

CS 306

Recitation 2

Hasan Ertuğrul ÇINAR

Today's Plan

- Notes about MySQL installation
- Revising Entity Relationship Model
- Drawing an ER diagram
- Learning basic SQL commands
- Creating a small database for covid cases
- Importing data into MySQL from Excel

Github Repository for Recitations

We are planning to use a github repository for this semester to share the datasets and example queries that will be used in recitations for demonstrating the practices for creating and using a database.

It is highly recommended to follow the course material in the recitations for accelerating your learning process and reducing your workload for projects.

The repository will be upload following the progression of the recitations.

The repository link:

<https://github.com/hasan-ert/cs306-recit-materials>

Installation Links

You need to install MySQL Server & Workbench into your computer

You also should install MySQL for Excel in order to easily import your data into MySQL from your Excel sheets and vice versa

Check out MySQL website or these videos regarding to your operating system

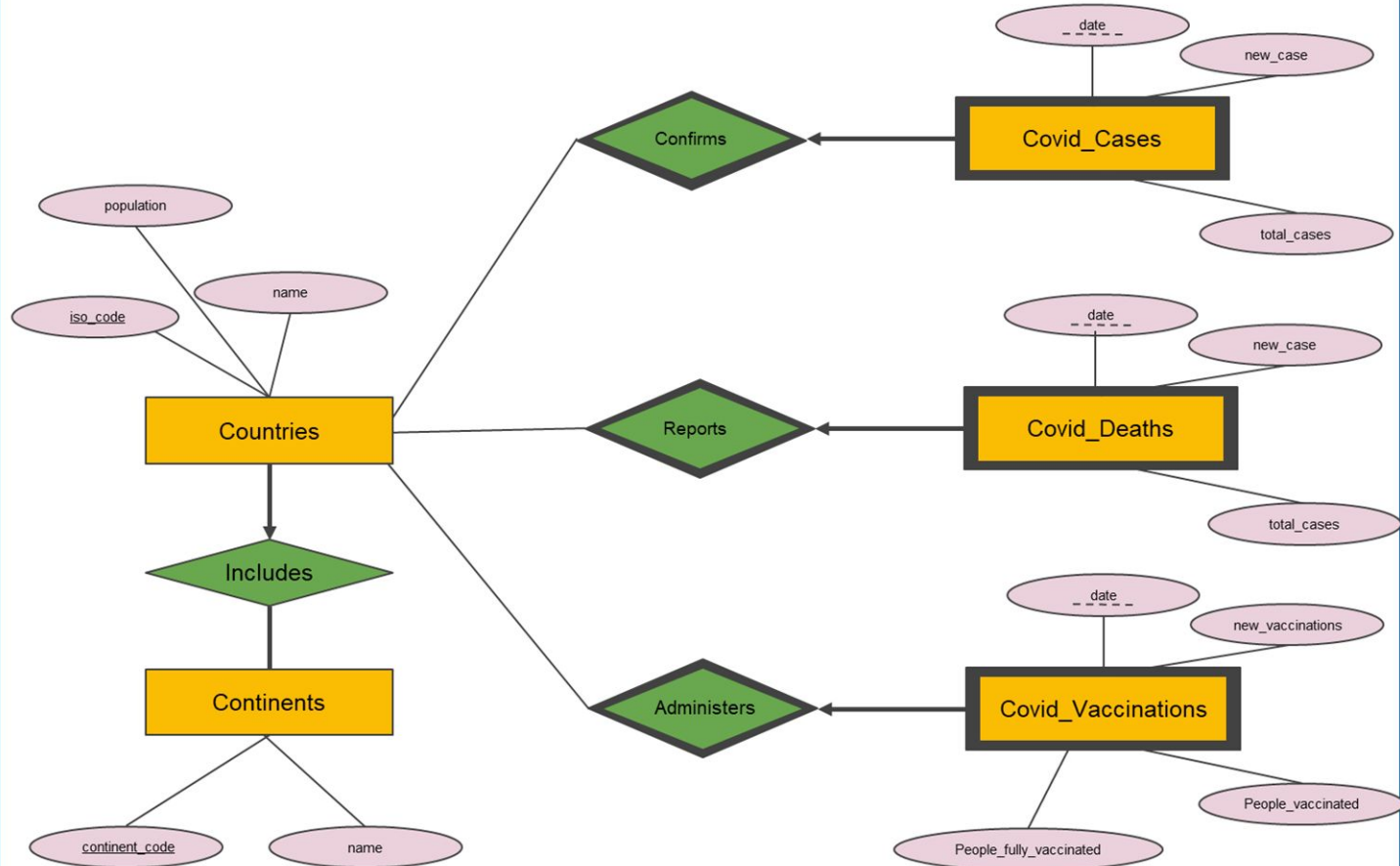
- <https://dev.mysql.com/downloads/>

For Windows:

- <https://www.youtube.com/watch?v=u96rVINbAUI&t=9s>

For Mac:

- <https://www.youtube.com/watch?v=YaquZR7126M>



SQL Create Table Commands

```
Create Table continents(  
    continent_code Varchar(5)  
Not Null,  
    continent_name  
Varchar(50),  
    primary key  
