PROBLEM-1: REPORT

Problem-1- HYPOTHETICAL SCENARIO

I obtained information on various collected data by visiting: https://resourcescovid19canada.hub.arcgis.com/search

I chose the B.C. Covid-19 Collection dataset

Problem Statement: B.C. Covid-19 Collection dataset helps finding the Covid-19 collection centre through the location, availability and also gives us the information regarding special conditions.

STEP-1:

Cleaning and filteration of the dataset. (refer: Covid Collection csv file)

- 1. In Specific Location column, there were blanks which I replaced by "UNKNOWN" values. Because the values could be anything.
- 2. Similarly, in Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday hours column I added "UNKNOWN" values instead of blanks.

STEP-2

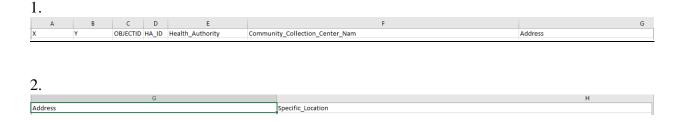
1. I checked whether the given table is in normalized form or not. Inorder to do so, we first check whether the table is in 1NF form or not.

1NF describes tabular format in which:

- All key attributes are defined
- There are no repeating groups in the table.
- All attributes are dependent on the primary key.

Check the attached excel file for the main table to verify the above point.

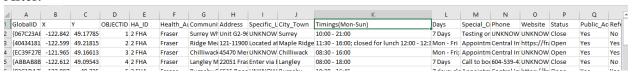
Below are the attributes (Object ID, Health_Authority, Community_Collection_Center_Name, Address, Specific_Location, City_Town, Monday_Hours, Tuesday_hours, Wednesday_hours, Thursday_hours, Friday_hours, Saturday_hours, Sunday_hours, Days, Special_criteria_consideration, Website, Phone, Global_id, Status, Public_Access, Edit_Date, Object, Accept_Children)

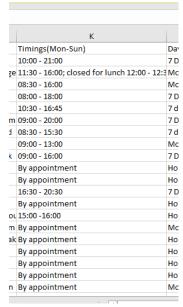


2. Then I realized, that the weeks column i.e. Monday_Hours, Tuesday_hours, Wednesday_hours, Thursday_hours, Friday_hours, Saturday_hours, Sunday_hours had same values which was resulting in data reduncy. So to avoid that I denormalized those columns to one column i.e. Timimgs (Mon-Sun). This column will specify all the same values from Monday to Sunday in just 1 column. Before:

ınday_Hours							
J	К	L	М	N	0	Р	
r Monday_Hours	Tuesday_Hours	Wednesday_Hours	Thursday_hours	Friday_Hours	Saturday_Hours	Sunday_Hours	70
10:00 - 21:00	10:00 - 21:00	10:00 - 21:00	10:00 - 21:00	10:00 - 21:00	10:00 - 21:00	10:00 - 21:00	7
d 11:30 - 16:00; closed	for 11:30 - 16:00; clo	s 11:30 - 16:00; closed fo	or 11:30 - 16:00; clos	e 11:30 - 16:00; close	d for lunch 12:00 - 12:30		Λ
ck 08:30 - 16:00	08:30 - 16:00	08:30 - 16:00	08:30 - 16:00	08:30 - 16:00			Λ
08:00 - 18:00	08:00 - 18:00	08:00 - 18:00	08:00 - 18:00	08:00 - 18:00	08:00 - 18:00	08:00 - 18:00	7
10:30 - 16:45	10:30 - 16:45	10:30 - 16:45	10:30 - 16:45	10:30 - 16:45	10:30 - 16:45	10:30 - 16:45	7
st 09:00 - 20:00	09:00 - 20:00	09:00 - 20:00	09:00 - 20:00	09:00 - 20:00	09:00 - 17:00	09:00 - 17:00	7
or 08:30 - 15:30	08:30 - 15:30	08:30 - 15:30	08:30 - 15:30	08:30 - 15:30	08:30 - 15:30	08:30 - 15:30	7
09:00 - 13:00	09:00 - 13:00	09:00 - 13:00	09:00 - 13:00	09:00 - 13:00			Ν
009:00 - 16:00	09:00 - 16:00	09:00 - 16:00	09:00 - 16:00	09:00 - 16:00	09:00 - 16:00	09:00 - 16:00	7
By appointment	By appointment	By appointment	By appointment	By appointment	By appointment	By appointment	F
By appointment	By appointment	By appointment	By appointment	By appointment	By appointment	By appointment	F
s 16:30 - 20:30	16:30 - 20:30	16:30 - 20:30	16:30 - 20:30	16:30 - 20:30	16:30 - 20:30	16:30 - 20:30	7
n By appointment	By appointment	By appointment	By appointment	By appointment	By appointment	By appointment	F
F 15:00 -16:00	15:00 -16:00	15:00 -16:00	15:00 -16:00	15:00 -16:00	15:00 -16:00	15:00 -16:00	F
Ar By appointment	By appointment	By appointment	By appointment	By appointment			Λ
l By appointment	By appointment	By appointment	By appointment	By appointment	By appointment	By appointment	F
By appointment	By appointment	By appointment	By appointment	By appointment	By appointment	By appointment	F
By appointment	By appointment	By appointment	By appointment	By appointment	By appointment	By appointment	F
By appointment	By appointment	By appointment	By appointment	By appointment	By appointment	By appointment	F
c By appointment	By appointment	By appointment	By appointment	By appointment	No appointments availabl	No appointments a	v۱

