**Final Project- Data Backup, Restore, optimization, user management**

**IBM DB2 cloud:**

* login to IBM cloud, go to resources a left menu list then then click databases and select your instance of database.
* On left side menu click “Data” then select csv file from computer to upload, select schema then in tables click on **new table+**, and give it name as billing, click create.
* Click next, you can see data types is generated for all columns, click next and last click on “Begin Load”, and msg will display, data loaded successfully.
* Click on view table option to see data loaded.
* To write queries click on sql option, write queries and run to see results.
* As part of this project created view, also optimized query using index, checked execution time before and after index creation.

**PostgreSQL** - performs the User Management tasks and handle the backup of the databases.

* Download database backup file from link provided, it is shell script, before running it, give user execute permission and then execute bash file to get database created with tables:
  + Chmod u\_x postgres-setup.sh
  + ./postgres-setup.sh # running bash script
* Check the max number of connections allowed in postgreySQL:
  + Show max\_connections;
* Create user using:
  + Create user backup\_operator;
* Create role backup:
  + Create role backup;
* Grant permissions to backup\_operator for database.
  + GRANT CONNECT ON DATABASE tolldata to backup;
  + GRANT SELECT ON ALL TABLES IN SCHEMA toll to backup;
* Grant bakup role to backup\_operator user:
  + GRANT backup to backup\_operator;
* Take backup from pgadmin tool, right click on database and select backup, add filename.

**MYSQL:**

* To restore database in mysql, first create database and then use source command to restore .sql file.
  + Create database billing;
  + Source billingbackup.sql
* Using index improved query performance by reducing time to execute, used explain to check how many rows query is executing before and after index creation.
* To look at storage engines use command: show engines;
* Create shell script file and save as .sh file , below is code of shell script file,

# creating backup file

mysqldump billing > all-databases-backup.sql

todays\_date=\_$(date +%d-%m-%Y);

mkdir /tmp/mysqldumps/$todays\_date;

# move backup file to folder named todays date

mv -i all-databases-backup.sql /tmp/mysqldumps/$todays\_date;

* 1st line creates backup file, then created todays date variable with date value used for folder name, then made folder using mkdir with todays date in path /tmp/mysqldumps/ , but first created this directory – mysqldumps.
* Finaly, moved backup file to todays date folder.
* give shell file execute permission as : chmod u+x mybackup.sh
* execute is by entering command : ./mybackup.sh
* now if we check by going into to path -/tmp/mysqldumps/ backup sql file available in today’s date folder.

**Datasette open source tool:**

* to restore data in datasette, if you have link to csv file (get it by right clicking on file).
* On right left corner of the tool click 3 lines and select add datasets, add link and click create, database will be created.
* To create a view or write queries click on sql option on left side.