(continent_code)  
);
```

```
Create Table countries(  
    iso_code Varchar(5) Not Null,  
    countries_name Varchar(50),  
    population INT,  
    primary key (iso_code)  
);
```

```
Create table continents_countries(  
    continent_code Varchar(5) NOT NULL,  
    iso_code Varchar(5),  
    Primary key (iso_code),  
    Foreign key (continent_code) References  
continent(continent_code) On Delete Cascade,  
    Foreign key (iso_code) References  
countries(iso_code) On Delete Cascade  
);
```

Weak Entity

Create Table cases(

date_info DATETIME,

iso_code varchar(5) NOT NULL,

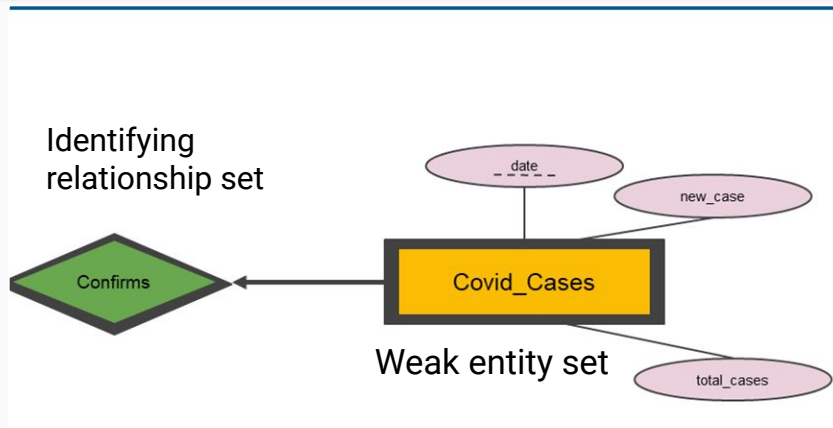
new_cases DECIMAL,

total_cases DECIMAL,

PRIMARY KEY (iso_code,date_info),

Foreign Key (iso_code) References
countries(iso_code) ON DELETE CASCADE

);



Since new_cases table is a weak entity, Using only one table for representing the relationship is enough. So we do not need an extra table for only covid_cases entity, however, we need to include iso_code in cases table that we created

Manually Inserting Data

Some example insertion queries are as follows:

- **Insert Into countries Values ("TUR", "Turkey", 84780000)**
 - Inserts an instance for "Turkey" in "countries" table
- **Insert Into continent Values ("EU", "Europe")**
 - Inserts "Europe" into continent table
- **Insert Into continent_countries Values ("EU", "TUR")**
 - Inserts an instance with "EU" as continent_code and "TUR" as iso_code into countries_countries table

