

Top Data Analyst Skills

<https://www.ziprecruiter.com/Career/Data-Analyst/Resume-Keywords-and-Skills>

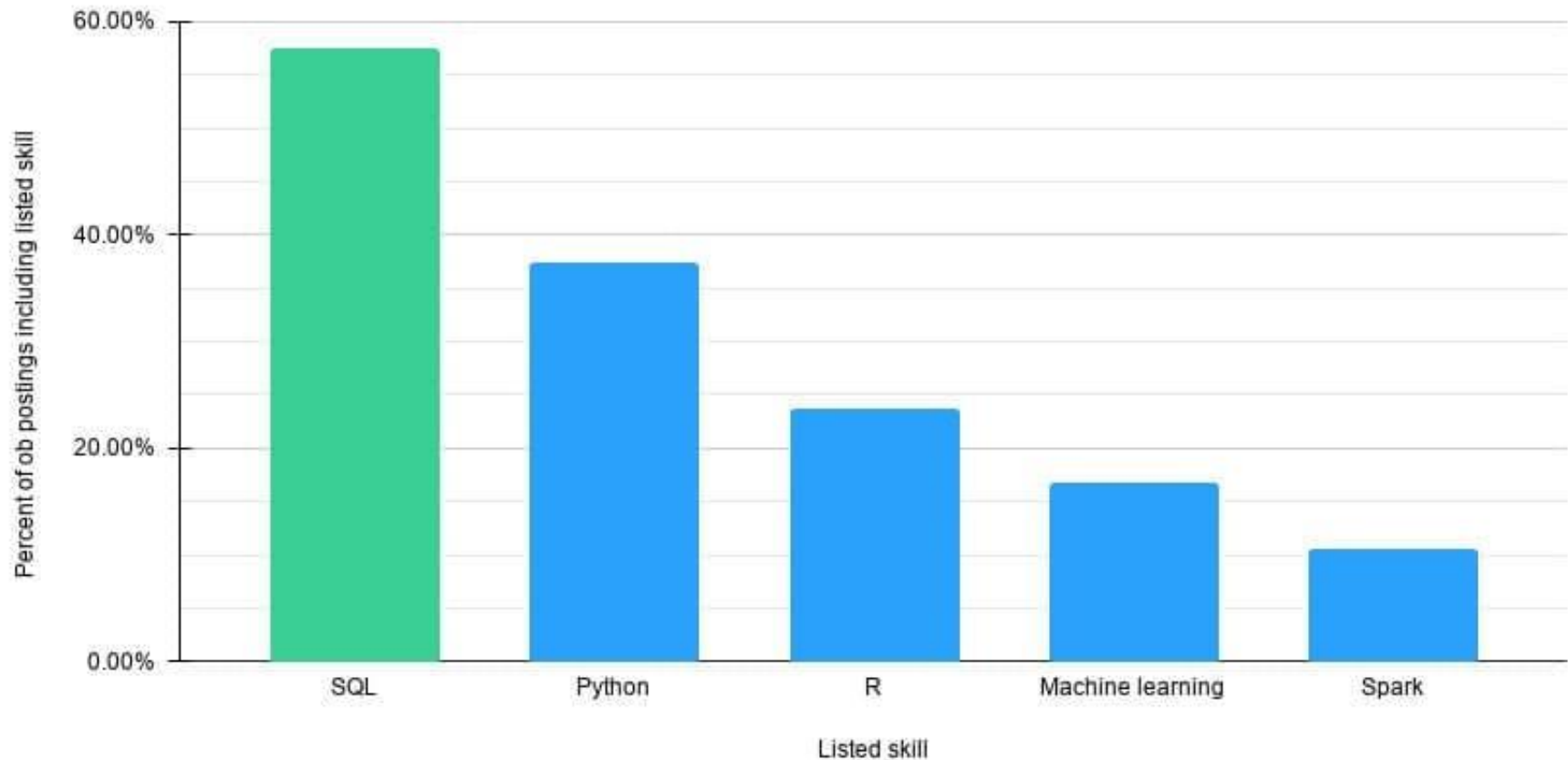
Skills Required by Employers	Share
Data Analytics	17.71%
SQL	17.15%
Database	15.02%
Statistics	10.72%
Tableau	8.54%
Business Intelligence	8.20%
Computer Science	6.50%

