



UNIVERSITAS
GADJAH MADA

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Geodetic Engineering Study Program
Dept. of Geodetic Engineering, UGM

Pengantar Mata Kuliah Praktikum Basisdata

(TKD211207)

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Dept. of Geodetic Engineering, UGM



Pengantar Praktikum Basisdata

- Sarana Perkuliahan & Praktikum
- Penjelasan Konten MK Praktikum Basisdata
- Pengantar materi
- Diskusi & Penugasan Mandiri



eLOK

e-Learning: Open for Knowledge Sharing

Mata Kuliah Praktikum Sistem Basisdata (kode: TGD-SBD)

Enrollment Key:
KELAS A

sbd-tgd2021-A

Enrollment Key:
KELAS B

sbd-tgd2021-B

Enrollment Key:
KELAS C

sbd-tgd2021-C



Grup Praktikum
SBD 2021:

[https://gdugm.link/
praktikumsbd](https://gdugm.link/praktikumsbd)

Komponen Penilaian

CPMK1

Menjelaskan konsep basisdata dan karakteristik basisdata serta bagaimana pengelolaan basisdata dengan memperhatikan keunggulan dan kelemahan sistem basisdata

CPMK2

Melakukan pemodelan data relasional dan penyusunan tabel-tabel basisdata

CPMK3

Melakukan pemodelan data dan implementasinya dengan pendekatan “bottom-up” (identitas dan determinan atribut tabel) dan proses normalisasi (1st, 2nd, 3rd, Boyce-Codd Normalisation)

CPMK4

Pemodelan data dengan diagram E-R (pendekatan “top-down”), tahapan logikal dan tahapan fisikal dalam bentuk tabel-tabel normal.

CPMK5

Melakukan pertanyaan (query) basisdata dengan relasi aljabar tabel dan SQL (Structured Query Language)

Komponen Penilaian

Komponen Penilaian	%	CPMK					Media
		1	2	3	4	5	
Kuis I – Desain Basisdata	15	√					Kuis-Elok (MCQ)
Laporan Desain Basidata (Diagram Konseptual)	15		√	√			Assignment-Elok
Laporan PostgreSQL	15		√	√	√		Assignment-Elok
Kuis II - Query SQL	20			√	√		Kuis Elok (Essay)
Proyek Akhir Rancangan Basisdata	35			√	√	√	ELOK/Simaster

Materi Praktikum

Minggu 1 - Pengantar Praktikum Sistem Basisdata

Minggu 2 - Konsep Dasar Tabel dan Desain Basisdata

Minggu 3 - Normalisasi Tabel

Minggu 4 - Pemodelan Data dan Pembuatan Tabel Entiti

Minggu 5 - Diagram ER dan UML

Minggu 6 - Menyusun Basisdata Relasional

Minggu 7 - Operasi Relasi Aljabar

Minggu 8 - Bahasa SQL Relasional

Minggu 9 - Membuat basisdata dengan PostgreSQL

Minggu 10 - Manajemen basisdata dengan PostgreSQL

Minggu 11 - Query Basisdata: DDL, DML, DCL dan TCL

Minggu 12 - Query Basisdata Lanjut

Minggu 13 - Pengenalan Basisdata NoSQL

Minggu 14 – Proyek Akhir

Peralatan Pendukung Praktikum

Penggambaran Diagram

 **Lucidchart**



365.ugm.ac.id

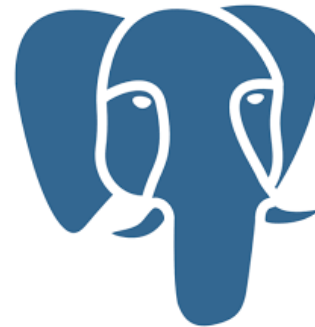


<https://app.diagrams.net/>

Perangkat Desain Basisdata



PgModeler



PgAdmin4

Database Management System (DBMS)



PostgreSQL

"DATA IS THE NEW OIL"

From the beginning of recorded time until 2000, we created **5 exabytes of data.**

