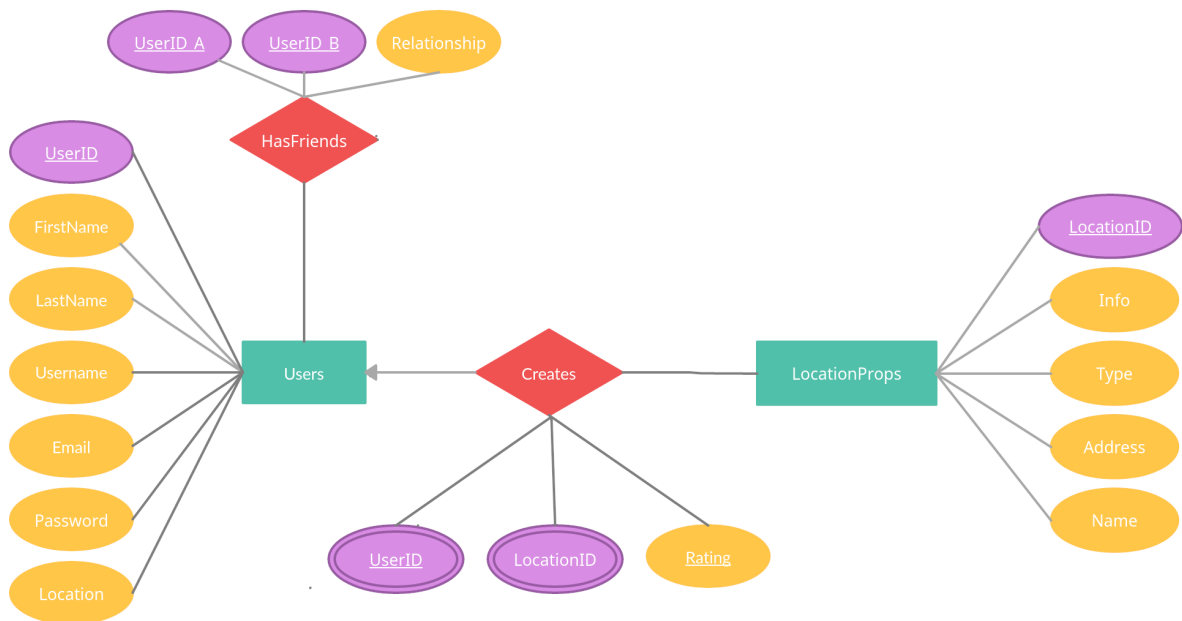
The project is a web application that uses geographic information to help users find places of interest and people.

The users can register and sign-in to the application. They can then view user generated places of interest. A user can filter places based on its type (restaurants, parks, gas stations, etc) and its distance from him/her. The users can also add places of interest by providing information such as its type, location, address and information. Other users can access this information on the map.

Similarly, users can also view other users who are on the app. Users can then view their information and add them as a friend.

The application uses React.js in the frontend, NodeJS & Express for the backend and PostgreSQL on AWS RDS for the database.

1.B. ER Diagram



1.C. Schema and Normalization

Initial Table Design:

Users(UserID, FirstName, LastName, Username, Email, Password, UserLocation, Visible)

Friends(UserID_A, UserID_B, Relationship)

UserLocations(UserID, LocationID, Rating, Name, Address, Location, Type, Info)

Evaluate table *Users*

Functional dependencies:

UserID -> (FirstName, LastName, Username, Email, Password, UserLocation, Visible)

Multi-valued dependencies:

None

Candidate Keys:

UserID

Violations (up to 4NF):

None

Evaluate table *Friends*

Functional dependencies:

(UserID_A, UserID_B) -> Relationship

Multi-valued dependencies:

None

Candidate Keys:

(UserID_A, UserID_B)

Violations (up to 4NF):

None

Evaluate table *UserLocations*

Functional dependencies:

LocationID -> (Name, Address, Location, Type, Info)

(UserID, LocationID) -> (Rating, Name, Address, Location, Type, Info)

Multi-valued dependencies:

None

Violations (up to 4NF):

3NF violation based on FDs; LocationID itself is not a superkey

Decompose UserLocations into:

Locations(UserID, LocationID, Rating)

LocationProps(LocationID, Name, Address, Location, Type, Info)

Evaluate table *Locations*

Functional dependencies:

(UserID, LocationID) -> Rating

Multi-valued dependencies:

None

Violations(up to 4NF):

None

Evaluate table *LocationProps*

Functional dependencies:

LocationID -> Name, Address, Location, Type, Info

Multi-valued dependencies:

None

Violations (up to 4NF):
None

Final tables:

Users(UserID, FirstName, LastName, Username, Email, Password, UserLocation, Visible)

Friends(UserID_A, UserID_B, Relationship)

Locations(UserID, LocationID, Rating)

LocationProps(LocationID, Name, Address, Location, Type, Info)

2.C. Database Images

List of relations			
Schema	Name	Type	Owner
public	friends	table	team9
public	locationprops	table	team9
public	locations	table	team9
public	users	table	team9