After:





- 3. Checking whether the table is in 2NF form or not. Inorder to do so, Partial Dependency should be eliminated.
 - The 2 key attribute(Primary Key) in the table is Global_Id and HA_id.
 - Partial Dependency occurs when 1 primary key determines some other attribute/attributes.
 - So in our case,
 - Global_Id is associated with (Community_Collection_Center_Name, Address, Specific_Location, City_Town,Timings (Mon-Sun) Days, Special_consideration, Website, Phone, Global_id, Status, Public_Access, Edit_Date, Object, Accept_Children)
 - 2. **HA_id** is associated with (Health_Authority).

Below shows the 2 table: (Also check the attached excel file with naming conventions: Health_Authority and CovidCollection for better understanding)

Table-1: Health_Authority (HA_id = Primary Key)

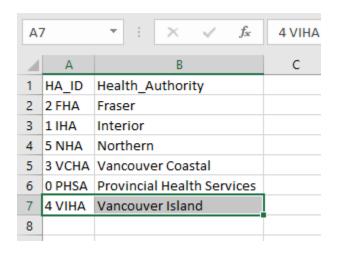


Table-2: Covid Collection (Global_id = Primary Key)

4	A	В	С	D	Е	F	G
Ī	GlobalID	X	Υ	OBJECTID	HA_ID	Health_Authority	Community_Collection_Center_Nam
	{067C23AB-FB39-4847-A045-C8B520720B3C}	-122.8424112	49.17785198	1	2 FHA	Fraser	Surrey Whalley UPCC
	{40434181-D1F8-4BC4-BF68-F88BBA602C70}	-122.5985311	49.21814948	2	2 FHA	Fraser	Ridge Meadows COVID-19 Testing Centre
	{EC39F27B-CD89-44FB-9C81-D24F7AD964FB}	-121.9645766	49.16613163	3	2 FHA	Fraser	Chilliwack COVID-19 Testing and Immunization Centre
	{ABBAB8B5-7CC2-4EB4-836E-8F9899A1A85E}	-122.6123934	49.09542818	4	2 FHA	Fraser	Langley Memorial Hospital
	{03C1DA73-6752-4612-83A2-5D318DFB9F79}	-122.9973556	49.22499887	5	2 FHA	Fraser	Burnaby COVID-19 Testing and Immunization Centre
	{1617186B-E10F-4935-86E9-9EA9271EAA10}	-122.8932259	49.22584268	6	2 FHA	Fraser	Fraser Northwest(Royal Columbian Medical Clinic)
	{5F1DF389-DA03-48C4-B01C-DD22F059DD53}	-122.3254393	49.06557445	7	2 FHA	Fraser	Abbotsford COVID-19 Testing Centre
	{F4DE268F-FC36-4F79-96B5-FB55D864534D}	-122.3323029	49.13489889	8	2 FHA	Fraser	Mission COVID-19 Testing and Immunization Centre
)	{3008C199-E8C9-48B9-96CC-DFD12C934501}	-122.7922922	49.03020526	9	2 FHA	Fraser	Peace Arch Hospital
	{AE72805A-16CC-4987-B3AD-20B51AB28CE5}	-119.2499468	50.25104404	10	1 IHA	Interior	Vernon Health Centre
2	{085DD993-6E74-4C6A-BC48-B4F3300D998B}	-119.4754796	49.88309389	11	1 IHA	Interior	Kelowna Community Collection Centre
3	{30A91291-C49D-4930-8CD9-91108657548F}	-120.3346162	50.67017113	12	1 IHA	Interior	Kamloops Urgent and Primary Care Centre
4	{2B7B0D5F-5011-411C-B685-FCE2348DD569}	-119.5880698	49.4559597	13	1 IHA	Interior	Penticton Test Collection Centre
5	{688EAA4C-5353-4C0A-AE89-7299AA245F1D}	-121.2921049	51.6384958	14	1 IHA	Interior	South Cariboo Health Centre
5	{050EB7F4-601D-44E7-A10F-69C8D60FA1B9}	-119.2687298	50.70580506	15	1 IHA	Interior	Salmon Arm Public Health Centre