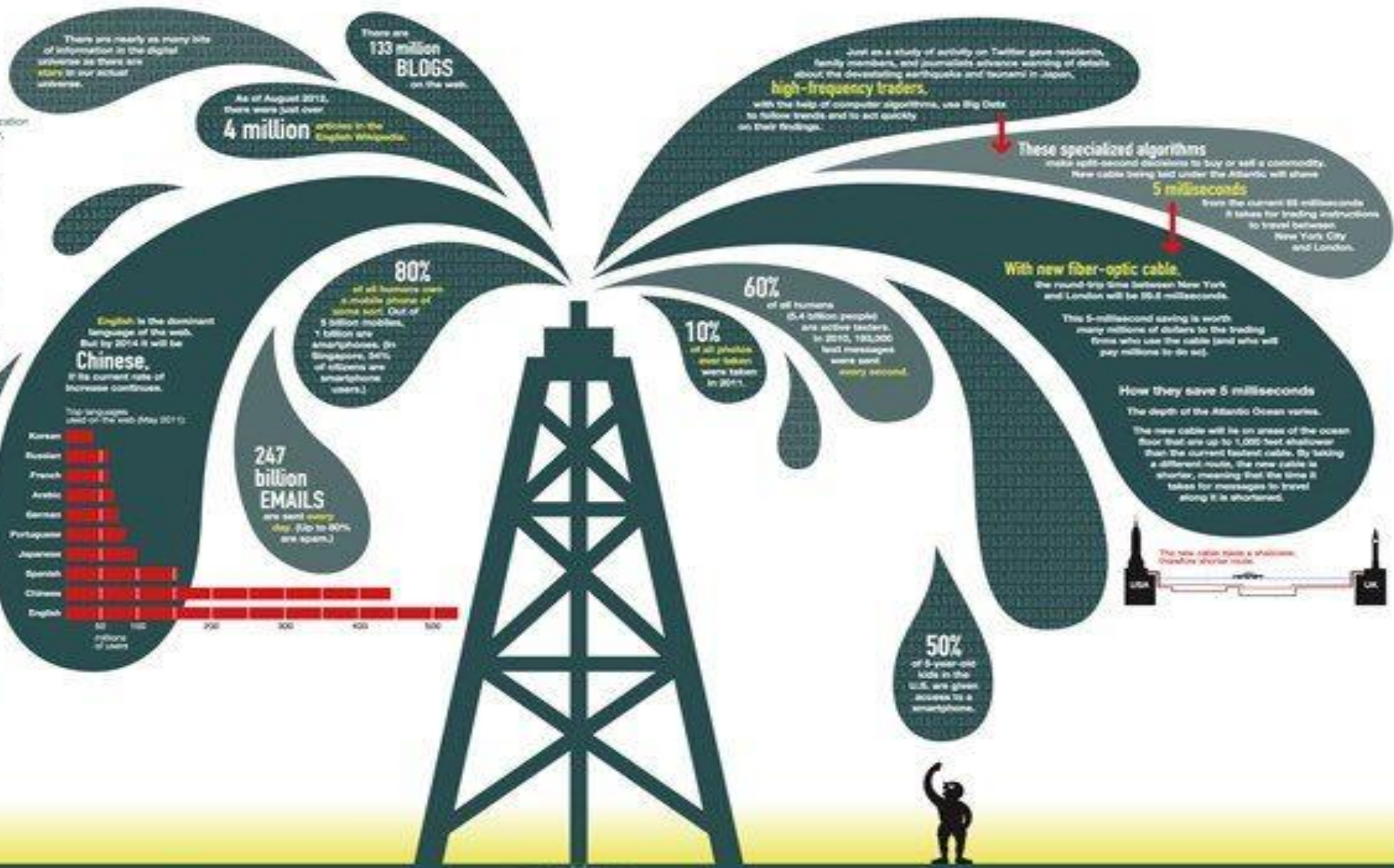
In 2011 the same amount was created every two days.

By 2013, it's expected that the time will shrink to 10 minutes.