(4 rows)

```
postgres=> SELECT * FROM USERS;
```

userid	firstname	lastname	username	email	password	location	visible
1	sid001	sheth	sid001	sid001@gmail.com	\$2a\$12\$mADnxqrlx3m5IKp036Zf.kjvNaBD.NaJoB2pD1KzHkTEHieTDnv6	(47.6084,-122.3405)	t
5	sid000	sheth	sid002	sid002@gmail.com	\$2a\$12\$7jz/LI/1R4e0ZtIXFVxjIO/1HMuHtgbGNeQpXhglFSXf4I3D4Kq	(47.6096,-122.342148)	t
6	sid003	sheth	sid003	sid003@gmail.com	\$2a\$12\$6b38hE8yH9LsbqVKEgy190h6P4EsekVU32Fuy6p0UfbxahoQzMCcW	(47.6096,-122.342148)	t
7	Bill	Burr	bill	burr@gmail.com	\$2a\$12\$mGo5a08G6LSPNS1I.ziX.ewSSUJ9nKE6LrmEopdCKUlyFuPrYszK	(47.6201,-122.3485)	t
8	Dave	Chapelle	dave	chapelle@gmail.com	\$2a\$12\$78GcVvpmb769VXcc5H/Rx.CoBmfK6juERmuEnEhX51m6Iea2RNXB.	(47.6201,-122.34)	t
9	George	Clooney	george	clooney@gmail.com	\$2a\$12\$ANa41PQSFuWsfWbY8I1Q9.ruIT6VvzBLow6Zv7buQVkaIRp4a832	(47.6101,-122.34)	t
10	Brad	Pitt	brad	pitt@gmail.com	\$2a\$12\$5vayXRAMCSXxxJGohKHHFme4rble3Y/Rvt1D/BxFd5umEMX.67oCcq	(47.5901,-122.34)	t
12	Jeff	Bezos	jeff	bezos@gmail.com	\$2a\$12\$xn8oBfxxjRbu6/2LXrxgK.xhBmkWY0daG2F3BL8sdrVujMolVzwy	(47.61,-122.305)	t
13	John	Smith	john	smith@gmail.com	\$2a\$12\$71r/H12eybpSNuziNosqbO.V96VCPiFyowOrsasTCsaPEjOR6/sZ.	(47.61,-122.325)	t
14	Chris	Rock	chris	rock@gmail.com	\$2a\$12\$5Zr/csUXPUyXE1xrs3m3XTOVDMdJU3q3jrvokOw1YCgaKjHgXudmtS	(47.605,-122.325)	t
15	Nicholas	Cage	nicholas	cage@gmail.com	\$2a\$12\$7T19ZobZwdltYIXDqn18puZi.pMaf/SUDwVENY51e4T8j7CjWqqUa	(47.605,-122.33)	t
18	Kate	Beckinsale	kate	beckinsale@gmail.com	\$2a\$12\$mADnxqrlx3m5IKp036Zf.kjvNaBD.NaJoB2pD1KzHkTEHieTDnv6	(47.27972,-122.31794)	t
27	Margot	Robie	margot	robie@gmail.com	\$2a\$12\$mADnxqrlx3m5IKp036Zf.kjvNaBD.NaJoB2pD1KzHkTEHieTDnv6	(47.605,-122.325)	t
28	Anne	Hathaway	anne	hathaway@gmail.com	\$2a\$12\$mADnxqrlx3m5IKp036Zf.kjvNaBD.NaJoB2pD1KzHkTEHieTDnv6	(47.605,-122.33)	t

(14 rows)

```
postgres=> SELECT * FROM FRIENDS;
```

userid_a	userid_b	relationship
1	5	friend
1	6	friend
5	9	friend
5	8	friend
7	9	friend
7	10	friend

(6 rows)

```
postgres=> SELECT * FROM LOCATIONS;
```

userid	locationid	rating
1	2	5
1	3	4
1	4	5
1	5	4
1	6	5
5	9	5
5	8	4
7	9	3
7	10	2

(9 rows)

```
postgres=> SELECT * FROM LOCATIONPROPS;
```

locationid	name	address	location	type	info
1	Space Needle	305 Harrison St	(47.6205,-122.3493)	parks	Seattle famous skyscraper
2	Olympic Sculpture Park	2901 Western Avenue	(47.6166,-122.3553)	parks	Famous tourist park
3	Volunteer Park	1247 15th Ave E	(47.6311,-122.3164)	parks	Popular park in Capitol Hill
4	Seattle Gym	1530 Queen Anne Ave	(47.5687,-122.31031)	gym	Lifting iron
5	Canlis	2576 Aurora Ave N	(47.6431,-122.3468)	restaurant	
6	Marymoor Park	6046 West Lake Sammamish Pkwy NE	(47.66,-122.1079)	parks	
7	Capital One ATM	Capitol One ATM	(47.6226,-122.3385)	atm	
8	Bank of America	Bank of America	(47.606,-122.3268)	bank	
9	McDonalds	McDonalds	(47.622,-122.3377)	restaurant	
10	KFC	KFC	(47.6305,-122.3435)	restaurant	

(10 rows)

Instance			
Configuration	Instance class	Storage	Performance Insights
DB instance ID	Instance class	Encryption	Performance Insights enabled
db-mapmark	db.t2.micro	Not enabled	Yes
Engine version	vCPU	Storage type	AWS KMS key
12.5	1	General Purpose (SSD)	aws/rds
DB name	RAM	IOPS	Retention period
-	1 GB	-	7 days
License model	Availability	Storage	
Postgresql License	Master username	20 GiB	
Option groups	team9	Storage autoscaling	
default:postgres-12	IAM DB authentication	Enabled	
Amazon Resource Name (ARN)	Not enabled	Maximum storage threshold	
arn:aws:rds:us-east-2:853124007654:db:db-mapmark	Multi-AZ	21 GiB	
Resource ID	No		
db-FCWL2TEUIVD3RKTOZH7M3XBOYM	Secondary Zone		
Created time	-		
Sat Feb 20 2021 00:46:52 GMT-0800 (Pacific Standard Time)			
Parameter group			
default:postgres12 (in-sync)			
Deletion protection			
Disabled			