7	{B8968C43-35D7-44C6-830C-F3A38C2F518B}	-122.1437423	52.13738722	16	1 IHA	Interior	Cariboo Memorial Hospital
В	{0F44E919-8993-464A-BB06-AE374795DB08}	-117.2846739	49.49503101	17	1 IHA	Interior	Kootenay Lake Hospital
9	{94FF4953-9940-4A13-AFF1-00D547E53EB8}	-117.7037124	49.09797877	18	1 IHA	Interior	Kiro Wellness Centre
0	{CB670AC1-F639-4CAA-B6EF-E4040CC00E17}	-115.7504821	49.51100857	19	1 IHA	Interior	Cranbrook Health Unit Centre (Rocky Mountain Lodge)
1	{747FE73B-C415-4228-9B54-25787BFF34AB}	-122.6966069	58.80781858	20	5 NHA	Northern	Fort Nelson Health Unit

Н	I I				
Address	Specific_Location				
Unit G2-9639 137A Street, Surrey	UNKNOWN				
121-11900 Haney Place, Maple Ridge	Located at the Ridge Meadows Urgent and Primary Care Centre				
45470 Menholm Road, Chilliwack	UNKNOWN				
22051 Fraser Hwy, Langley, BC V3A 4H4	Enter via Emergency Dept				
6515 Bonsor Avenue, Burnaby	UNKNOWN				
107-301 East Columbia St, New Westminster, BC V3L 3L2	Clinic is across them RCH				
Bldg 1 - 32470 Haida Drive, Abbotsford	Enter through Gate 2				
7298 Hurd Street, Mission	Located at the Mission Community Health Centre				
15521 Russell Avenue, White Rock	Collection centre entrance is on the side of the hospital in the cafeteria. Do not enter through the hospital main entrance.				
1440 14th Avenue, Vernon	Park in COVID-19 designated stall. Wait outside the COVID-19 testing entrance until directed				
2180 Ethel Street, Kelowna	Entrance on Glenwood Avenue; please follow signage. No drive-through testing capability.				
102-311 Columbia St, Kamloops	UNKNOWN				
140-3547 Skaha Lake Road, Penticton	Enter from Yorkton Ave. Park in designated spot and call number listed on arrival. If no cell phone, use sanitizing station at entrance and ring doorbell.				
555D Cedar Ave, 100 Mile House	Please report to the ER entrance. Report to the greeter and say you need a PCR test.				
851 16th Street N, Salmon Arm	Park at the far end of the parking lot in the designated stalls (look for the orange cones). Stay in your car. The nurse will call or meet you at your car.				
517 6th Avenue N, Williams Lake	Weekdays: Park in Parking Lot B in designated COVID-19 testing parking spot. Stay in your vehicle until a nurse directs you. Weekend & Stat Holidays: Pl				
3 View Street, Nelson	Park in designated stall. Enter plastic awning area and follow signage.				
1500 Columbia Avenue, Trail	Follow signage and park in designated driveway to the right of main entrance. For PCR test appts, remain in vehicle and nurse will come out at appointm				
20 23rd Avenue S, Cranbrook	Enter off of 24th Ave. Drive past helicopter pad to the back of the health unit building. Park in a designated spot and call posted number on arrival.				
5217 Airport Dr, Fort Nelson	UNKNOWN				
CovidCollection (+)					

J	К	L
City_Town	Timings(Mon-Sun)	Days
Surrey	10:00 - 21:00	7 Days
Maple Ridge	11:30 - 16:00; closed f	for Mon - Fri
Chilliwack	08:30 - 16:00	Mon - Fri; closed statutory holidays
Langley	08:00 - 18:00	7 Days
Burnaby	10:30 - 16:45	7 days; closed statutory holidays
New Westminster	09:00 - 20:00	7 Days
Abbotsford	08:30 - 15:30	7 days; open statutory holidays
Mission	09:00 - 13:00	Mon - Fri
White Rock	09:00 - 16:00	7 Days
Vernon	By appointment	Hours and days of operation are subject to change, see Interior Health's COVID-19 testing page for more information.
Kelowna	By appointment	Hours and days of operation are subject to change, see Interior Health's COVID-19 testing page for more information.
Kamloops	16:30 - 20:30	7 Days
Penticton	By appointment	Hours and days of operation are subject to change, see Interior Health's COVID-19 testing page for more information.
100 Mile House	15:00 -16:00	Hours and days of operation are subject to change, see Interior Health's COVID-19 testing page for more information.
Salmon Arm	By appointment	Mon - Fri. Hours and days of operation are subject to change, see Interior Health's COVID-19 testing page for more information
Williams Lake	By appointment	Hours and days of operation are subject to change, see Interior Health's COVID-19 testing page for more information.
Nelson	By appointment	Hours and days of operation are subject to change, see Interior Health's COVID-19 testing page for more information.
Trail	By appointment	Hours and days of operation are subject to change, see Interior Health's COVID-19 testing page for more information.
Cranbrook	By appointment	Hours and days of operation are subject to change, see Interior Health's COVID-19 testing page for more information.
Fort Nelson	By appointment	Mon - Fri
CovidCol	lection (+)	: (

M	N
Special_CriteriaConsideratio	Phone
Testing on first come first serve, walk-in basis. Appts booked only for priority testing. When arriving to the site, a receipt is given showing a timeframe	tcUNKNOWN
Appointment required. Book online at https://fraserhealth.secureform.ca/index.php	Central Intake Line: 604-587-3936, open 8:30 - 16:
Appointment required. Book online at https://fraserhealth.secureform.ca/index.php	Central Intake Line: 604-587-3936, open 8:30 - 16:
Call to book an appointment, press 2 and leave your name and number; your call will be returned in a timely manner within business hours. Due to curr	e 604-539-4392
Appointment required. Book online at https://fraserhealth.secureform.ca/index.php	Central Intake Line: 604-587-3936, open 8:30 - 16:
The centre is open to all members of the public. Appointments are required either through the website or by calling 236-996-900. There is NO walk-in	s 236-996-9000
Appointment required. Book online at https://fraserhealth.secureform.ca/index.php	Central Intake Line: 604-587-3936, open 8:30 - 16:
Appointment required. Book online at https://fraserhealth.secureform.ca/index.php	Central Intake Line: 604-587-3936, open 8:30 - 16:
Appointment required. Book online at https://fraserhealth.secureform.ca/index.php	Central Intake Line: 604-587-3936, open 8:30 - 16
The public, health care workers and non-Interior Health staff can book an appointment by calling: 1-877-740-7747	1-877-740-7747, open 07:00 - 19:00, 7 days a week
The public, health care workers and non-Interior Health staff can book an appointment by calling: 1-877-740-7747	1-877-740-7747, open 07:00 - 19:00, 7 days a week
To book an appointment, call the Kamloops Public Health COVID Line at 250-851-7467, Sunday to Friday until 4 pm. After 4 pm on Friday and all day Satur	rc 250-314-2256
The public, health care workers and non-Interior Health staff can book an appointment by calling: 1-877-740-7747	1-877-740-7747, open 07:00 - 19:00, 7 days a week
Open to the public, health care workers and staff. Walk-ins accepted.	1-877-740-7747, open 07:00 - 19:00, 7 days a week
The public, health care workers and non-Interior Health staff can book an appointment by calling: 1-877-740-7747	1-877-740-7747, open 07:00 - 19:00, 7 days a week
The public, health care workers and non-Interior Health staff can book an appointment by calling: 1-877-740-7747	1-877-740-7747, open 07:00 - 19:00, 7 days a weel
The public, health care workers and non-Interior Health staff can book an appointment by calling: 1-877-740-7747	1-877-740-7747, open 07:00 - 19:00, 7 days a weel
The public, health care workers and non-Interior Health staff can book an appointment by calling: 1-877-740-7747	1-877-740-7747, open 07:00 - 19:00, 7 days a weel
The public, health care workers and non-Interior Health staff can book an appointment by calling: 1-877-740-7747	1-877-740-7747, open 07:00 - 19:00, 7 days a weel
Appointment required. Individuals with symptoms of COVID-19 may book online at https://northernhealthcovid.secureform.ca/index.php or call the N	o 1-844-645-7811 Call: 10:00 - 22:00, 7 days a week
CovidCollection (+)	