Percent of All Data Analyst Jobs Listing SQL

Data Source: Indeed.com, 1/29/2021



DATAQUEST



SQL is easily the most in-demand skill for Data Analyst roles. (Data: Indeed.com, 1/29/2021)

Prerequisites

- Computing resources
- Analytical and programming skills, some interest in research
- Algorithms and Data Structures
- Strong Aptitude for Math, particularly:
 - Set theory
 - Relational Algebra

Overview of Lectures

Data Models; ER diagram

Relational Data Model

Integrity rules and Normalization

SQL: DDL and DML; Views, triggers, and stored procedures

Python Pandas Data Frames

Database access and connectivity

Non-relational Databases

Datawarehouse, BI, ETL, OLAP

Evaluation

Homework assignments	10%
Group Project	20%
Labs	20%
Quizzes	10%
Midterm Exam	15%
Final Exam (comprehensive)	25%

Final Grades

(A+) ≥ 98 ,

(A) ≥ 94 and < 98

(A-) ≥ 90 and < 94

(B+) ≥ 85 and < 90

(B) ≥ 75 and < 85

(B-) ≥ 70 and < 75

(C+) ≥ 68 and < 70 ,

(C) ≥ 64 and < 68

(C-) ≥ 60 and < 64 ,

(D) ≥ 50 and < 60 ,

(F) < 50

Exams

- Quizzes and exams on Canvas may include Respondus monitoring using the laptop's camera
- Ensure that the laptop is in a good condition to be able to take exams
- Exams missed or jeopardized due to technical issues with the laptop may not be re-administered
- Worst-one Quiz out policy

What Is a DBMS?

- A very large, integrated collection of data.
- Models real-world enterprise.
 - Entities (e.g., students, courses)
Relationships (e.g., Madonna is taking CS564)
- A Database Management System (DBMS) is a software package designed to store and manage databases.

Why Use a DBMS?

- Data independence and efficient access.
- Reduced application development time.
- Data integrity and security.
- Uniform data administration.
- Concurrent access, recovery from crashes.

Why Study Databases??

- Shift from computation to information
 - at the “low end”: scramble to webspace (a mess!)
 - at the “high end”: scientific applications
- Datasets increasing in diversity and volume.
 - Digital libraries, interactive video, Human Genome project, EOS project
- DBMS encompasses most of CS
 - OS, languages, theory, AI, multimedia, logic