Delete Statements

Delete From countries Where iso_code = "TUR"

- Deletes the instances from countries table where iso_code is equal to "TUR"

Delete From countries_countries Where continent_code = "EU" AND iso_code = "TUR"

- Deletes the instances from countries_countries table where continent_code is equal to "EU" AND iso_code is equal to "TUR"

DROP and ALTER Statements

DROP TABLE countries

- Deletes the countries table from database

ALTER TABLE countries

Rename Column country_name to name

Add Column population_density DECIMAL

- Alters the countries table by
 - Renaming countries_name column to name
 - Adding a new column named population_density with type Decimal

Importing Data

AutoSave

Off

covid-location.csv v

Search

FileHomeInsertPage LayoutFormulasDataReviewViewAutomateHelpPower Pivot

Data

Queries & Connections

Refresh All

Properties

Edit Links

Queries & Connections

Stocks

Geography

Sort

Filter

Apply

Advanced

Text to Columns

Data Tools

What-If Analysis

Forecast Sheet

Group

Ungroup

Subtotal

Outline

Analyze

MySQL for Excel

MySQL

A1

fx

iso_code

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
	iso_code	continent	location		populatio	median_a	aged_65_	aged_70_	gdp_per	extreme	cardiovasc	diabetes	female_sr	male_smc	handwash	hospital_t	life_expe	human_dv	population					
1	AFG	Asia	Afghanistan: AFGHANISTAN		54.422	18.6	2.581	1.837	1803.987		597.029	9.59			37.746	0.5	64.83	0.511	41128772					
2	ALB	Europe	Albania: ALBANIA		2.863	38.1	13.088	43.3	3140.433	1.1	304.195	10.08	7.1	51.2		2.89	76.57	0.795	142679664					
3	DZA	Africa	Algeria: ALGERIA		17.348	29.1	6.211	3.857	13913.84	0.5	278.364	6.73	0.7	30.4	83.741	1.9	76.88	0.748	44903228					
4	AND	Europe	Andorra: ANDORRA		163.755						109.135	7.97	29	37.8			83.73	0.868	79843					
5	AGO	Africa	Angola: ANGOLA		23.89	16.8	2.405	1.362	5819.455		276.045	3.94			26.664		61.15	0.581	35588996					
6	AIA	North Am	Antigua and Barbuda: ANTIGUA AND BARBUDA														81.88		15877					
7	ATG	North Am	Antigua and Barbuda: ANTIGUA AND BARBUDA		231.845	32.1	6.933	4.631	21490.94		191.511	13.17				3.8	77.02	0.778	93772					
8	ARG	South Am	Argentina: ARGENTINA		16.177	31.9	11.198	7.441	48933.91	0.6	191.032	5.5	16.2	27.7			5.76	0.845	45510324					
9	ARM	Asia	Armenia: ARMENIA		102.931	35.7	11.232	7.571	8787.58	1.8	341.01	7.11	1.5	52.1	94.043	4.2	75.09	0.776	2780472					
10	ARW	North Am	Aruba: ARUBA		584.8	41.2	13.085	7.452	35973.78			11.62					76.29		106459					
11	AUS	Oceania	Australia: AUSTRALIA		3.202	37.9	15.504	10.129	46468.71	0.5	107.791	5.07	13	16.5		3.84	83.44	0.944	26177410					
12	AUT	Europe	Austria: AUSTRIA		106.749	44.4	19.202	13.748	45436.69	0.7	145.183	6.35	28.4	30.9		7.37	51.84	0.922	8939617					
13	AZE	Asia	Azerbaijan: AZERBAIJAN		119.309	32.4	6.018	3.871	15847.42		559.812	7.11	0.3	42.5	83.241	4.7	73	0.756	10350878					
14	BHS	North Am	Bahamas: BAHAMAS		39.497	34.3	8.996	5.2	27717.85		235.954	13.17	3.1	20.4		2.9	73.92	0.814	409898					
15	BHR	Asia	Bahrain: BAHRAIN		1935.907	32.4	2.372	1.387	43290.71		151.689	16.52	5.8	37.6		2	77.29	0.852	1472237					
16	BGD	Asia	Bangladesh: BANGLADESH		1265.036	27.5	5.098	3.262	3523.984	14.8	298.003	8.38	1	44.7	34.808	0.8	72.59	0.632	171186368					
17	BRB	North Am	Barbados: BARBADOS		664.463	39.8	14.952	9.473	16978.07		170.05	13.57	1.9	14.5	88.469	5.8	79.19	0.814	281646					
18	BLR	Europe	Belarus: BELARUS		46.858	40.3	14.759	9.788	17167.97		443.129	5.18	10.5	46.1		11	74.79	0.823	9534956					
19	BEL	Europe	Belgium: BELGIUM		375.564	41.8	18.571	12.849	42658.58	0.2	114.898	4.29	25.1	31.4		5.64	81.63	0.931	11655929					
20	BEN	North Am	Benin: BENIN		16.826	25	3.413	2.279	7824.362		176.857	17.11			90.083	1.3	74.62	0.786	1262985					
21	BEN	Europe	Benin: BENIN		16.826	25	3.413	2.279	7824.362		176.857	17.11			90.083	1.3	74.62	0.786	1262985					
22	BEN	Asia	Benin: BENIN		16.826	25	3.413	2.279	7824.362		176.857	17.11			90.083	1.3	74.62	0.786	1262985					
23	BEN	North Am	Benin: BENIN		16.826	25	3.413	2.279	7824.362		176.857	17.11			90.083	1.3	74.62	0.786	1262985					
24	BMU	North Am	Bermuda: BERMU		1308.82	33.5	8.552	5.06	14103.45	3.4	177.961	8.11	10.1	17.9		2.2	75.88	0.765	215313504					
25	BGR	Europe	Bulgaria: BULGARIA		7.561	44.7	20.801	13.272	15653.31	1.5	424.688	5.81	30.1	44.4		7.454	75.05	0.816	6781955					
26	BFA	Europe	Burkina Faso: BURKINA FASO		70.151	17.6	2.409	1.588	1703.102	43.7	269.048	2.42	1.6	23.9	11.877	0.4	61.58	0.452	22673764					
27	BFI	Europe	Burundi: BURUNDI		423.062	17.5	2.562	1.504	702.225	71.7	293.068	6.05			6.144	0.8	61.58	0.433	1289583					
28	BHM	Asia	Bhutan: BHUTAN		90.672	25.6	4.412	2.385	3645.07		270.892	4	2	33.7	66.229	0.8	69.82	0.594	16767851					

- MySQL for Excel is an Excel extension tool that helps to connect your MySQL server with your Excel sheets for data transfer

Importing Data Manually

MySQL For Excel

MyTrial
root
127.0.0.1:3306
cs306-recit

Export Excel Data to New Table
Create a new table and fill it with data

Select Database Objects
Use CTRL or SHIFT for multiple selection.

Filter Database Objects

Tables

- continent
- continent_has
- country

Views

Import MySQL Data
Add object's data at the current cell

Edit MySQL Data
Open a new sheet to edit table data

Append Excel Data to Table
Add data to an existing MySQL Table

Options < Back Close

Append Data - covid-location [A1:S249]

Append Data to MySQL Table

1. Choose Column Mapping Method
Select how the Excel columns should be mapped to the MySQL table columns.
Mapping Method: Manual

2. Manually Adjust Column Mapping
Manually change the column mapping if needed. Click a column in the upper table with the mouse and drag it onto a column in the lower table.

☒ First Row Contains Column Names This is a small subset of the data for preview purposes only.

iso_code	continent	location	population_density	median_age	aged_65_oli	
AFG	Asia	Afghanistan	AFGHANISTAN	54.422	18.6	2.581
OWID_AFR	NULL	Africa	afrika	NULL	NULL	NULL
ALB	Europe	Albania	Albania	104.871	38	13.188
DZA	Africa	Algeria	Algeria	17.348	29.1	6.211
AND	Europe	Andorra	NULL	163.755	NULL	NULL

iso_code	location	population
iso_code	country_name	population
ABW	Aruba	106459
AFG	Afghanistan	41128772
AGO	Angola	35588996
AIA	Anguilla	15877
ALB	Albania	2842318

Unmapped Columns Mapped Columns

Advanced Options... Store Mapping Append Cancel

Prepare Data for New_Cases Table

AutoSave | covid-covid-data.csv | Search | Hasan Gyar | Comment

File Home Insert **Formulas** Data Review View Automation Help Power Pivot

Get Data From Web Recent Sources From Table/Range Existing Connections Get & Transform Data

Queries & Connections Data Types Sort & Filter Filter Advanced Data Tools What-If Forecast Analysis Outline Analyze MyQOL OpenSolver

156 | fx | 0

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
iso_code	continent	location	date	total_case	new_case	new_deat	new_deat_total	case_new	new_case	new_deat	new_deat_total	reproduct	icu_patier	icu_patier_hosp	path_hosp	path_weekly	ic_weekly	h_weekly	h_total	test_new	test_total	test	test	test	test	test	test
AFG	Asia	Afghanistan	2020-01-01	5	5	0	0	0.122	0.122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-02	5	0	0	0	0.122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-03	5	0	0	0	0.122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-04	5	0	0	0	0.122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-05	5	0	0	0	0.122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-06	5	0	0.714	0.714	0.122	0	0.017	0.017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-07	5	0	0.714	0.714	0.122	0	0.017	0.017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-08	5	0	0	0	0.122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-09	5	0	0	0	0.122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-10	5	0	0	0	0.122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-11	5	0	0	0	0.122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-12	5	0	0	0	0.122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-13	5	0	0	0	0.122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-14	8	3	0.429	0.429	0.195	0.073	0.01	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-15	8	0	0.429	0.429	0.195	0	0.01	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-16	8	0	0.429	0.429	0.195	0	0.01	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-17	8	0	0.429	0.429	0.195	0	0.01	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-18	11	3	0.857	0.857	0.267	0.073	0.021	0.021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-19	11	0	0.857	0.857	0.267	0	0.021	0.021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-20	11	0	0.857	0.857	0.267	0	0.021	0.021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-21	14	3	0.857	0.857	0.34	0.073	0.021	0.021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-22	20	6	1.714	1.714	0.486	0.146	0.042	0.042	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-23	25	5	2.429	2.429	0.686	0.122	0.059	0.059	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-24	26	1	2.571	2.571	0.612	0.024	0.063	0.063	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-25	26	0	2.143	2.143	0.612	0	0.052	0.052	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-26	26	0	2.143	2.143	0.612	0	0.052	0.052	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-27	24	0	0	0	0.584	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-28	24	0	0	0	0.584	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-29	24	10	2.286	2.286	0.627	0.243	0.056	0.056	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-30	40	6	2.429	1	1	0.973	0.146	0.059	0.024	0.024	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-01-31	42	2	2.571	1	0	1.021	0.049	0.063	0.024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-02-01	74	12	7.143	1	0	1.799	0.778	0.174	0.024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-02-02	80	6	8	2	1	1.945	0.146	0.187	0.024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFG	Asia	Afghanistan	2020-02-03	91	11	9.571	2	0	2.213	0.207	0.233	0.049	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table2 - Power Query Editor

File Home Transform Add Column View

Close & Load Refresh Advanced Editor Choose Columns Remove Columns Keep Rows Remove Rows Sort Split Column Group By

Queries [1] Table2

= Table.TransformColumnTypes(Source,{{"iso_cc", "AB", "iso_code"}, {"continent", "AB", "continent"}, {"location", "AB", "location"}}

	AB iso_code	AB continent	AB location
1	AFG	Asia	Afghanistan
2	AFG	Asia	Afghanistan
3	AFG	Asia	Afghanistan
4	AFG	Asia	Afghanistan
5	AFG	Asia	Afghanistan

Choose Columns

Choose the columns to keep

Search Columns

- ☐ (Select All Columns)
- ☒ iso_code
- ☐ continent
- ☐ location
- ☒ date
- ☒ total_cases
- ☒ new_cases
- ☐ new_cases_smoothed
- ☐ total_deaths
- ☐ new_deaths
- ☐ new_deaths_smoothed

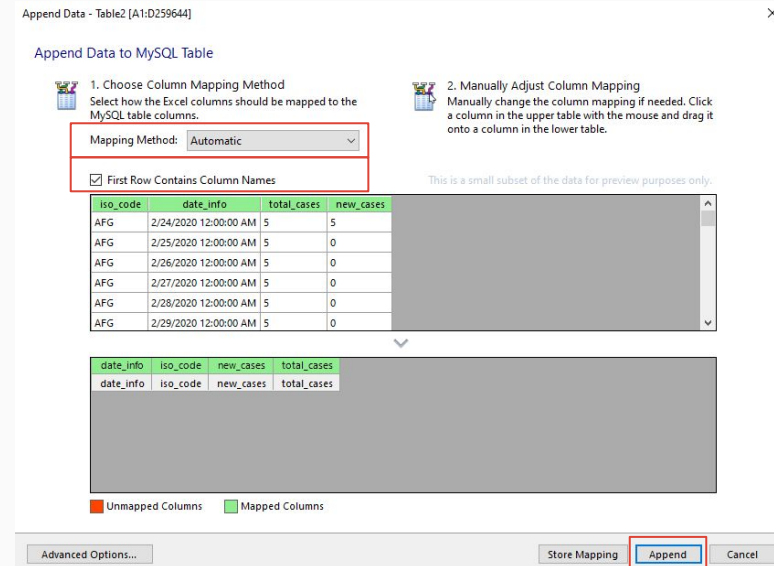
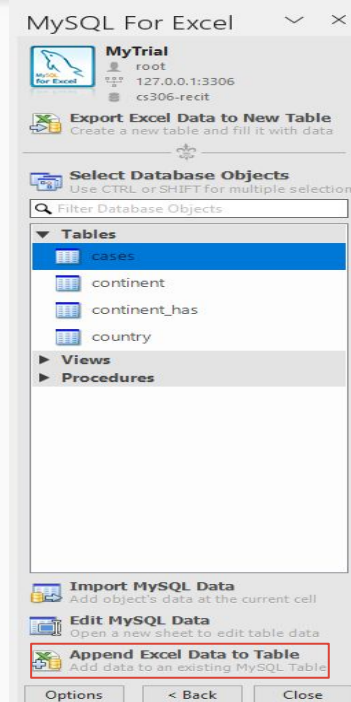
Import Data Automatically

Once you prepare your table in excel,

Go to Data section and click MySQL for Excel

Then select your DB and respective table for this excel sheet

Select Append Excel Data to Table and choose automatic & First Row is headers option



Importing Data Remarks

- Do not forget to install MySQL for Excel extension for this method
- You can select manual mapping option if your columns in database and excel sheet has different names for same columns
 - Once you select manual mapping, you can drag and drop the respective columns to the top section of the column
- Make sure that column data types are compatible with your declarations in the database
-
- For automatic import, your column names must be same
- If you encounter any errors during import, you may need to work on your prepared data on excel sheet to solve the issue

Questions

You may ask any question regarding to today's recitation or any subject related to projects

Thank You for Your Attendance!

See you all next week