CS 306

Recitation 2

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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

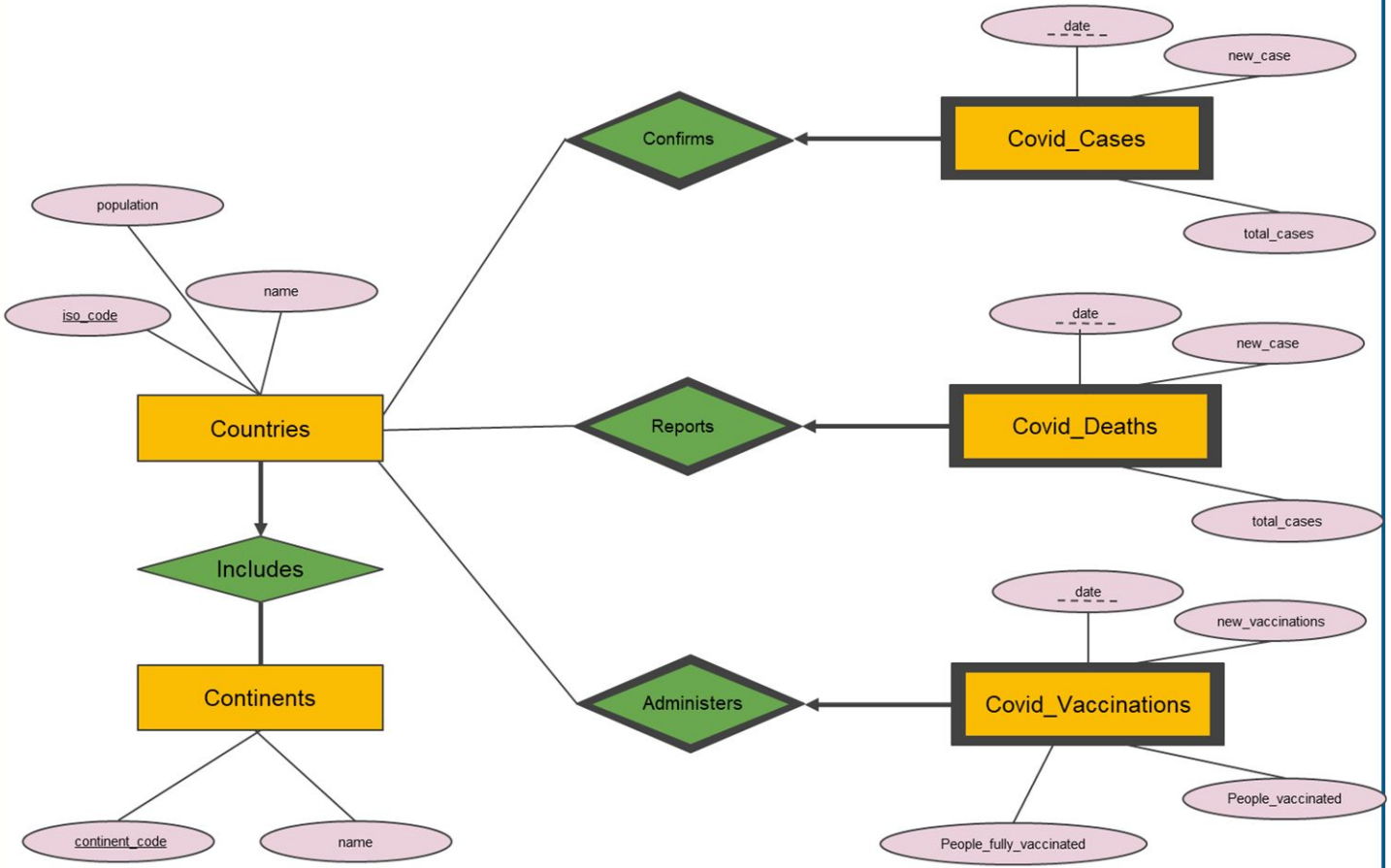
- https://dev.mysql.com/downloads/

For Windows:

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

For Mac:

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


date
new_case
Covid_Cases
Confirms
total_cases
population
name
iso_code
Countries
date
new_case
Reports
Covid_Deaths
total_cases
Includes
date
new_vaccinations
Continents
Administers
Covid_Vaccinations
People_vaccinated
continent_code
name
People_fully_vaccinated

