

DBMS – Big Picture

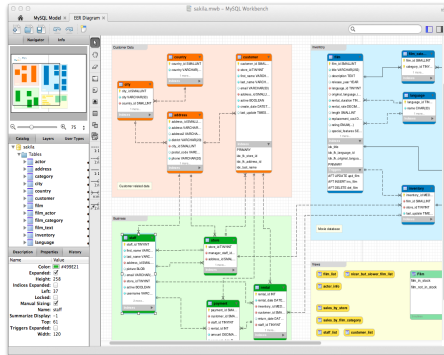
Khalid Mahmood

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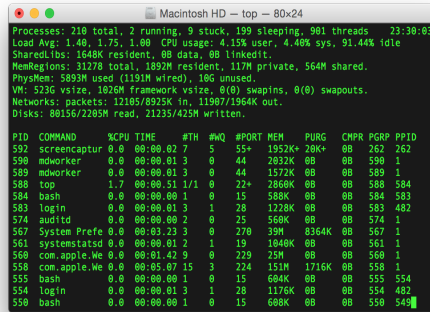
Why Databases?



MySQL workbench



MySQL CLI (client)



Python

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="your_username",
    password="your_password",
    database="database_name"
)

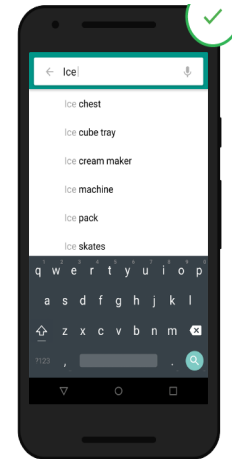
mycursor = mydb.cursor()

mycursor.execute("SELECT * FROM students")

myresult = mycursor.fetchall()

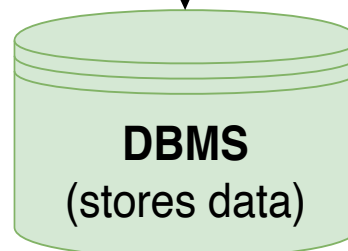
for x in myresult:
    print(x)
```

Mobile App



**User / Application
program**

SQL



```

import mysql.connector

mydb = mysql.connector.connect(
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    user="your_username",
    password="your_password",
    database="database_name"
)

mycursor = mydb.cursor()

mycursor.execute("SELECT * FROM students")

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Python

Mobile App

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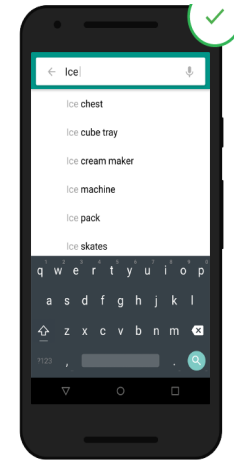
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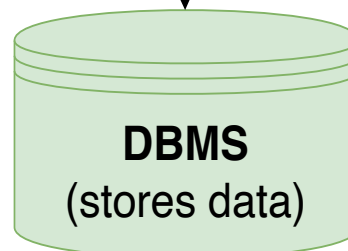
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```



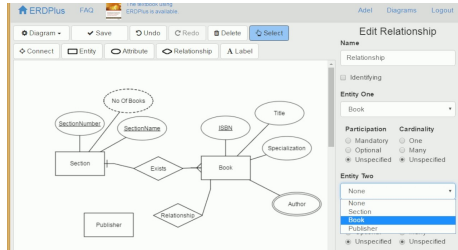
lication
am

SQL



Course Outline

Design

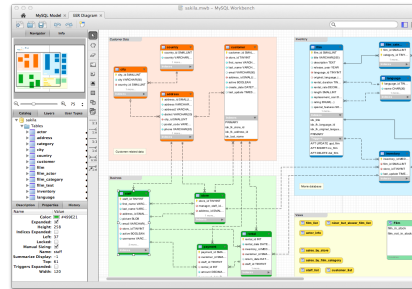


Tool: erdplus.com

Project: Milestone 1

Lectures: ER/EER Model,
Normalization

Relational DBMS Design



Tool: MySQL DB,
MySQL workbench

Project: Milestone 2

Lectures: Relational
Model

SQL

```
select Marka, Rocznik  
from CAR  
select Imie, Nazwisko, marka  
from CAR left join EMP on car.IdPrac = emp.IdPrac  
select Imie, Nazwisko, marka  
from CAR left join EMP on car.IdPrac = emp.IdPrac  
where Marka = 'Fiat'  
select Marka, COUNT(Marka) as ile  
from car  
group by Marka  
select Marka, COUNT(Marka) as ile  
from car  
group by Marka  
having COUNT(Marka)>1  
select Marka, COUNT(Marka) as ile  
from car  
group by Marka  
having COUNT(Marka)>1  
order by Marka
```

Tool: MySQL DB, MySQL
client/workbench

Project: Milestone 3

Lectures: SQL,
Transaction

DB Programming

```
import mysql.connector  
  
mydb = mysql.connector.connect(  
    host="localhost",  
    user="your_username",  
    password="your_password",  
    database="database_name"  
)  
  
mycursor = mydb.cursor()  
  
mycursor.execute("SELECT * FROM students")  
  
myresult = mycursor.fetchall()  
  
for x in myresult:  
    print(x)
```

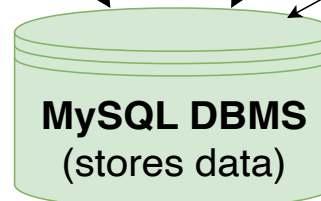
Tool: Java, Python,
Java Script, etc

Project: Milestone
Lectures: DB
Programming

SQL
(implicit)

SQL

SQL



MySQL DBMS
(stores data)

- DBMS is widely used:
 - Web-design, ML, Data Science, Big data analytics
- SQL
 - Commonly used programming language
 - Not limited to DBMS only
- Concepts of DBMS is widely used in numerous data management systems