

Practicum

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Part 3:

UML Model

<https://lucid.app/invitations/accept/19527041-b53a-4f4c-9f88-4ab215c56f79>

Conceptual Model

- Key Icon: Primary Key
- Light Red: Foreign Key

Part 5

– MySQL Workbench Forward Engineering

```
CREATE SCHEMA IF NOT EXISTS `contacttracing` DEFAULT CHARACTER SET utf8 ;
USE `contacttracing` ;
```

```
– Table contacttracing.taskforce
CREATE TABLE IF NOT EXISTS contacttracing.taskforce (
  ReportingId INT(11) NOT NULL, DateReported DATE NOT NULL,
  CovidStatus ENUM('Positive', 'Suspected', 'Negative') NOT NULL,
  LastSyncDate DATE NOT NULL, PRIMARY KEY (ReportingId))
ENGINE = InnoDB DEFAULT CHARACTER SET = utf8;
```

```
– Table contacttracing.active
CREATE TABLE IF NOT EXISTS contacttracing.active (
  ActiveUserId VARCHAR(70) NOT NULL,
  ReportingId INT(11) NOT NULL,
  PRIMARY KEY (ActiveUserId),
  INDEX fk_Active_TaskForce1_idx (ReportingId ASC) VISIBLE,
  CONSTRAINT fk_Active_TaskForce1
  FOREIGN KEY (ReportingId)
  REFERENCES contacttracing.taskforce (ReportingId))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;
```