DEFINITIONS

Database: organized collection of logically related data

Data: stored representations of meaningful objects and events

Structured: numbers, text, dates

Unstructured: images, video, documents

Information: data processed to increase knowledge in the person using the data

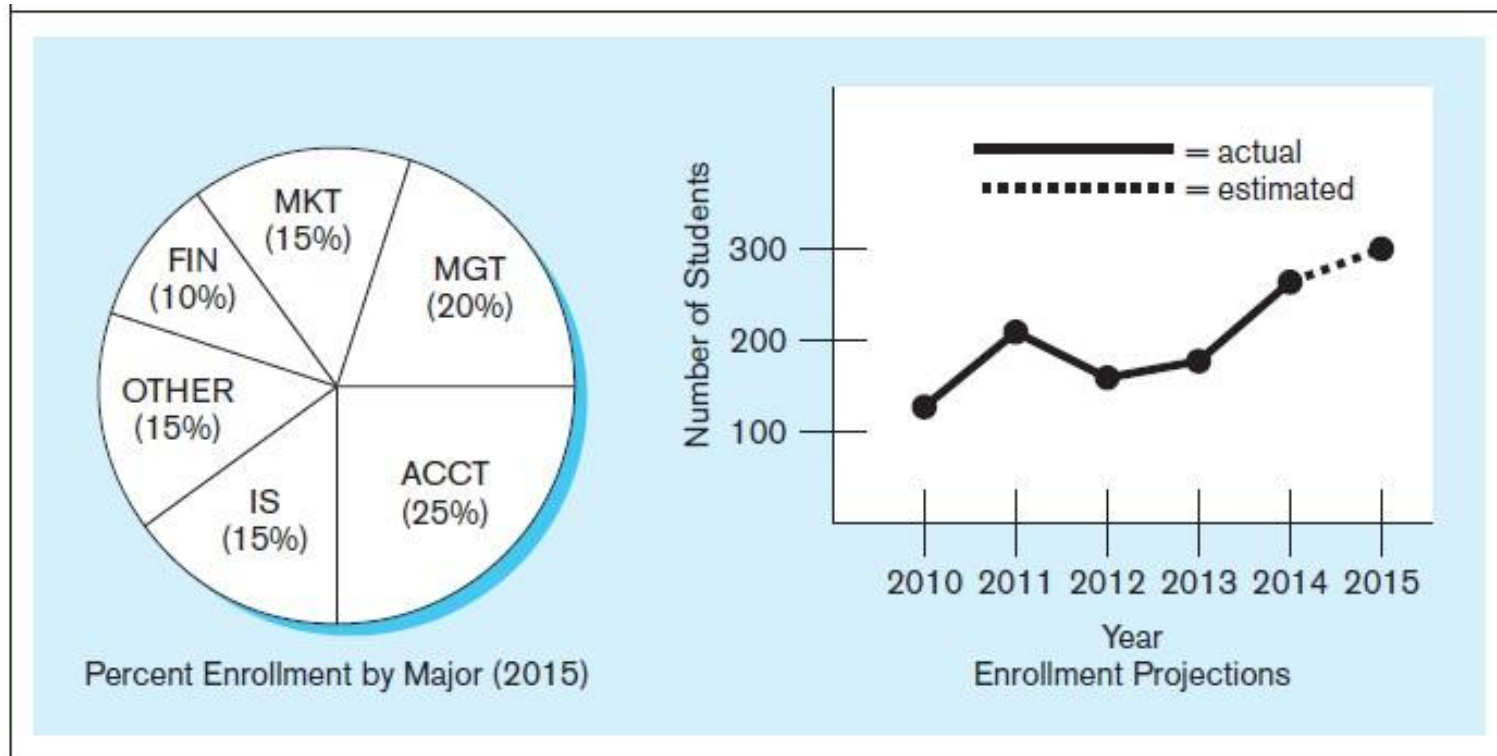
Metadata: data that describes the properties and context of user data

Figure 1-1a Data in context

Class Roster			
Course:	MGT 500 Business Policy	Semester:	Spring 2015
Section:	2		
Name	ID	Major	GPA
Baker, Kenneth D.	324917628	MGT	2.9
Doyle, Joan E.	476193248	MKT	3.4
Finkle, Clive R.	548429344	PRM	2.8
Lewis, John C.	551742186	MGT	3.7
McFerran, Debra R.	409723145	IS	2.9
Sisneros, Michael	392416582	ACCT	3.3

Context helps users understand data

Figure 1-1b Summarized data



Graphical displays turn data into useful information that managers can use for decision making and interpretation