1	N	0	Р	Q	R	S
1	Phone	Website	Status	Public_Access	Referral_Required	EditDate (
2	UNKNOWN	UNKNOWN	Close	Yes	No	2020/10/1
3	Central Intake Line: 604-587-3936, open 8:30 - 16:30, 7 days a week to help with book	https://fraserhealth.secureform.ca/index.php	Open	Yes	Yes	2022/05/0
4	Central Intake Line: 604-587-3936, open 8:30 - 16:30, 7 days a week to help with book	UNKNOWN	Open	Yes	Yes	2022/05/0
5	604-539-4392	UNKNOWN	Close	Yes	No	2020/11/2
6	Central Intake Line: 604-587-3936, open 8:30 - 16:30, 7 days a week to help with book	https://fraserhealth.secureform.ca/index.php	Open	Yes	Yes	2022/05/1
7	236-996-9000	https://www.divisionsbc.ca/fraser-northwest/influenza-symptom-te	Close	Yes	No	2020/06/1
8	Central Intake Line: 604-587-3936, open 8:30 - 16:30, 7 days a week to help with book	https://fraserhealth.secureform.ca/index.php	Close	Yes	Yes	2022/05/1
9	Central Intake Line: 604-587-3936, open 8:30 - 16:30, 7 days a week to help with book	https://fraserhealth.secureform.ca/index.php	Open	Yes	Yes	2022/04/2
10	Central Intake Line: 604-587-3936, open 8:30 - 16:30, 7 days a week to help with book	https://fraserhealth.secureform.ca/index.php	Close	Yes	Yes	2021/12/2
11	1-877-740-7747, open 07:00 - 19:00, 7 days a week to help with booking an appointment	https://www.interiorhealth.ca/health-and-wellness/disease-outbrea	Open	Yes	Yes	2022/06/0
12	1-877-740-7747, open 07:00 - 19:00, 7 days a week to help with booking an appointment	https://www.interiorhealth.ca/health-and-wellness/disease-outbrea	Close	Yes	Yes	2022/05/3
13	250-314-2256	UNKNOWN	Close	Yes	Yes	2022/04/1
14	1-877-740-7747, open 07:00 - 19:00, 7 days a week to help with booking an appointment	https://www.interiorhealth.ca/health-and-wellness/disease-outbrea	Close	Yes	Yes	2022/06/0
15	1-877-740-7747, open 07:00 - 19:00, 7 days a week to help with booking an appointment	https://www.interiorhealth.ca/health-and-wellness/disease-outbrea	Open	No	No	2022/06/0
16	1-877-740-7747, open 07:00 - 19:00, 7 days a week to help with booking an appointment	https://www.interiorhealth.ca/health-and-wellness/disease-outbrea	Open	Yes	Yes	2022/06/0
17	1-877-740-7747, open 07:00 - 19:00, 7 days a week to help with booking an appointment	https://www.interiorhealth.ca/health-and-wellness/disease-outbrea	Open	Yes	Yes	2022/06/0
18	1-877-740-7747, open 07:00 - 19:00, 7 days a week to help with booking an appointment	https://www.interiorhealth.ca/health-and-wellness/disease-outbrea	Close	Yes	Yes	2022/06/0
19	1-877-740-7747, open 07:00 - 19:00, 7 days a week to help with booking an appointment	https://www.interiorhealth.ca/health-and-wellness/disease-outbrea	Open	Yes	Yes	2022/06/0
20	1-877-740-7747, open 07:00 - 19:00, 7 days a week to help with booking an appointment	https://www.interiorhealth.ca/health-and-wellness/disease-outbrea	Open	Yes	Yes	2022/04/2
21	1-844-645-7811 Call: 10:00 - 22:00, 7 days a week including statutory holidays. Fax req	https://northernhealthcovid.secureform.ca/index.php	Open	Yes	Yes	2022/01/1

R	S	Т	U	V	W	X
Referral_Required	EditDate	Object	AcceptChildren	Accepts_Children	Drive_Through_Testing	<u> </u>
No	2020/10/13 19:44:33+00	1	Yes	UNKNOWN	UNKNOWN	
Yes	2022/05/05 22:20:03+00	1	Accepts children aged 3 months and over.	Yes	No	
Yes	2022/05/03 20:21:51+00	1	No age limit	Yes	No	
No	2020/11/27 22:39:07+00	1	Accepts children aged 3 months and over.	UNKNOWN	UNKNOWN	
Yes	2022/05/17 15:17:52+00	1	Accepts children aged 3 months and over.	Yes	No	
No	2020/06/15 16:20:29+00	1	Yes	UNKNOWN	UNKNOWN	
Yes	2022/05/12 22:26:23+00	1	Accepts children aged 3 months and over.	Yes	No	
Yes	2022/04/25 17:27:49+00	1	Accepts children aged 3 months and over.	Yes	No	
Yes	2021/12/29 21:48:58+00	1	Accepts children aged 3 months and over.	UNKNOWN	UNKNOWN	
Yes	2022/06/01 21:39:57+00	1	All ages	Yes	No	
Yes	2022/05/31 23:40:22+00	1	All ages	Yes	No	
Yes	2022/04/13 16:35:33+00	1	Yes	UNKNOWN	UNKNOWN	
Yes	2022/06/02 15:51:14+00	1	All ages	Yes	No	
No	2022/06/01 21:21:02+00	1	All ages	Yes	No	
Yes	2022/06/02 16:03:37+00	1	All ages	Yes	Yes	
Yes	2022/06/01 20:53:05+00	1	All ages	Yes	No	
Yes	2022/06/02 15:39:28+00	1	All ages	Yes	No	
Yes	2022/06/01 21:17:59+00	1	All ages	Yes	Yes	
Yes	2022/04/26 20:53:27+00	1	All ages	Yes	No	
Yes	2022/01/13 18:33:06+00	1	All ages	Yes	No	

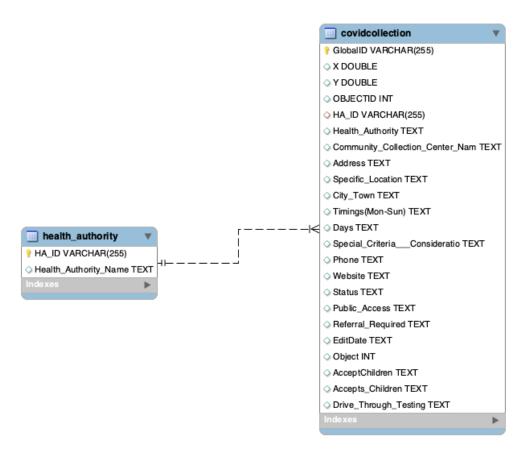
The screenshot consists of 20 data but can take a look of all row through attached excel file. Also the "unknown" values are added when there was no data.

- 4. After eliminating Partial Dependency, we check for transitive dependency. If there is any transitive dependency, it should be eliminated too.
 - Transitive Dependency occurs when some non-key attribute determines some other attribute.
 - So in our case, there is no transitive dependency.

Therefore our table is normalized upto 2NF.

STEP-2:

Constructing ERD in MySQL Workbench using Forward Engineering.



STEP-3:

SQL dump values are attached with the folder.

Reference:

 $\frac{https://resources-covid19canada.hub.arcgis.com/datasets/bcgov03::b-c-covid-19-collection-centres/explore?location=53.736499\%2C-123.342959\%2C5.02$