

Project Phase III

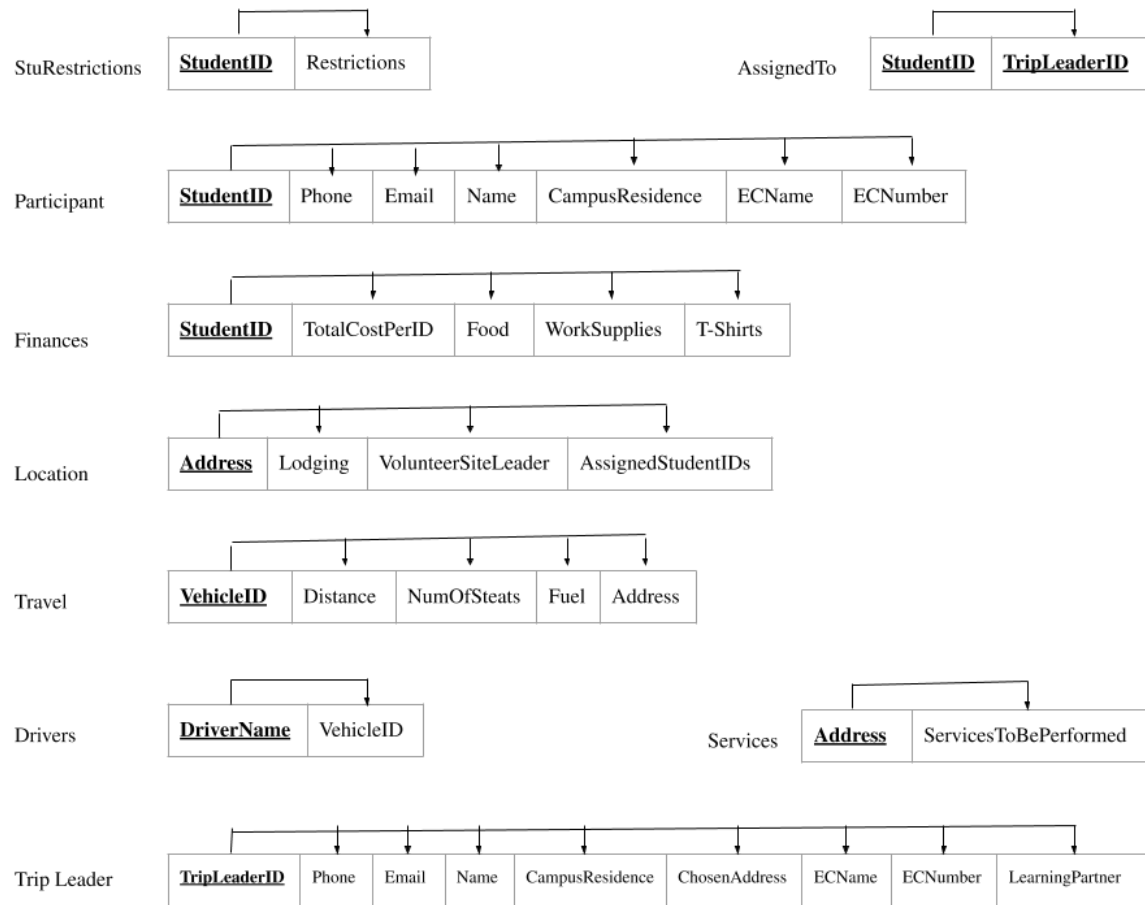
Group 5

Team Five

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REACH Alternative Breaks Database

Step 1: Normalize the relations in the logical schema, at least to 3NF.



Step 2: Identify and explain all integrity constraints. Describe which attributes are allowed to be NULL, why, and what a NULL value means for each attribute.

Restrictions can be NULL because not every student has a restriction. A restriction would be, for example, and allergy. If a restriction entry is NULL, that means that particular student does not have any restrictions.

Tshirt can also be NULL. This item would be NULL if that student did not purchase a tshirt, which is not required.

All other inputs must have a value (NOT NULL).

Step 3: List all the operations that your system will perform in the database. For each operation, show a transaction that would implement it.

Input	Output
StudentID	Restrictions

StudentID	TripLeaderID
StudentID	Phone, Email, Name, Campus Residence, EC Name, EC Number
StudentID	TotalCostPerID, Food, WorkSupplied, T-Shirts
Address	Lodging, VoluneerSiteLeader, AssignedStudentIDs
VehicleID	Distance, NumOfSeats, Fuel, Address
DriverName	VehicleID
Address	ServicesToBePerformed
TripLeaderID	Phone, Email, Name, CampusResidence,ChosenAddress, ECName, ECNumber, Learning

Step 4: Create base relations with the right attribute domains, etc.

CREATE TABLE participant

```
(
    studentid      CHAR(8)          NOT NULL,
    phone          CHAR(10)         NOT NULL UNIQUE,
    email          VARCHAR(30)      NOT NULL UNIQUE,
    name           VARCHAR(25)      NOT NULL,
    campusresidence VARCHAR(20)     NOT NULL,
    ecname         VARCHAR(25)      NOT NULL,
    ecnumber       CHAR(10)         NOT NULL,
    PRIMARY KEY (studentid) );
```

CREATE TABLE sturestrictions

```
(
    studentid      CHAR(8)          NOT NULL,
    restrictions    VARCHAR(100) ,
    PRIMARY KEY (studentid),
    FOREIGN KEY (studentid) REFERENCES participant(studentid) );
```

CREATE TABLE finances

```
(
    studentid      CHAR(8)          NOT NULL,
    totalcostperid NUMERIC(5,2)     NOT NULL,
    food           NUMERIC(5,2)     NOT NULL,
```

```

    worksupplies      NUMERIC(5,2)      NOT NULL,
    tshirt            NUMERIC(4,2),
    PRIMARY KEY (studentid),
    FOREIGN KEY (studentid) REFERENCES participant(studentid) );

```

CREATE TABLE location

```

(    address          VARCHAR(100)      NOT NULL,
    lodging           VARCHAR(100)      NOT NULL,
    volunteersiteleader VARCHAR(25)      NOT NULL,
    assignedstudentids CHAR(8)          NOT NULL,
    PRIMARY KEY (address)
    FOREIGN KEY (assignedstudentids) REFERENCES participant (studentid) );

```

CREATE TABLE services

```

(    address          VARCHAR(100)      NOT NULL,
    servicestobeperformed VARCHAR(500)    NOT NULL,
    PRIMARY KEY (address),
    FOREIGN KEY (address) REFERENCES location (address) );

```

CREATE TABLE travel

```

(    vehicleid        CHAR(2)           NOT NULL,
    distance          INT                NOT NULL,
    numofseats        INT                NOT NULL,
    fuel              VARCHAR(7)         NOT NULL,
    address           VARCHAR(100)       NOT NULL,
    PRIMARY KEY (vehicleid),
    FOREIGN KEY (address) REFERENCES location (address) );

```

CREATE TABLE drivers

```

(    drivename        VARCHAR(25)       NOT NULL,
    vehicleid         CHAR(2)           NOT NULL,
    PRIMARY KEY (drivename),
    FOREIGN KEY (vehicleid) REFERENCES travel (vehicleid) );

```

CREATE TABLE tripleaders

```

(    tripleaderid     CHAR(3)           NOT NULL,
    phone             CHAR(10)          NOT NULL UNIQUE,
    email             VARCHAR(30)       NOT NULL UNIQUE,
    name              VARCHAR(25)       NOT NULL,
    campusresidence   VARCHAR(20)       NOT NULL,
    chosenaddress      VARCHAR(100)      NOT NULL,
    ecname            VARCHAR(25)       NOT NULL,
    ecnumber          CHAR(10)          NOT NULL,
    learningpartner    VARCHAR(25)      NOT NULL,

```

PRIMARY KEY (tripleaderid),
FOREIGN KEY (chosenaddress) REFERENCES location(address));

CREATE TABLE assignedto

(studentid CHAR(8) NOT NULL,
 tripleaderid CHAR(3) NOT NULL,
 PRIMARY KEY (studentid, tripleaderid),
 FOREIGN KEY (studentid) REFERENCES participant (studentid)
 FOREIGN KEY (tripleaderid) REFERENCES tripleaders (tripleaderid));

Step 5. Populate the base relations with 4-8 rows each.

INSERT INTO participant VALUES ('00945521', '7571234567', 'john.doe@gmail.com', 'John Doe', 'Potomac River', 'Mary Doe', '7574567890');
INSERT INTO participant VALUES ('00949745', '7575839000', 'becky.smith.17@cnu.edu', 'Becky Smith', 'Rappahannock River', 'John Smith', '7579807645');
INSERT INTO participant VALUES ('00971789', '8056839233', 'greg.mathies@yahoo.com', 'Greg Mathies', 'Off Campus', 'Lindsay Mathies', '8056839656');
INSERT INTO participant VALUES ('00966812', '7036380271', 'rob.jones.19@cnu.edu', 'Rob Jones', 'Warwick River', 'Bob Jones', '7036380271');
INSERT INTO participant VALUES ('00946253', '5712958633', 'molly.philips.18@cnu.edu', 'Molly Philips', 'Jefferson', 'Jackie Philips', '5713665897');
INSERT INTO participant VALUES ('00945233', '7572662915', 'leogrant@gmail.com', 'Leo Grant', 'York River', 'Bob Grant', '7578022175');

INSERT INTO sturestrictions VALUES ('00945521', 'Nut allergy');
INSERT INTO sturestrictions VALUES ('00949745', NULL);
INSERT INTO sturestrictions VALUES ('00971789', NULL);
INSERT INTO sturestrictions VALUES ('00966812', 'Heavy Lifting, Light Sensitivity');
INSERT INTO sturestrictions VALUES ('00946253', 'Fish allergy');
INSERT INTO sturestrictions VALUES ('00945233', NULL);

INSERT INTO finances VALUES ('00945521', 295.75, 150.75, 120.00, 25.00);
INSERT INTO finances VALUES ('00949745', 350.00, 250.00, 100.00, NULL);
INSERT INTO finances VALUES ('00971789', 442.75, 225.00, 200.00, 17.75);
INSERT INTO finances VALUES ('00966812', 328.00, 180.00, 125.00, 23.00);
INSERT INTO finances VALUES ('00946253', 500.75, 275.75, 200.00, 25.00);
INSERT INTO finances VALUES ('00945233', 475.00, 300.00, 175.00, NULL);

INSERT INTO location VALUES ('James River VA', 'Embassy Suites', 'Dave Williams', '00945521');
INSERT INTO location VALUES ('James River VA 2', 'Embassy Suites', 'Dave Williams', '00946253');
INSERT INTO location VALUES ('Greenville SC', 'Courtyard', 'Joe Smith', '00949745');

INSERT INTO location VALUES ('West Jefferson PA', 'Days Inn', 'George Wilson', '00971789');
INSERT INTO location VALUES ('West Jefferson PA 2', 'Days Inn', 'George Wilson',
'00945233');
INSERT INTO location VALUES ('Atlanta GA', 'SpringHill Suites', 'Stan Brown', '00966812');

INSERT INTO services VALUES ('James River VA', 'Parks & Recreation, watershed restoration,
trail cleanup, wildlife reclamation services');
INSERT INTO services VALUES ('Greenville SC', 'Children's volunteering, offering tutoring
services, learning enhancement, assigned buddies/partners');
INSERT INTO services VALUES ('West Jefferson PA', 'Homeless shelter volunteering, offering
food services, aid with shelter options, and therapy sessions');
INSERT INTO services VALUES ('Atlanta GA', 'SPCA volunteering, offering animal rehabilitation
services, spending time with the animals, ensuring proper care');

INSERT INTO travel VALUES ('01', 35, 5, '5 gal', 'James River Va');
INSERT INTO travel VALUES ('02', 428, 4, '29 gal', 'Greenville SC');
INSERT INTO travel VALUES ('03', 352, 4, '24 gal', 'West Jefferson PA');
INSERT INTO travel VALUES ('04', 608, 5, '41 gal', 'Atlanta GA');

INSERT INTO drivers VALUES ('Jason Amar', '01');
INSERT INTO drivers VALUES ('Gary Lee', '02');
INSERT INTO drivers VALUES ('Sarah Shaw', '03');
INSERT INTO drivers VALUES ('Mike King', '04');

INSERT INTO tripleader VALUES ('101', '7576543211', 'coo@email.com', 'Daniel Co',
'Rappahannock River', 'James River VA', 'Dennis Co', '7574567744', 'John Doe');
INSERT INTO tripleader VALUES ('102', '8045556398', 'nicoledavis@gmail.com', 'Nicole Davis',
'Santoro', 'James River VA', 'Bill Davis', '7578875412', 'John Doe');
INSERT INTO tripleader VALUES ('103', '7036384638', 'paul.thompson.17@cnu.edu', 'Paul
Thompson', 'Taylor', 'James River VA', 'Dee Thompson', '7038189448', 'Molly Philips');
INSERT INTO tripleader VALUES ('104', '7039568741', 'david.sanchez.18@cnu.edu', 'David
Sanchez', 'Rappahannock River', 'James River VA', 'Larry Sanchez', '7036968544', 'Molly
Philips');
INSERT INTO tripleader VALUES ('105', '7578745231', 'susan.clark.18@cnu.edu', 'Susan
Clark', 'Potomac River', 'Greenville SC', 'Mike Clark', '7578980435', 'Becky Smith');
INSERT INTO tripleader VALUES ('106', '7037435000', 'elizabeth.sherman.18@cnu.edu',
'Elizabeth Sherman', 'Washington', 'Greenville SC', 'Lorena Sherman', '7037436003', 'Becky
Smith');
INSERT INTO tripleader VALUES ('107', '5718445989', 'william.nelson.18@cnu.edu', 'William
Nelson', 'Taylor', 'West Jefferson PA', 'Jeff Nelson', '5714854710', 'Greg Mathies');
INSERT INTO tripleader VALUES ('108', '802217363', 'maggie.auld.17@cnu.edu', 'Maggie
Auld', 'Washington', 'West Jefferson PA', 'George Auld', '5714854710', 'Greg Mathies');
INSERT INTO tripleader VALUES ('109', '5712561088', 'katie.west.19@cnu.edu', 'Katie West',
'James River', 'West Jefferson PA', 'Mary West', '5714856388', 'Leo Grant');

```
INSERT INTO tripleader VALUES ('110', '7037441233', 'patrick.lackey.18@cnu.edu', 'Patrick Lackey', 'Rappahannock River', 'West Jefferson PA', 'Natalie Lackey', '7037448758', 'Leo Grant');
```

```
INSERT INTO tripleader VALUES ('111', '7576553259', 'kate.moore.17@cnu.edu', 'Kate Moore', 'Rappahannock River', 'Atlanta GA', 'Kathy Moore', '757154500', 'Rob Jones');
```

```
INSERT INTO tripleader VALUES ('112', '7579638521', 'matt.duncan@yahoo.com', 'Matt Duncan', 'Madison', 'Atlanta GA', 'Tom Duncan', '7570094655', 'Rob Jones');
```

```
INSERT INTO assignedto VALUES ('00945521', '101');
```

```
INSERT INTO assignedto VALUES ('00945521', '102');
```

```
INSERT INTO assignedto VALUES ('00946253', '103');
```

```
INSERT INTO assignedto VALUES ('00946253', '104');
```

```
INSERT INTO assignedto VALUES ('00949745', '105');
```

```
INSERT INTO assignedto VALUES ('00949745', '106');
```

```
INSERT INTO assignedto VALUES ('00971789', '107');
```

```
INSERT INTO assignedto VALUES ('00971789', '108');
```

```
INSERT INTO assignedto VALUES ('00945233', '109');
```

```
INSERT INTO assignedto VALUES ('00945233', '110');
```

```
INSERT INTO assignedto VALUES ('00966812', '111');
```

```
INSERT INTO assignedto VALUES ('00966812', '112');
```

Show what is in each table by printing out a "SELECT * FROM table" for each table.

participant

```
mysql> SELECT * FROM participant;
```

studentid	phone	email	name	campusresidence	ecname	ecnumber
00945233	7572662915	leogrant@gmail.com	Leo Grant	York River	Bill Grant	7578022175
00945521	7571234567	john.doe@gmail.com	John Doe	Potomac River	Mary Doe	7574567890
00946253	5712958633	molly.philips.18@cnu.edu	Molly Philips	Jefferson	Jackie Philips	5713665897
00949745	7575839000	becky.smith.17@cnu.edu	Becky Smith	Rappahannock River	John Smith	7579807645
00966812	7036380271	rob.jones.19@cnu.edu	Rob Jones	Warwick River	Bob Jones	7036380271
00971789	8056839233	greg.mathies@yahoo.com	Greg Mathies	Off Campus	Chip Mathies	8056839656

```
6 rows in set (0.07 sec)
```

Sturestrictions

```
mysql> SELECT * FROM sturestrictions;
```

studentid	restrictions
00945233	NULL
00945521	Nut allergy
00946253	Fish allergy
00949745	NULL
00966812	Heavy Lifting, Light Sensitivity
00971789	NULL

```
6 rows in set (0.03 sec)
```

Finances

```
mysql> SELECT * FROM finances;
+-----+-----+-----+-----+-----+
| studentid | totalcostperid | food | worksupplies | tshirt |
+-----+-----+-----+-----+-----+
| 00945233 | 475.00 | 300.00 | 175.00 | NULL |
| 00945521 | 295.75 | 150.75 | 120.00 | 25.00 |
| 00946253 | 500.75 | 275.75 | 200.00 | 25.00 |
| 00949745 | 350.00 | 250.00 | 100.00 | NULL |
| 00966812 | 328.00 | 180.00 | 125.00 | 23.00 |
| 00971789 | 442.75 | 225.00 | 200.00 | 17.75 |
+-----+-----+-----+-----+-----+
6 rows in set (0.11 sec)

mysql> _
```

location

```
mysql> SELECT * FROM location;
+-----+-----+-----+-----+
| address | lodging | volunteersiteleader | assignedstudentids |
+-----+-----+-----+-----+
| Atlanta GA | SpringHill Suites | Stan Brown | 00966812 |
| Greenville SC | Courtyard | Joe Smith | 00949745 |
| James River VA | Embassy Suites | Dave Williams | 00945521 |
| James River VA 2 | Embassy Suites | Dave Williams | 00946253 |
| West Jefferson PA | Days Inn | George Wilson | 00971789 |
| West Jefferson PA 2 | Days Inn | George Wilson | 00945233 |
+-----+-----+-----+-----+
6 rows in set (0.06 sec)
```

services

```
mysql> SELECT * FROM services;
+-----+-----+
| address | servicestobeperformed |
+-----+-----+
| Atlanta GA | SPCA volunteering, offering animal rehabilitation services, spending time with the animals, ensuring proper care |
| Greenville SC | Children?s volunteering, offering tutoring services, learning enhancement, assigned buddies/partners |
| James River VA | Parks & Recreation, watershed restoration, trail cleanup, wildlife reclamation services |
| West Jefferson PA | Homeless shelter volunteering, offering food services, aid with shelter options, and therapy sessions |
+-----+-----+
4 rows in set (0.07 sec)

mysql>
```

travel

```
mysql> SELECT * FROM travel;
+-----+-----+-----+-----+-----+
| vehicleid | distance | numofseats | fuel | address |
+-----+-----+-----+-----+-----+
| 01 | 35 | 5 | 5 gal | James River Va |
| 02 | 428 | 4 | 29 gal | Greenville SC |
| 03 | 352 | 4 | 24 gal | West Jefferson PA |
| 04 | 608 | 5 | 41 gal | Atlanta GA |
+-----+-----+-----+-----+-----+
4 rows in set (0.08 sec)
```


drivers

```
mysql> SELECT * FROM drivers;
+-----+-----+
| drivername | vehicleid |
+-----+-----+
| Jason Amar | 01        |
| Gary Lee   | 02        |
| Sarah Shaw | 03        |
| Mike King  | 04        |
+-----+-----+
4 rows in set (0.06 sec)
```

tripleader

```
mysql> SELECT * FROM tripleader;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| tripleaderid | phone      | email                      | name      | campusresidence | chosenaddress | ecname      | ecnumber  | learningpartner |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 101          | 7576543211 | coo@email.com              | Daniel Co | Rappahannock River | James River VA | Dennis Co   | 7574567744 | John Doe        |
| 102          | 8045556398 | nicoledavis@gmail.com      | Nicole Davis | Santoro          | James River VA | Bill Davis  | 7578875412 | John Doe        |
| 103          | 7036384638 | paul.thompson.17@cnu.edu    | Paul Thompson | Taylor           | James River VA | Dee Thompson | 7038189448 | Molly Philips   |
| 104          | 7039568741 | david.sanchez.18@cnu.edu    | David Sanchez | Rappahannock River | James River VA | Larry Sanchez | 7036968544 | Molly Philips   |
| 105          | 7578745231 | susan.clark.18@cnu.edu      | Susan Clark | Potomac River    | Greenville SC | Mike Clark  | 7578980435 | Becky Smith     |
| 106          | 7037435000 | elizabeth.sherman.18@cnu.edu | Elizabeth Sherman | Washington       | Greenville SC | Lorena Sherman | 7037436003 | Becky Smith     |
| 107          | 5718445989 | william.nelson.18@cnu.edu    | William Nelson | Taylor           | West Jefferson PA | Jeff Nelson | 5714854710 | Greg Mathies    |
| 108          | 802217363 | maggie.auld.17@cnu.edu      | Maggie Auld | Washington       | West Jefferson PA | George Auld | 5714854710 | Greg Mathies    |
| 109          | 5712561088 | katie.west.19@cnu.edu       | Katie West | James River      | West Jefferson PA | Mary West   | 5714856388 | Leo Grant       |
| 110          | 7037441233 | patrick.lackey.18@cnu.edu    | Patrick Lackey | Rappahannock River | West Jefferson PA | Natalie Lackey | 7037448758 | Leo Grant       |
| 111          | 7576553259 | kate.moore.17@cnu.edu       | Kate Moore | Rappahannock River | Atlanta GA    | Kathy Moore | 757154500  | Rob Jones       |
| 112          | 7579638521 | matt.duncan@yahoo.com       | Matt Duncan | Madison          | Atlanta GA    | Tom Duncan  | 7570094655 | Rob Jones       |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
```

assignedto

```
mysql> SELECT * FROM assignedto;
+-----+-----+
| studentid | tripleaderid |
+-----+-----+
| 00945521  | 101          |
| 00945521  | 102          |
| 00946253  | 103          |
| 00946253  | 104          |
| 00949745  | 105          |
| 00949745  | 106          |
| 00971789  | 107          |
| 00971789  | 108          |
| 00945233  | 109          |
| 00945233  | 110          |
| 00966812  | 111          |
| 00966812  | 112          |
+-----+-----+
12 rows in set (0.00 sec)
```