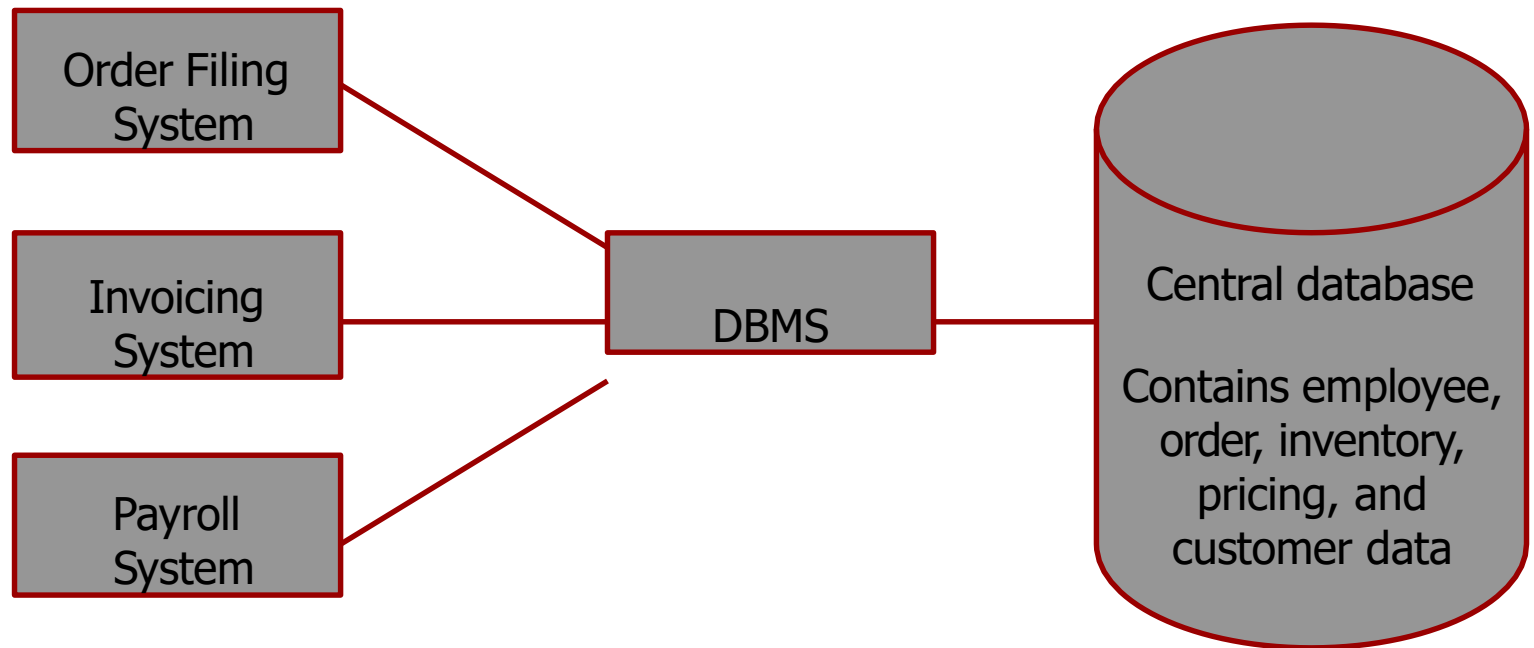
TABLE 1-1 Example Metadata for Class Roster

Data Item		Metadata				
Name	Type	Length	Min	Max	Description	Source
Course	Alphanumeric	30			Course ID and name	Academic Unit
Section	Integer	1	1	9	Section number	Registrar
Semester	Alphanumeric	10			Semester and year	Registrar
Name	Alphanumeric	30			Student name	Student IS
ID	Integer	9			Student ID (SSN)	Student IS
Major	Alphanumeric	4			Student major	Student IS
GPA	Decimal	3	0.0	4.0	Student grade point average	Academic Unit