Every hour, we create enough Internet traffic to fill **7 billion DVDs.**

Side by side, that's that's seven times the height of Everest.

Coined in 2006 by Clay Humby, a British data commercialization entrepreneur, this now famous phrase was embraced by the World Economic Forum in a 2011 report, which considered data to be an economic asset, like oil.



There are nearly as many bits of information in the digital universe as there are **atoms** in our actual universe.

There are **133 million BLOGS** on the web.

As of August 2012, there were **4 million** articles in the English Wikipedia.

80% of all humans own a mobile phone of some sort. Out of 5 billion mobile, 1 billion are smartphones. In Singapore, 50% of citizens are smartphone users.

60% of all humans (5.4 billion people) are active texters. In 2010, 191,500 text messages were sent every second.

10% of all photos ever taken were taken in 2011.

These specialized algorithms make split-second decisions to buy or sell a commodity. New cables being laid under the Atlantic will shave **5 milliseconds** from the current 82 milliseconds it takes for trading instructions to travel between New York City and London.

With new fiber-optic cable, the round-trip time between New York and London will be 30.2 milliseconds.

This 5-millisecond saving is worth many millions of dollars in the trading firms who use the cable (and who will pay millions to do so).

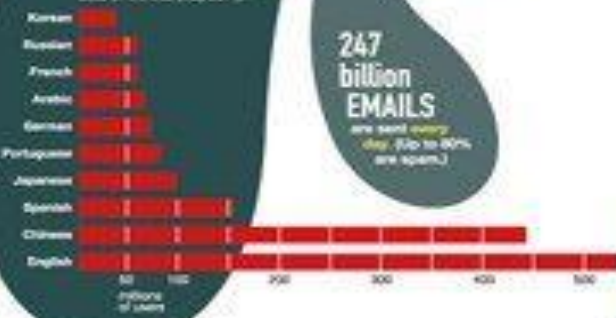
How they save 5 milliseconds
The depth of the Atlantic Ocean varies. The new cable will be on areas of the ocean floor that are up to 1,000 feet shallower than the current fastest cable. By taking a different route, the new cable is shorter, meaning that the time it takes for messages to travel along it is shortened.



50% of 8-year-old kids in the U.S. are given access to a smartphone.

English is the dominant language of the web. But by 2014 it will be **Chinese.** If its current rate of increase continues.

Top languages used on the web (July 2012)












247 billion EMAILS are sent every day. (Up to 40% are spam.)



Database:

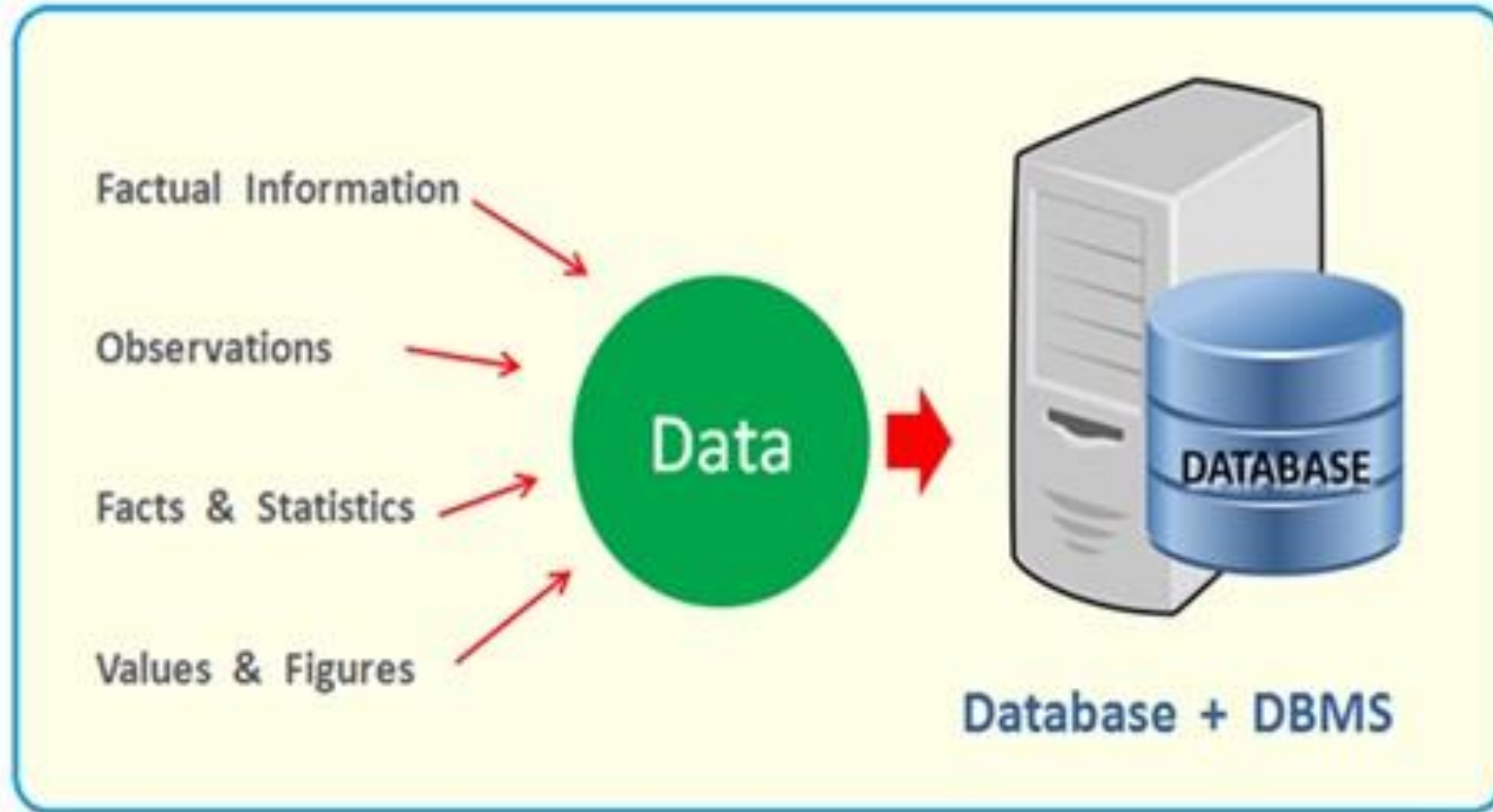
a Systematic Collection of DATA

> Databases

Name	Date modified	Type	Size
 msgstore.db.crypt12	9/22/2017 2:01 AM	CRYPT12 File	232,151 KB
 msgstore-2017-09-15.1.db.crypt12	9/14/2017 2:01 AM	CRYPT12 File	230,187 KB
 msgstore-2017-09-16.1.db.crypt12	9/15/2017 2:01 AM	CRYPT12 File	230,415 KB
 msgstore-2017-09-17.1.db.crypt12	9/16/2017 2:40 AM	CRYPT12 File	230,578 KB
 msgstore-2017-09-18.1.db.crypt12	9/17/2017 2:01 AM	CRYPT12 File	230,727 KB
 msgstore-2017-09-19.1.db.crypt12	9/18/2017 2:01 AM	CRYPT12 File	231,077 KB
 msgstore-2017-09-20.1.db.crypt12	9/19/2017 2:01 AM	CRYPT12 File	231,284 KB
 msgstore-2017-09-21.1.db.crypt12	9/21/2017 11:36 AM	CRYPT12 File	232,083 KB
 msgstore-2017-09-22.1.db.crypt12	9/21/2017 11:38 AM	CRYPT12 File	232,083 KB

DBMS - Database Management System - What Is Data ?

DBMS - What is Data ?