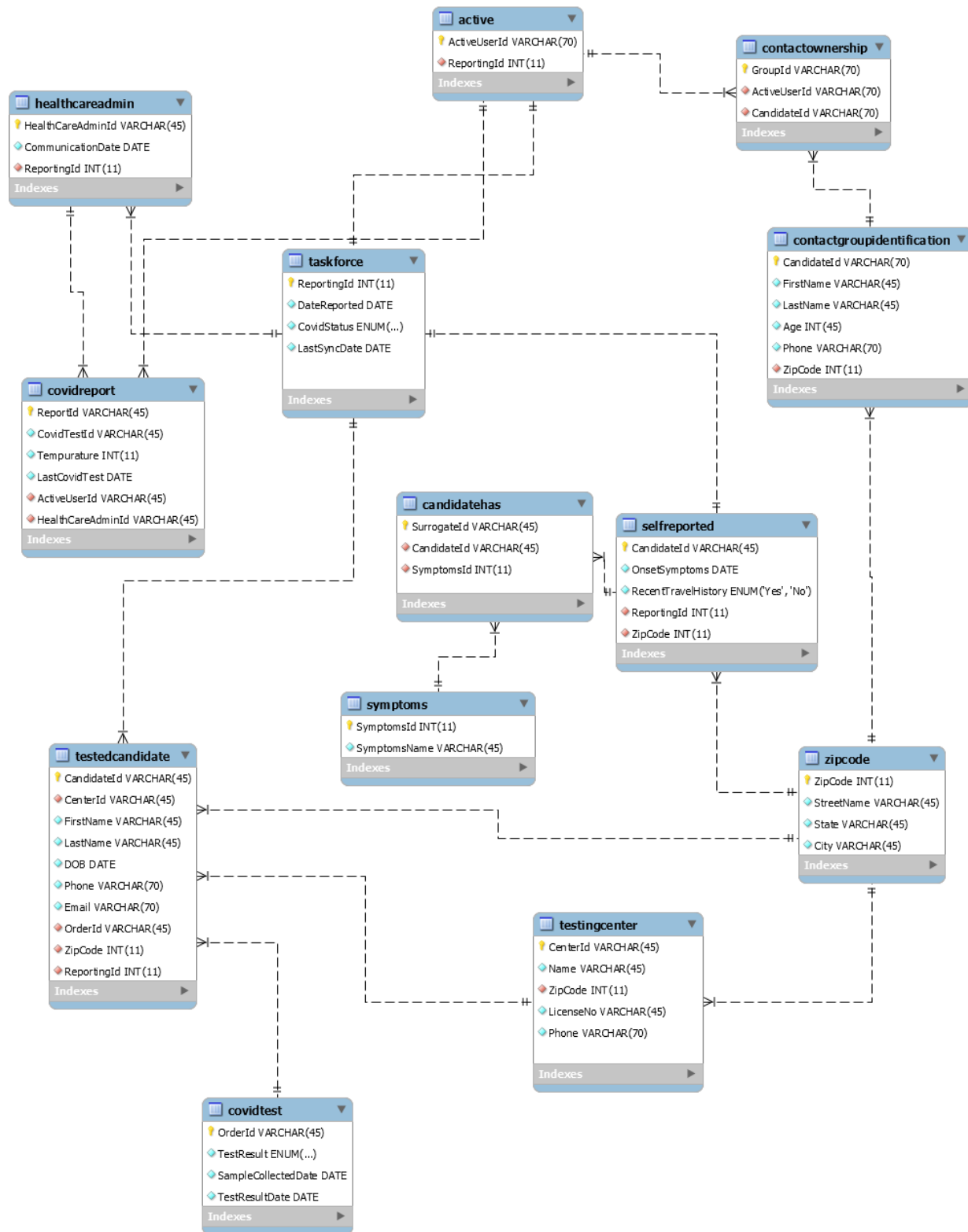


Figure 1: ERD Diagram Design in MySQL WorkBench

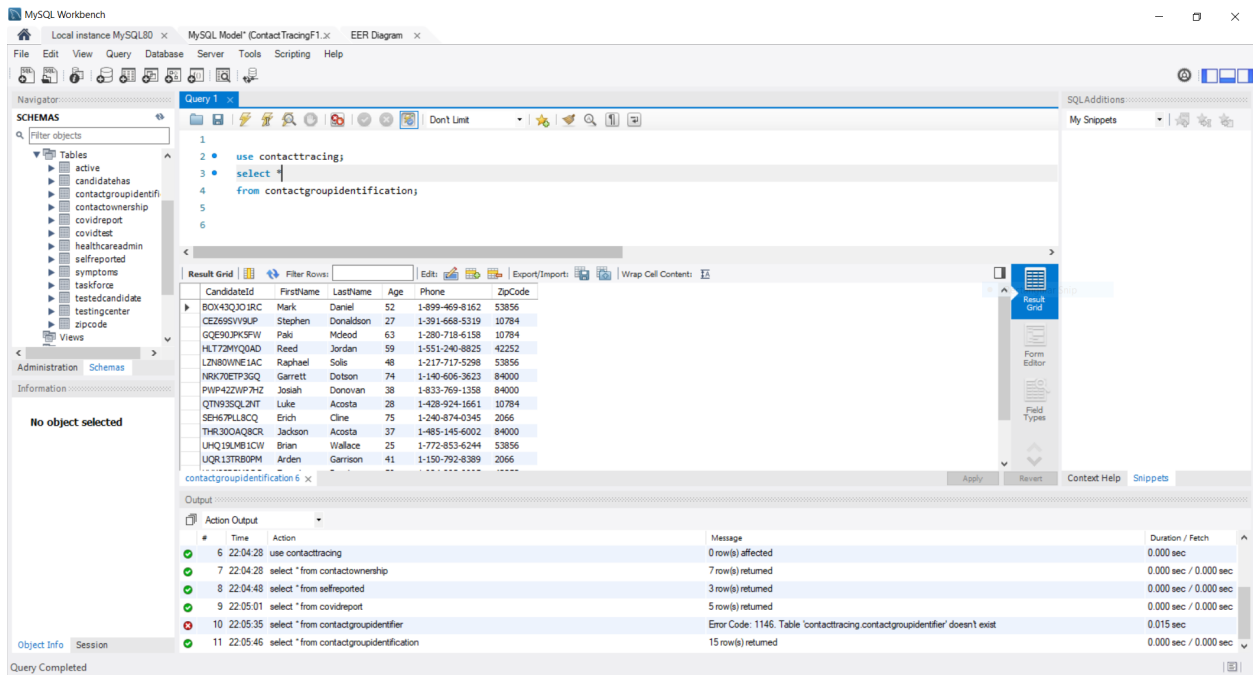


Figure 2: Querying in MySQL WorkBench

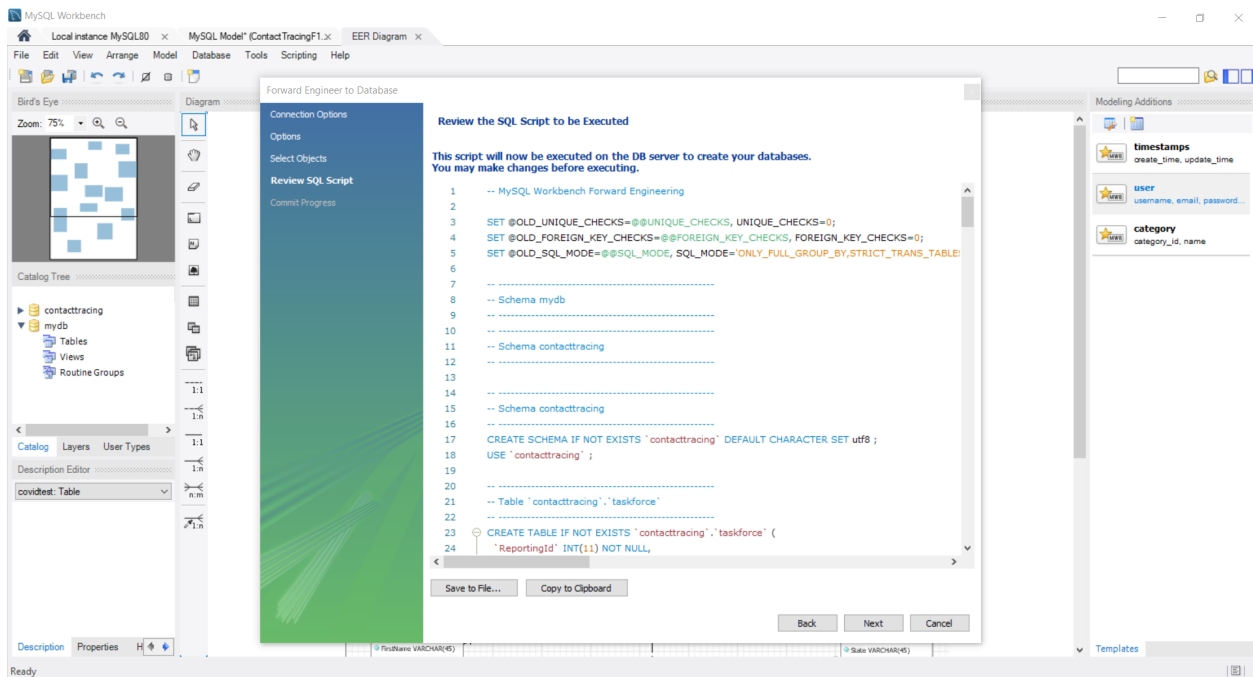


Figure 3: Forward Engineering in MySQL WorkBench

– Table `contacttracing.zipcode`

```
CREATE TABLE IF NOT EXISTS contacttracing.zipcode ( ZipCode
INT(11) NOT NULL, StreetName VARCHAR(45) NOT NULL, State
VARCHAR(45) NOT NULL, City VARCHAR(45) NOT NULL, PRIMARY
KEY (ZipCode)) ENGINE = InnoDB DEFAULT CHARACTER SET =
utf8;
```