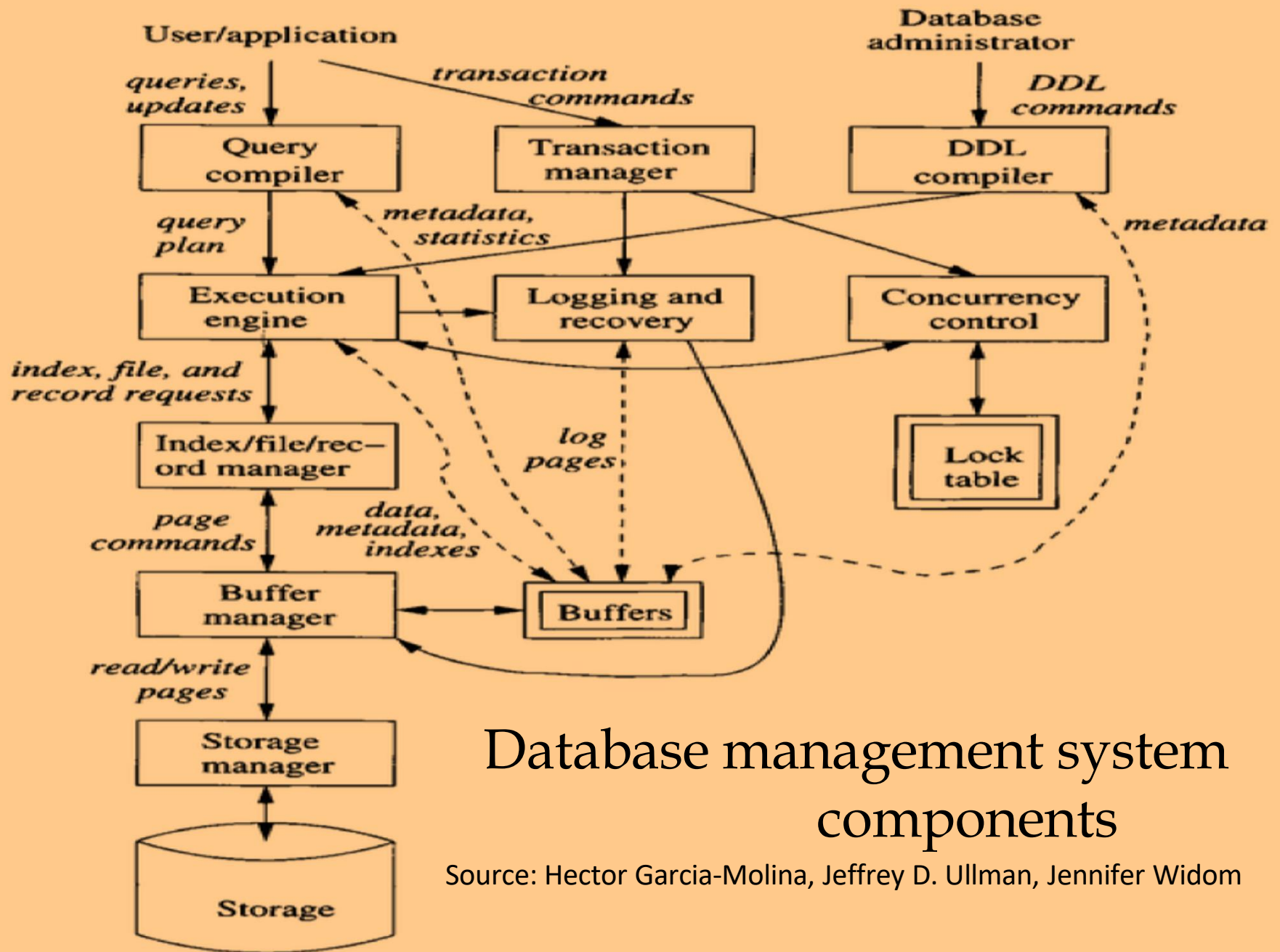
Descriptions of the properties or characteristics of the data, including data types, field sizes, allowable values, and data context

DATABASE MANAGEMENT SYSTEM

A software system that is used to create, maintain, and provide controlled access to user databases



DBMS manages data resources like an operating system manages hardware resources



Database management system components

Source: Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom