Checkpoint 2: Report

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Overview

Our project is focused on modeling the operations of a rehab program and using the power of data to drive better decision-making, which, in turn, improves the health of clients and the community. Thus far, we have been able to compute graduation rates, length of time in program, the number of classes attended, and other client data. We plan to add mentor tracking to realize effective mentor and rehab strategies. Details regarding progress and future steps can be found below.

For a more detailed scope of the rehab program, it is good to imagine the process of the services and operations as a *client* would see them. A person seeking assistance in through rehabilitation would send in an application. Due to the organization's strict acceptance, not everyone is let into the program. Once someone is accepted into the program, they become a resident - living on the organization's campus. They are assigned a mentor (member/employee of the organization) and a room number – where the newly accepted resident will stay while in the program. If the individual does well in the program, they will graduate from the program after completing several different classes in the program. If the individual does not fit well after becoming a resident, they are at risk of being *ejected* from the program.

Then through the database being implemented, the organization will be able to track each of the steps for every individual that encounters the organization as described previously. The system will improve the metrics and tracking of operations, allowing the organization to have its greatest effect.

Individual contributions of members

Luiz Gustavo Fagundes Malpele as the team leader, Luiz helped organizing the group members and assigning each group member a role that would be more efficient in order to deliver a neat work. Furthermore, this member had an important contribution with the Data Dictionary and ER diagram.

Elijah Luckey with a strong previous database knowledge had a remarkable contribution in terms of putting up the database for the project on MySQL. Furthermore, on the first portion of it, this member had an important contribution with the ER diagram and other assigned tasks.

Thomas Sawyer has contributed with reviewing the documents to check if the rubric is been followed as it should. Thomas also assisted with loading data into the tables.

Gunnar Sundberg did an important job by helping the group by generating data and loading this data into the MySQL tables. Gunnar also had an important contribution when it comes to document design, information organization and brainstorming of the project.

Project description

Target vs. Actual Accomplishments

Our target for this checkpoint was to have scripts for the construction of our tables completed and a functioning prototype available for team members to begin testing. Not only have we accomplished this, but we have thousands of rows of near-finished data that we have been testing queries on. We had discussed revising our data model, but ultimately had to move that task beyond the checkpoint.

Analysis

Action(s) Taken

To this checkpoint, we have modeled our data, constructed our tables, populated them with data, and begun to use the data to gain insights. We have performed all tasks related to material covered in class. Our team is ahead of schedule and may now begin to make revisions and improvements. We will adjust our data model and begin creating end-user views after views are covered more thoroughly in class. Our plan is to have a revised and optimized data model and full implementation before the week of Thanksgiving Break.

Source code for SQL and Data generation

Creation of the Database

Here, the creation of the database occurs, named *RehabProgram*. It is clearly demonstrated that the database was created by the user Elijah Luckey (username: eluckey2472).

```
CREATE DATABASE gsundberg3513_RehabProgram;
```

Creation of the Tables on the Database

The following tables are created: *Client*, *Contact*, *Residency*, *ClassSession*, and *ClassSessionAttendance*.

Table: Client

```
CREATE TABLE Client (
      -- The data type [SERIAL] is an alias
      -- for [BIGINT UNSIGNED NOT NULL]
      id SERIAL,
      first_name VARCHAR(30) NOT NULL,
      middle_name VARCHAR(30),
      last_name VARCHAR(30) NOT NULL,
      date_of_birth DATE NOT NULL,
      gender ENUM('Male', 'Female'),
      social_security_number VARCHAR(11),
      -- The different 'phases' of the organizations program.
      -- Since any new [Client] added to the system will always be an
      -- applicant, the default value will be ['Applicant']
      client_phase ENUM('Applicant', 'Resident', 'Graduate', 'Ejected')
      NOT NULL DEFAULT 'Applicant',
      CONSTRAINT pk_Client_id PRIMARY KEY (id),
      CONSTRAINT check_ssn CHECK (social_security_number LIKE '###\-
      ##\-####')
);
```

Table: Contact

```
CREATE TABLE Contact (
      client_id BIGINT UNSIGNED NOT NULL,
      phone_number VARCHAR(10),
      email_address VARCHAR(40),
      emergency_number VARCHAR(10),
      contact_name VARCHAR(64),
      CONSTRAINT fk_Contact_client_id FOREIGN KEY (client_id)
      REFERENCES Client (id)
);
```

Table: Residency

```
CREATE TABLE Residency (
      client_id BIGINT UNSIGNED NOT NULL,
      room_number VARCHAR(4),
      mentor_name VARCHAR(64),
```


Commented [LE1]: Since there is no "code block" styling in word, let's all use a uniform format for code blocks. The formatting is: 11pt font, Consolas, and the first level of the snippet is indented/tabbed level.

Commented [LE2]: @Sundberg, Gunnar Should we use your table design? Or stick with this structure for now.

Commented [SG3R2]: stick with this structure pls

Commented [LE4R2]: NO
but okay

Commented [LE5]: And then comments within code blocks will be italicized.

```
        entry_date date,
        exit_date date,
        CONSTRAINT fk_Residency_client_id FOREIGN KEY (client_id)
        REFERENCES Client (id)
);
```

Table: ClassSession

```
CREATE TABLE ClassSession (
        id BIGINT UNSIGNED NOT NULL AUTO_INCREMENT,
        mentor_name VARCHAR(64),
        capacity INT(2),
        classroom_number VARCHAR(4),
        date_of_session date,
        CONSTRAINT pk_ClassSession_id PRIMARY KEY (id)
);
```

Table: ClassSessionAttendance

```
CREATE TABLE ClassSessionAttendance (
        class_session_id BIGINT UNSIGNED NOT NULL,
        client_id BIGINT UNSIGNED NOT NULL,
        CONSTRAINT fk_ClassSessionAttendance_client_id FOREIGN KEY
        (client_id) REFERENCES Client (id),
        CONSTRAINT fk_ClassSessionAttendance_class_session_id FOREIGN KEY
        (class_session_id) REFERENCES ClassSession (id)
);
```

The database tables were populated with randomly generated data. Due to the nature of the project, the data used should not contain actual personal information (social security numbers, first name, last name, birthday, phone numbers, email addresses, etc.)

Instructions to use the Database

This database should be used in a fashion that contributes to the productivity of the fictitious rehabilitation organization.

Database Operations: Queriers and Performance

```
+-----------------------------------+
| Tables_in_eluckey2472_RehabProgram |
+-----------------------------------+
| ClassSession                      |
| ClassSessionAttendance            |
| Client                            |
| Contact                           |
| Residency                         |
+-----------------------------------+
```

Describe command and select statement for each of the 5 tables of the database:

```
MariaDB [gsundberg3513_RehabProgram]> select * from ClassSession
    -> limit 10;
+----+--------------------+----------+------------------+-----------------+
| id | mentor_name        | capacity | classroom_number | date_of_session |
+----+--------------------+----------+------------------+-----------------+
|  1 | Gerald Nelane      |       36 | 1736             | 2019-09-08      |
|  2 | Maritsa Itzkovwitch |       12 | 2852             | 2013-11-20      |
|  3 | Marina Corp        |       14 | 3620             | 2018-04-27      |
|  4 | Mario Petticrew    |       15 | 1743             | 2014-07-09      |
|  5 | Onida Walkingshaw  |       20 | 3912             | 2016-01-31      |
|  6 | Gleda Paquet       |       35 | 4308             | 2013-01-27      |
|  7 | Tarrance Tuckerman |       19 | 3912             | 2019-04-06      |
|  8 | Gleda Paquet       |       35 | 1743             | 2012-05-23      |
|  9 | Noellyn Flageul    |       39 | 3540             | 2015-04-03      |
| 10 | Giffie Grumbridge  |       50 | 2408             | 2014-06-10      |
+----+--------------------+----------+------------------+-----------------+
```

```
MariaDB [eluckey2472_RehabProgram]> describe ClassSession;
+------------------+---------------------+------+-----+---------+----------------+
| Field            | Type                | Null | Key | Default | Extra          |
+------------------+---------------------+------+-----+---------+----------------+
| id               | bigint(20) unsigned | NO   | PRI | NULL    | auto_increment |
| mentor_name      | varchar(64)         | YES  |     | NULL    |                |
| capacity         | int(2)              | YES  |     | NULL    |                |
| classroom_number | varchar(4)          | YES  |     | NULL    |                |
| date_of_session  | date                | YES  |     | NULL    |                |
+------------------+---------------------+------+-----+---------+----------------+
```

Residency's table:

```
+------------------+---------------------+------+-----+---------+-------+
| Field            | Type                | Null | Key | Default | Extra |
+------------------+---------------------+------+-----+---------+-------+
| class_session_id | bigint(20) unsigned | NO   | MUL | NULL    |       |
| client_id        | bigint(20) unsigned | NO   | MUL | NULL    |       |
+------------------+---------------------+------+-----+---------+-------+
```

```
MariaDB [gsundberg3513_RehabProgram]> select * from ClassSessionAttendance
    -> limit 10;
+------------------+-----------+
| class_session_id | client_id |
+------------------+-----------+
|              432 |       317 |
|               17 |       332 |
|              247 |       480 |
|              473 |       182 |
|              597 |       558 |
|              309 |       515 |
|              399 |       407 |
|              555 |       531 |
|              258 |       593 |
|              205 |       629 |
+------------------+-----------+
```

Client's table:

Field	Type	Null	Key	Default	Extra
id	bigint(20) unsigned	NO	PRI	NULL	auto_increment
first_name	varchar(30)	NO		NULL	
middle_name	varchar(30)	YES		NULL	
last_name	varchar(30)	NO		NULL	
date_of_birth	date	NO		NULL	
gender	enum('Male','Female')	YES		NULL	
social_security_number	varchar(4)	YES		NULL	
client_phase	enum('Applicant','Resident','Graduate','Ejected')	NO		Applicant	

```
MariaDB [gsundberg3513_RehabProgram]> select * from Client
    -> limit 10;
```

id	first_name	middle_name	last_name	date_of_birth	gender	social_security_number	client_phase
2	Mata	Dagny	Huffey	1978-04-14	Male	296-49-5357	Resident
3	Taber	Kermie	Knott	1976-06-28	Male	356-60-7529	Applicant
4	Conroy	Milty	Searchwell	1985-08-25	Male	625-23-7000	Resident
5	Ramsay	Thorpe	Scothorne	1962-07-06	Male	725-40-0271	Resident
6	Panchito	Rudiger	Leggott	1963-12-09	Male	173-02-3073	Resident
7	Sosanna	Wendie	Morphew	1983-11-20	Female	842-46-1063	Ejected
8	Dorine	Georgina	Linnitt	1986-09-16	Female	855-43-1000	Applicant
9	Dante	Roderic	McAnellye	1970-09-06	Male	263-35-8318	Ejected
10	Martha	Eloise	Sharrocks	1971-05-25	Female	773-32-2286	Ejected
11	Kelby	Augustine	McAllan	1988-04-05	Male	296-23-8022	Resident

Contact's table

Field	Type	Null	Key	Default	Extra
client_id	bigint(20) unsigned	NO	MUL	NULL	
phone_number	varchar(10)	YES		NULL	
email_address	varchar(40)	YES		NULL	
emergency_number	varchar(10)	YES		NULL	
contact_name	varchar(64)	YES		NULL	

```
MariaDB [gsundberg3513_RehabProgram]> select * from Contact
    -> limit 10;
```

client_id	phone_number	email_address	emergency_number	contact_name
507	3926785977	jtolomei0@eventbrite.com	4193879863	Joceline Tolomei
304	9687222055	sstorah1@4shared.com	2897186342	Sean Storah
460	5734404598	dvenners2@netscape.com	8335932734	Dania Venners
505	9675349178	bmertel3@bbb.org	3515136330	Bryanty Mertel
627	9232888690	jstutard4@cargocollective.com	4544979013	Jaimie Stutard
495	4831977190	rroulston5@samsung.com	2157300354	Rhianna Roulston
404	4115208972	ewycherley6@i2i.jp	7036083198	Edwina Wycherley
338	6923402283	nbernth7@unesco.org	9252762690	Nikita Bernth
323	2241206369	medlin8@ning.com	1738005189	Marco Edlin
117	4769370651	slonergan9@cnn.com	6528732424	Scarlett Lonergan

Residency's table

Field	Type	Null	Key	Default	Extra
client_id	bigint(20) unsigned	NO	MUL	NULL	
room_number	varchar(4)	YES		NULL	
mentor_name	varchar(64)	YES		NULL	
entry_date	date	YES		NULL	
exit_date	date	YES		NULL	

```
MariaDB [gsundberg3513_RehabProgram]> select * from Residency
    -> limit 10;
+-----------+-------------+----------------------+------------+-----------+
| client_id | room_number | mentor_name          | entry_date | exit_date |
+-----------+-------------+----------------------+------------+-----------+
|         2 | 2462        | Juliane Chaperlin    | 2014-08-15 | NULL      |
|         4 | 4968        | Lila Clapston        | 2013-07-27 | NULL      |
|         5 | 9502        | Barney Leadbeater    | 2015-08-16 | NULL      |
|         6 | 9426        | Desiri Glassup       | 2012-10-24 | NULL      |
|        11 | 2720        | Bertrando Avramovsky | 2019-07-23 | NULL      |
|        13 | 9513        | Gerald Nelane        | 2018-09-13 | NULL      |
|        19 | 2027        | Deidre Schukert      | 2018-01-21 | NULL      |
|        22 | 1130        | Haley Brierton       | 2017-06-10 | NULL      |
|        25 | 9125        | Margarette Prendiville | 2013-11-08 | NULL      |
|        27 | 2927        | Maritsa Itzkovwitch  | 2012-12-25 | NULL      |
+-----------+-------------+----------------------+------------+-----------+
```

Useful queries:

The number of attended classes by client:

```
select Client.id as "Client ID",
concat(Client.first_name, " ", Client.middle_name, " ",
Client.last_name) as "Client Name",
count(ClassSessionAttendance.client_id) as "Attended Classes"
from Client, ClassSessionAttendance
where Client.id = ClassSessionAttendance.client_id
group by Client.id
order by Client.id
limit 10;
```

```
+-----------+--------------------------+------------------+
| Client ID | Client Name              | Attended Classes |
+-----------+--------------------------+------------------+
|         2 | Mata Dagny Huffey        |               22 |
|         3 | Taber Kermie Knott       |               12 |
|         4 | Conroy Milty Searchwell  |               18 |
|         5 | Ramsay Thorpe Scothorne  |                9 |
|         6 | Panchito Rudiger Leggott |               16 |
|         7 | Sosanna Wendie Morphew   |               17 |
|         8 | Dorine Georgina Linnitt  |               14 |
|         9 | Dante Roderic McAnellye  |               12 |
|        10 | Martha Eloise Sharrocks  |               20 |
|        11 | Kelby Augustine McAllan  |               12 |
+-----------+--------------------------+------------------+
```

The current status of a client, entry date, exit date and the amount of time in the program:

```
select Client.id as "Client ID",
Client.client_phase as "Status",
concat(Client.first_name, " ", Client.middle_name, " ",
Client.last_name) as "Client Name",
Residency.entry_date as "Entry date",
```

```
Residency.exit_date as "Exit_date",
sum(timediff(Residency.exit_date,Residency.entry_date)) as "Time on the
program"
from Client, Residency
where Client.id = Residency.client_id
group by Client.id
order by Client.id
limit 10;
```

Client ID	Status	Client Name	Entry date	Exit_date	Time on the program
2	Resident	Mata Dagny Huffey	2014-08-15	NULL	NULL
4	Resident	Conroy Milty Searchwell	2013-07-27	NULL	NULL
5	Resident	Ramsay Thorpe Scothorne	2015-08-16	NULL	NULL
6	Resident	Panchito Rudiger Leggott	2012-10-24	NULL	NULL
11	Resident	Kelby Augustine McAllan	2019-07-23	NULL	NULL
13	Resident	Ronny Raynard Cranmor	2018-09-13	NULL	NULL
19	Resident	Noe Ebeneser Mulcaster	2018-01-21	NULL	NULL
22	Resident	Inna Tabbatha Grzegorzewski	2017-06-10	NULL	NULL
25	Resident	Giles Gasparo Simnel	2013-11-08	NULL	NULL
27	Resident	Edy Verene Drewry	2012-12-25	NULL	NULL

Getting Emergency contact information of client:

```
select Client.id as "Client ID",
Client.client_phase as "Status",
concat(Client.first_name, " ", Client.middle_name, " ",
Client.last_name) as "Client Name",
Contact.emergency_number as "Emergency Phone",
Contact.contact_name as "Contact name"
from Client, Contact
where Client.id = Contact.client_id
group by Client.id
order by Client.id
limit 10;
```

Client ID	Status	Client Name	Emergency Phone	Contact name
4	Resident	Conroy Milty Searchwell	3217744045	Lamond Loweth
5	Resident	Ramsay Thorpe Scothorne	6757155453	Salvatore Sheward
7	Ejected	Sosanna Wendie Morphew	8538594329	Philbert Sive
8	Applicant	Dorine Georgina Linnitt	7699878419	Addy Spacy
10	Ejected	Martha Eloise Sharrocks	5325722270	Darsie Breslane
14	Applicant	Britta Elsie Treanor	3096352829	Fedora Balam
15	Graduate	Thorndike Reamonn Oaten	2415604964	Etty Willatts
18	Graduate	Demetrius Frasquito Henzer	2362084973	Shana Camp
20	Ejected	Cornelius Onofredo Efford	6332907608	Elizabeth Vasler
22	Resident	Inna Tabbatha Grzegorzewski	8806029705	Alice Widdows

Note: Source code and data is viewable at https://github.com/Luckey-Elijah/Database-1-Project
To see the database on ember, from MariaDB: `use gsundberg3513_RehabProgram`

Problems and Issues with the Database

The residency data base contains only information regarding Clients that are current residents of the Rehab Program and it should also include data regarding Clients that Ejected or Graduated the program. This way, it will be possible to have data regarding exit dates and average time of a Client on the Program. We also need to take additional steps and perform more checks to ensure data integrity after randomly generating most of our data.

Our team is also working to add additional tables after realizing that there are attributes in tables that do not specifically describe the tables. We are working on designing a mentor table rather than having mentor as an attribute, along with other improvements.