SQL Create Table Commands

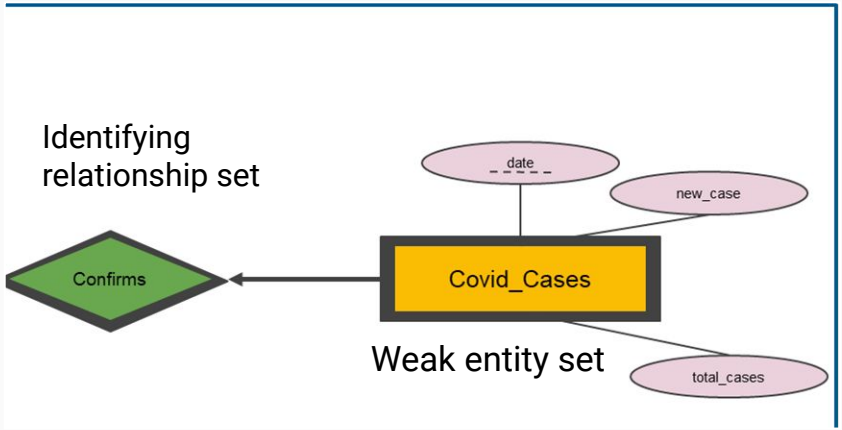
```
Create Table continents(
   continent_code Varchar(5) Not Null,
   continent_name Varchar(50),
   primary key (continent_code)
);
```

```
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),
   iso_code Varchar(5),
   Primary key (continent_code, 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

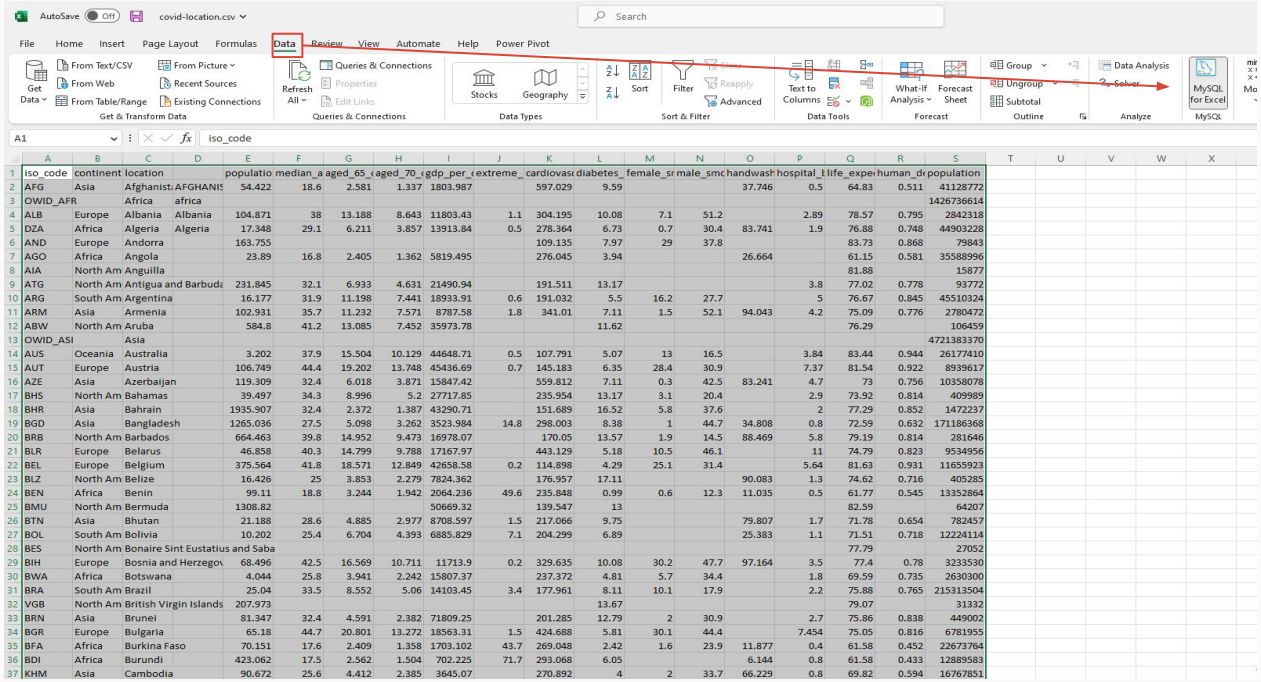
ALTER TABLE countries

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

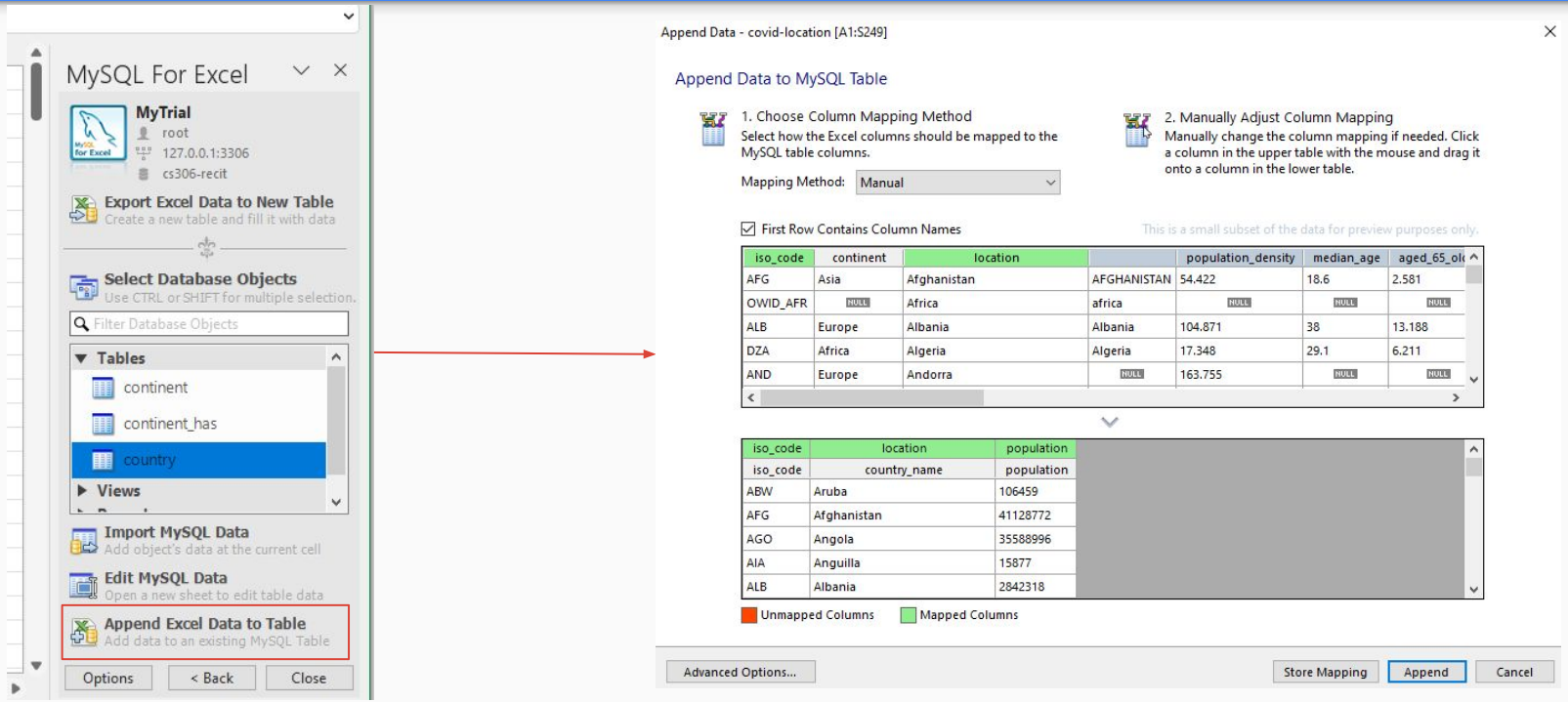
Importing Data



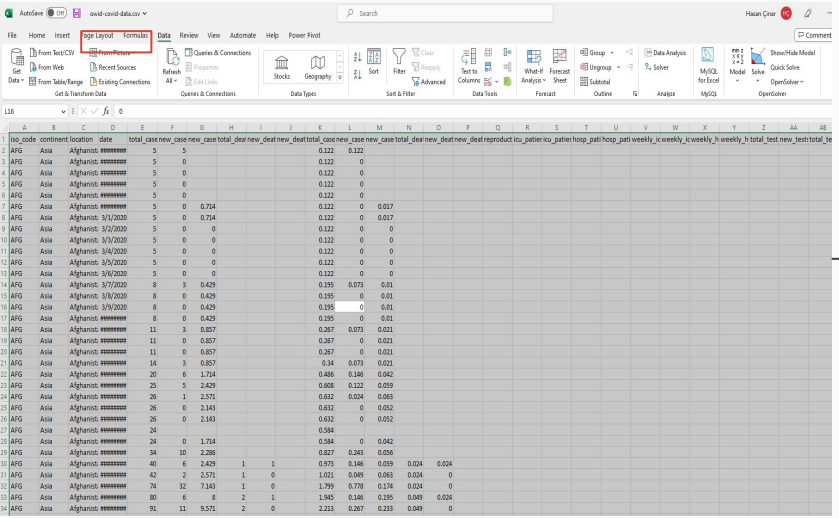
iso_code	continent	location		population	median_a	aged_65_o	aged_70_o	gdp_per_c	extreme_	cardiovasc	diabetes_	female_sr	male_smo	handwash	hospital_b	life_expe	human_de	population
AFG	Asia	Afghanist	AFGHANIS	54.422	18.6	2.581	1.337	1803.987		597.029	9.59			37.746	0.5	64.83	0.511	41128772
OWID_AFR		Africa	africa															1426736614
ALB	Europe	Albania	Albania	104.871	38	13.188	8.643	11803.43	1.1	304.195	10.08	7.1	51.2		2.89	78.57	0.795	2842318
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
AND	Europe	Andorra		163.755						109.135	7.97	29	37.8			83.73	0.868	79843
AGO	Africa	Angola		23.89	16.8	2.405	1.362	5819.495		276.045	3.94			26.664		61.15	0.581	35588996
AIA	North Am	Anguilla														81.88		15877
ATG	North Am	Antigua and Barbud		231.845	32.1	6.933	4.631	21490.94		191.511	13.17				3.8	77.02	0.778	93772
ARG	South Am	Argentina		16.177	31.9	11.198	7.441	18933.91	0.6	191.032	5.5	16.2	27.7		5	76.67	0.845	45510324
ARM	Asia	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
ABW	North Am	Aruba		584.8	41.2	13.085	7.452	35973.78			11.62					76.29		106459
OWID_ASI		Asia																4721383370
AUS	Oceania	Australia		3.202	37.9	15.504	10.129	44648.71	0.5	107.791	5.07	13	16.5		3.84	83.44	0.944	26177410
AUT	Europe	Austria		106.749	44.4	19.202	13.748	45436.69	0.7	145.183	6.35	28.4	30.9		7.37	81.54	0.922	8939617
AZE	Asia	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	10358078
BHS	North Am	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	409989
BHR	Asia	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
BGD	Asia	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
BRB	North Am	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
BLR	Europe	Belarus		46.858	40.3	14.799	9.788	17167.97		443.129	5.18	10.5	46.1		11	74.79	0.823	9534956
BEL	Europe	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	11655923
BLZ	North Am	Belize		16.426	25	3.853	2.279	7824.362		176.957	17.11			90.083	1.3	74.62	0.716	405285
BEN	Africa	Benin		99.11	18.8	3.244	1.942	2064.236	49.6	235.848	0.99	0.6	12.3	11.035	0.5	61.77	0.545	13352864
BMU	North Am	Bermuda		1308.82				50669.32		139.547	13					82.59		64207
BTN	Asia	Bhutan		21.188	28.6	4.885	2.977	8708.597	1.5	217.066	9.75			79.807	1.7	71.78	0.654	782457
BOL	South Am	Bolivia		10.202	25.4	6.704	4.393	6885.829	7.1	204.299	6.89			25.383	1.1	71.51	0.718	12224114
BES	North Am	Bonaire Sint Eustatius and Saba														77.79		27052
BIH	Europe	Bosnia and Herzegov		68.496	42.5	16.569	10.711	11713.9	0.2	329.635	10.08	30.2	47.7	97.164	3.5	77.4	0.78	3233530
BWA	Africa	Botswana		4.044	25.8	3.941	2.242	15807.37		237.372	4.81	5.7	34.4		1.8	69.59	0.735	2630300
BRA	South Am	Brazil		25.04	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
VGB	North Am	British Virgin Islands		207.973							13.67					79.07		31332
BRN	Asia	Brunei		81.347	32.4	4.591	2.382	71809.25		201.285	12.79	2	30.9		2.7	75.86	0.838	449002
BGR	Europe	Bulgaria		65.18	44.7	20.801	13.272	18563.31	1.5	424.688	5.81	30.1	44.4		7.454	75.05	0.816	6781955
BFA	Africa	Burkina Faso		70.151	17.6	2.409	1.358	1703.102	43.7	269.048	2.42	1.6	23.9	11.877	0.4	61.58	0.452	22673764
BDI	Africa	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	12889583
KHM	Asia	Cambodia		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

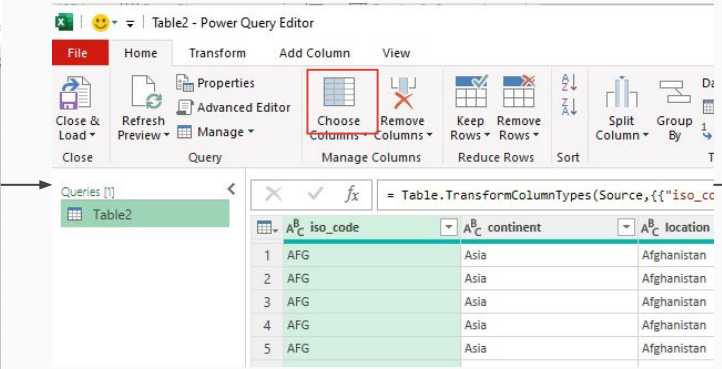
- MySQL for Excel is an Excel extension tool that helps to connect your MySQL server with your Excel sheets for data transfer

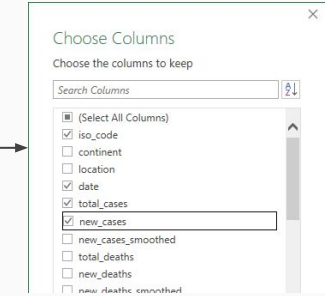
Importing Data Manually



Prepare Data for New_Cases Table







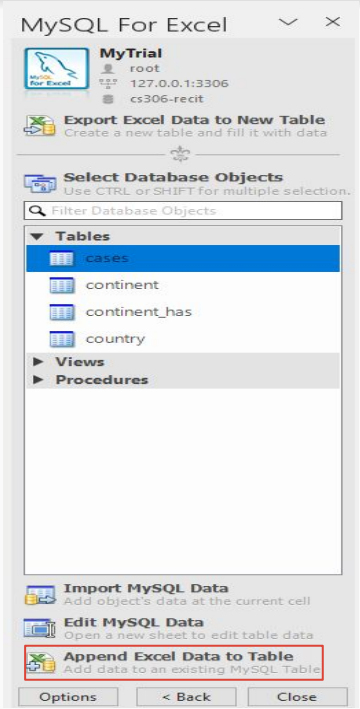
Import Data Automatically

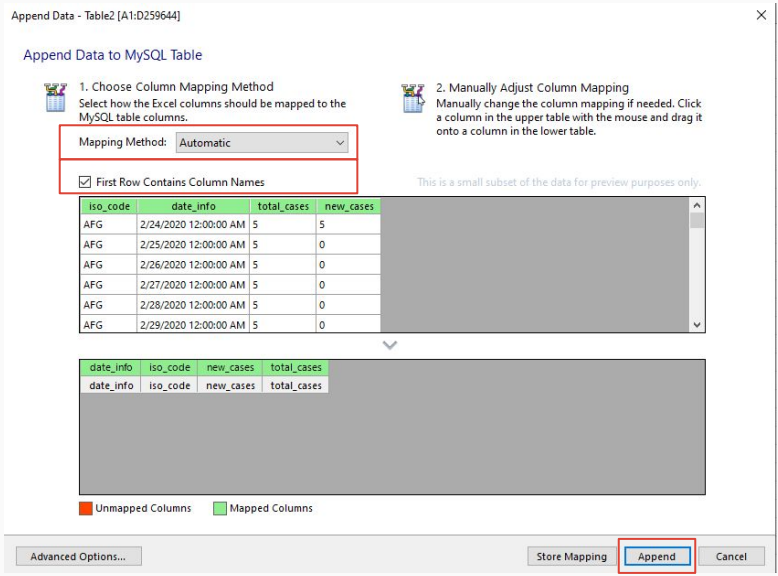
Once you prepare your table in excel,

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