– Table `contacttracing.selfreported`

```
CREATE TABLE IF NOT EXISTS contacttracing.selfreported (
CandidateId VARCHAR(45) NOT NULL,
OnsetSymptoms DATE NOT NULL,
RecentTravelHistory ENUM('Yes', 'No') NOT NULL,
ReportingId INT(11) NOT NULL,
ZipCode INT(11) NOT NULL,
PRIMARY KEY (CandidateId),
INDEX fk_SelfReported_Task Force1_idx (ReportingId ASC) VISIBLE,
INDEX fk_SelfReported_ZipCode1_idx (ZipCode ASC) VISIBLE,
CONSTRAINT fk_SelfReported_Task Force1
FOREIGN KEY (ReportingId)
REFERENCES contacttracing.taskforce (ReportingId),
CONSTRAINT fk_SelfReported_ZipCode1
FOREIGN KEY (ZipCode)
REFERENCES contacttracing.zipcode (ZipCode))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;
```

– Table `contacttracing.symptoms`

```
CREATE TABLE IF NOT EXISTS contacttracing.symptoms (
SymptomsId INT(11) NOT NULL, SymptomsName VARCHAR(45) NOT
NULL, PRIMARY KEY (SymptomsId)) ENGINE = InnoDB DEFAULT
CHARACTER SET = utf8;
```

– Table `contacttracing.candidatehas`

```
CREATE TABLE IF NOT EXISTS contacttracing.candidatehas (
SurrogateId VARCHAR(45) NOT NULL,
CandidateId VARCHAR(45) NOT NULL,
SymptomsId INT(11) NOT NULL,
PRIMARY KEY (SurrogateId),
INDEX fk_candidatehas_selfreported1_idx (CandidateId ASC) VISIBLE,
INDEX fk_candidatehas_symptoms_copy1_copy11 (SymptomsId ASC) VISIBLE,
CONSTRAINT fk_candidatehas_selfreported1
FOREIGN KEY (CandidateId)
REFERENCES contacttracing.selfreported (CandidateId),
CONSTRAINT fk_candidatehas_symptoms_copy1_copy11
FOREIGN KEY (SymptomsId)
REFERENCES contacttracing.symptoms (SymptomsId))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;
```

– Table `contacttracing.contactgroupidentification`

```
CREATE TABLE IF NOT EXISTS
contacttracing.contactgroupidentification ( CandidateId
VARCHAR(70) NOT NULL, FirstName VARCHAR(45) NOT NULL,
LastName VARCHAR(45) NOT NULL, Age INT(45) NOT NULL, Phone
VARCHAR(70) NOT NULL, ZipCode INT(11) NOT NULL, PRIMARY
KEY (CandidateId), INDEX
fk_contactgroupidentification_zipcode1_idx (ZipCode ASC)
VISIBLE, CONSTRAINT fk_contactgroupidentification_zipcode1
FOREIGN KEY (ZipCode) REFERENCES contacttracing.zipcode
(ZipCode)) ENGINE = InnoDB DEFAULT CHARACTER SET = utf8;
```

– Table `contacttracing.contactownership`

```
CREATE TABLE IF NOT EXISTS contacttracing.contactownership (
GroupId VARCHAR(70) NOT NULL,
ActiveUserId VARCHAR(70) NOT NULL,
CandidateId VARCHAR(70) NOT NULL,
PRIMARY KEY (GroupId),
INDEX fk_ContactOwnership_ContactGroupIdentification1_idx (CandidateId ASC) VISIBLE,
INDEX fk_contactownership_active1_idx (ActiveUserId ASC) VISIBLE,
CONSTRAINT fk_ContactOwnership_ContactGroupIdentification1
FOREIGN KEY (CandidateId)
REFERENCES contacttracing.contactgroupidentification (CandidateId),
CONSTRAINT fk_contactownership_active1
FOREIGN KEY (ActiveUserId)
REFERENCES contacttracing.active (ActiveUserId))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;
```

– Table `contacttracing.healthcareadmin`

```
CREATE TABLE IF NOT EXISTS contacttracing.healthcareadmin (
HealthCareAdminId VARCHAR(45) NOT NULL, CommunicationDate
DATE NOT NULL, ReportingId INT(11) NOT NULL, PRIMARY KEY
(HealthCareAdminId), INDEX fk_HealthCareAdmin_TaskForce1_idx
(ReportingId ASC) VISIBLE, CONSTRAINT
fk_HealthCareAdmin_TaskForce1 FOREIGN KEY (ReportingId)
REFERENCES contacttracing.taskforce (ReportingId)) ENGINE =
InnoDB DEFAULT CHARACTER SET = utf8;
```

– Table `contacttracing.covidreport`

```
CREATE TABLE IF NOT EXISTS contacttracing.covidreport (
ReportId VARCHAR(45) NOT NULL,
CovidTestId VARCHAR(45) NOT NULL,
Tempurature INT(11) NOT NULL,
LastCovidTest DATE NOT NULL,
ActiveUserId VARCHAR(45) NOT NULL,
HealthCareAdminId VARCHAR(45) NOT NULL,
PRIMARY KEY (ReportId),
```

```

- Table contacttracing.covidreport
INDEX fk_CovidReport_Active1_idx (ActiveUserId ASC) VISIBLE,
INDEX fk_CovidReport_HealthCareAdmin1_idx (HealthCareAdminId ASC) VISIBLE,
CONSTRAINT fk_CovidReport_Active1
FOREIGN KEY (ActiveUserId)
REFERENCES contacttracing.active (ActiveUserId),
CONSTRAINT fk_CovidReport_HealthCareAdmin1
FOREIGN KEY (HealthCareAdminId)
REFERENCES contacttracing.healthcareadmin (HealthCareAdminId))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;

```

```

- Table contacttracing.covidtest
CREATE TABLE IF NOT EXISTS contacttracing.covidtest ( OrderId
VARCHAR(45) NOT NULL, TestResult ENUM('Positive', 'Negative')
NOT NULL, SampleCollectedDate DATE NOT NULL, TestResultDate
DATE NOT NULL, PRIMARY KEY (OrderId)) ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;

```

```

- Table contacttracing.testingcenter
CREATE TABLE IF NOT EXISTS contacttracing.testingcenter (
CenterId VARCHAR(45) NOT NULL,
Name VARCHAR(45) NOT NULL,
ZipCode INT(11) NOT NULL,
LicenseNo VARCHAR(45) NOT NULL,
Phone VARCHAR(70) NOT NULL,
PRIMARY KEY (CenterId),
INDEX fk_TestingCenter_ZipCode1_idx (ZipCode ASC) VISIBLE,
CONSTRAINT fk_TestingCenter_ZipCode10
FOREIGN KEY (ZipCode)
REFERENCES contacttracing.zipcode (ZipCode))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;

```

```

- Table contacttracing.testedcandidate

```

```

CREATE TABLE IF NOT EXISTS `contacttracing`.`testedcandidate` (
`CandidateId` VARCHAR(45) NOT NULL,
`CenterId` VARCHAR(45) NOT NULL,
`FirstName` VARCHAR(45) NOT NULL,
`LastName` VARCHAR(45) NOT NULL,
`DOB` DATE NOT NULL,
`Phone` VARCHAR(70) NOT NULL,
`Email` VARCHAR(70) NOT NULL,
`OrderId` VARCHAR(45) NOT NULL,
`ZipCode` INT(11) NOT NULL,
`ReportingId` INT(11) NOT NULL,
PRIMARY KEY (`CandidateId`),

```

```

INDEX `OrderId_idx` (`OrderId` ASC) VISIBLE,
INDEX `fk_TestedException_Task Force1_idx` (`ReportingId` ASC) VISIBLE,
INDEX `fk_TestedException_ZipCode1_idx` (`ZipCode` ASC) VISIBLE,
INDEX `fk_testedcandidate_testingcenter1_idx` (`CenterId` ASC) VISIBLE,
CONSTRAINT `OrderId0`
    FOREIGN KEY (`OrderId`)
    REFERENCES `contacttracing`.`covidtest` (`OrderId`),
CONSTRAINT `fk_TestedException_Task Force1`
    FOREIGN KEY (`ReportingId`)
    REFERENCES `contacttracing`.`taskforce` (`ReportingId`),
CONSTRAINT `fk_TestedException_ZipCode1`
    FOREIGN KEY (`ZipCode`)
    REFERENCES `contacttracing`.`zipcode` (`ZipCode`),
CONSTRAINT `fk_testedcandidate_testingcenter1`
    FOREIGN KEY (`CenterId`)
    REFERENCES `contacttracing`.`testingcenter` (`CenterId`))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;

SET SQL_MODE=@OLD_SQL_MODE; SET FOREIGN_KEY_CHECKS=@OLD_FOREIGN_KEY_C
HECKS; SET UNIQUE_CHECKS=@OLD_UNIQUE_CHECKS;

```

Part 6 Insertion Queries

```

INSERT INTO zipcode (ZipCode,StreetName,State,City) VALUES ("10784","Opal Village", "Cali-
fornia","Los Angeles"), ("50835","Cartwright Meadow","Minnesota","Saint Paul"), ("19379","Pagac
Ramp","Tennessee","Nashville"), ("42252","Rogers Extension","Georgia","Atlanta"), ("84000","Marielle
Coves","California","Los Angeles"), ("06774","Crooks Roads","California","Los Angeles"), ("12422","Anibal
Stream","New York","Buffalo"), ("53856","Daphne Plains","New York","New York City"), ("10906","Wyman
Inlet","Missouri","Kansas City"), ("02066","Camron Flat","Missouri","Kansas City")

```

```

INSERT INTO testingcenter (CenterId,Name,ZipCode,LicenseNo,Phone) VALUES ("GGIY930","Gravida","50835","CCQ63YS
257-419-2125"), ("CEBY227","Art Avenue","10906","IIE27FLI1SU","1-694-581-9531"), ("TXEY205","Dolor","50835","IIZ44U
572-524-4960"), ("EYXM942","Elite","12422","YXM70XGK6FD","1-613-416-2970"), ("ZXME144","996
Hawk","53856","TSZ13NHE3OV","1-455-963-8898"), ("ANWV749","Auctor","06774","FIU46JOV5DK","1-
561-744-6198"), ("COOK457","Porttitor","19379","CPC43TNY2BP","1-517-122-5863");

```

```

INSERT INTO taskforce (ReportingId,DateReported,CovidStatus,LateSyncDate) VALUES ("251697","2020-
08-01","Positive","2020-09-07"), ("978362","2020-08-07","Negative","2020-09-16"), ("880509","2020-08-
14","Negative","2020-09-24"), ("989349","2020-08-04","Positive","2020-09-12"), ("985882","2020-08-05","
Positive","2020-10-01"), ("597538","2020-08-25","Negative","2020-09-20"), ("381416","2020-08-
19","Negative","2020-10-01");

```

```

INSERT INTO covidtest (OrderId,TestResult,SampleCollectedDate,TestResultDate) VALUES ("920317","Positive","2020-
09-05","2020-09-18"), ("795954","Negative","2020-09-13","2020-09-22"), ("143503","Negative","2020-09-
01","2020-09-27"), ("153649","Negative","2020-09-03","2020-09-24"), ("342421","Positive","2020-09-
04","2020-10-01"), ("280492","Positive","2020-09-06","2020-09-18"), ("871028","Negative","2020-09-
10","2020-09-17");

```

```

INSERT INTO testedcandidate (CandidateId,CenterId,FirstName,LastName,DOB,Phone,Email,OrderId,ZipCode,ReportingId)
VALUES ("SJG20231","GGIY930","Nissim","Dyer","1969-12-31","1-736-566-4425","eget.ipsum.Donec@m
ollis.org","920317","50835","251697"), ("RQV30513","GGIY930","Tanek","Jackson","1969-12-31","1-379-748-
3323","consequat@diamDuismi.ca","153649","50835","978362"), ("UZK77843","COOK457","Howard","Murray","1969-
12-31","1-469-932-4425","Donec.porttitor.tellus@risus.co.uk","143503","12422","880509"), ("QKN80556","ANWV749","Kenne
12-31","1-423-727-1379","nulla.Integer@non.com","280492","06774","989349"), ("EWK36743","ANWV749","Armando","Byrd
12-31","1-433-304-0459","Mauris.magna.Duis@accumsan.ca","342421","10906","985882"), ("HKV04560","COOK457","Zahir",
12-31","1-242-445-5926","at@Nullamsuscipitest.edu","871028","10906","597538");

```

```
INSERT INTO active(ActiveUserId,ReportingId) VALUES ("YLHR6228", "251697") ,("VFDW5805",
"985882") ,("GSPA4057", "880509") ,("DHFO0615", "989349") ,("AZUV4790", "597538") ;
```

```
INSERT INTO contactownership(GroupId,ActiveUserId,CandidateId) VALUES ("YPRF8254","YLHR6228","GQE90JPK5FW",
("QIXA9762","YLHR6228","CEZ69SVV9UP"), ("ZAUX3675","AZUV4790","QTN93SQL2NT")
,("YRFX0967","GSPA4057","BOX43QJO1RC") ,("FVDY0232","GSPA4057","UHQ19LMB1CW")
,("UIQK1684","DHFO0615","HLT72MYQ0AD") ,("EALB5226","DHFO0615","SEH67PLL8CQ");
```

```
INSERT INTO contactgroupidentification (CandidateId,FirstName,LastName,Age,Phone,ZipCode) VALUES
("GQE90JPK5FW","Paki","McLeod",63,"1-280-718-6158","10784"), ("CEZ69SVV9UP","Stephen","Donaldson",27,"1-
391-668-5319","10784"), ("QTN93SQL2NT","Luke","Acosta",28,"1-428-924-1661","10784"), ("BOX43QJO1RC","Mark","Dani
899-469-8162","53856"),("LZN80WNE1AC","Raphael","Solis",48,"1-217-717-5298","53856"), ("UHQ19LMB1CW","Brian","W
772-853-6244","9140 BQ"), ("XNF54NCA9ND","Hunter","English",67,"1-535-613-8886","84000")
,("NRK70ETP3GQ","Garrett","Dotson",74,"1-140-606-3623","84000"), ("PWP42ZWP7HZ","Josiah","Donovan",38,"1-
833-769-1358","84000"), ("HLT72MYQ0AD","Reed","Jordan",59,"1-551-240-8825","42252"), ("VUY82RPM9OQ","Francis","F
984-893-9905","42252"), ("SEH67PLL8CQ","Erich","Cline",75,"1-240-874-0345","02066"), ("WWL05CBK8KK","Brady","Roa
199-822-7523","02066"), ("UQR13TRB0PM","Arden","Garrison",41,"1-150-792-8389","02066"), ("THR30OAQ8CR","Jackson"
485-145-6002","84000");
```

```
INSERT INTO healthcareadmin (HealthCareAdminId,CommunicationDate,ReportingId) VALUES
("SL833UT3GQ","2020-10-03","251697") ,("SW436HG6OL","2020-09-27","989349") ,("VE799NF5RI","2020-
10-06","985882") ,("QH791SY9TR","2020-10-06","381416") ,("GH647AI9BB","2020-10-11","597538");
```

```
INSERT INTO covidreport (ReportId,CovidTestId,Tempurature,LastCovidTest,ActiveUserId,HealthCareAdminId)
VALUES ("KF405IX4MJ","SPM54UIR2GS",116,"2020-10-28"," AZUV4790"," SL833UT3GQ"),
("EI508SI3RW","XJI99EVA8IY",91,"2020-10-07"," DHFO0615"," SW436HG6OL") ,("HO155LT3TG","UZQ14MPQ9CD",116,"
10-23"," GSPA4057"," SW436HG6OL ") ,("OC706CP9PJ","BBJ31TzM7TD",94,"2020-10-01","
VFDW5805"," SW436HG6OL") ,("KL540BY8LF","MRL95LMA0SY",116,"2020-10-19"," YLHR6228","
GH647AI9BB ");
```

```
INSERT INTO selfreported (CandidateId,OnsetSymptomsDate,RecentTravelHistory,ReportingId,ZipCode)
VALUES ("HS018AS3EE","2020-09-09","Yes","597538","10784"), ("AN574IW6EQ","2020-09-26","Yes","985882","10784")
,("EF588GK2NQ","2020-09-30","No","880509","42252"); INSERT INTO candidatehas (SurrogateId,CandidateId,SymptomsId)
VALUES ("TB540YJ0ZC","HS018AS3EE",1),("HU221RQ1QY","AN574IW6EQ",6), ("VE308AH6ES","EF588GK2NQ",5);
```

```
INSERT INTO candidatehas (SymptomsId,SymptomsName) VALUES (2,"Fever"), (5,"Sore throat"),
(4,"Cough") ,(3,"Shortness of breath") ,(1,"Nausea");
```

Part 7.

```
library(DBI)
```

```
## Warning: package 'DBI' was built under R version 3.6.3
```

```
library(RMySQL)
```

```
## Warning: package 'RMySQL' was built under R version 3.6.3
```

```
mydrv <- dbDriver("MySQL")
```

```
conn <- dbConnect(mydrv, dbname="contacttracing",host="127.0.0.1",port=3306, user="root",password="Tend
```

QUERIES

1. Query to display the Name, Covid Test Result, the location of their Testing center along with the Date the Task Force Authority has their data entry by using multiple join statements.

```
dbFetch(dbSendQuery(conn, 'select tc.FirstName,tc.LastName,ct.TestResult,zc.State,tf.DateReported from
```

```
##   FirstName LastName TestResult      State DateReported
## 1   Armando     Byrd   Positive California 2020-08-05
## 2    Zahir Carrillo Negative  Tennessee 2020-08-25
```



```
## 3 Kennedy Burks Positive California 2020-08-04
## 4 Tanek Jackson Negative Minnesota 2020-08-07
## 5 Nissim Dyer Positive Minnesota 2020-08-01
## 6 Howard Murray Negative Tennessee 2020-08-14
```

2. Query to display the Name and contact Details of the potential Covid infected persons who has contacted the Person whose covid Status was 'Positive' in the database of Task Force.

```
dbFetch(dbSendQuery(conn, 'select FirstName,LastName,Age,Phone,ZipCode from contactgroupidentification v
```

```
## FirstName LastName Age Phone ZipCode
## 1 Stephen Donaldson 27 1-391-668-5319 10784
## 2 Paki Mcleod 63 1-280-718-6158 10784
## 3 Erich Cline 75 1-240-874-0345 2066
## 4 Reed Jordan 59 1-551-240-8825 42252
```

3. Query to display the Streetwise count of Covid testing.

```
dbFetch(dbSendQuery(conn, 'select StreetName,count(*) as TestingCount from zipcode group by State havi
```

```
## StreetName TestingCount
## 1 Camron Flat 2
## 2 Crooks Roads 3
## 3 Anibal Stream 2
```

4. Query to display the Id of the Patient who is Covid Negative but shows Body Tempurature higher than 90 from the database that is held with HealthCare Monitoring Body.

```
dbFetch(dbSendQuery(conn, 'select hc.ReportingId,cr.Tempurature,tf.CovidStatus from covidreport cr inner
```

```
## ReportingId Tempurature CovidStatus
## 1 989349 91 Positive
## 2 989349 116 Positive
## 3 251697 116 Positive
## 4 989349 94 Positive
```

5. Query to display risk-wise status patient according to their age and CovidStatus of their recent Contact Person carrying Covid.

```
dbFetch(dbSendQuery(conn, 'select FirstName,LastName,Age,
CASE
WHEN Age > 50 THEN "Higher Risk"
WHEN Age < 50 THEN "Mild Risk"
END as Risk
from contactgroupidentification where CandidateId in (select co.CandidateId from c
```

```
## FirstName LastName Age Risk
## 1 Stephen Donaldson 27 Mild Risk
## 2 Paki Mcleod 63 Higher Risk
## 3 Erich Cline 75 Higher Risk
## 4 Reed Jordan 59 Higher Risk
```