Employee Data



Employee Database

www.learncomputerscienceonline.com

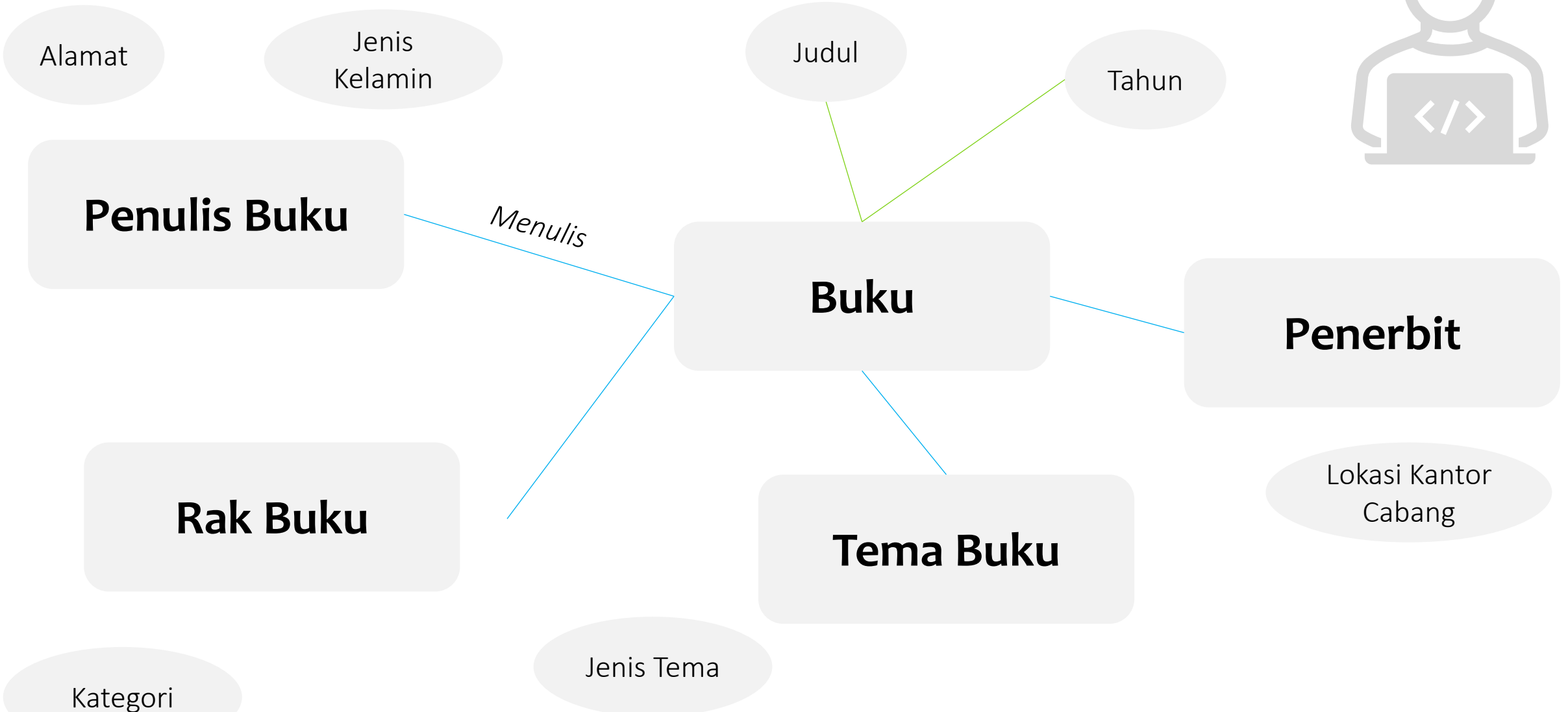
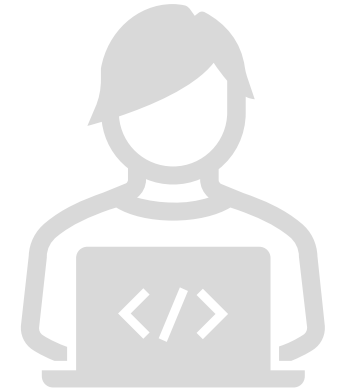
Bagaimana **sistem perpustakaan** diatur sedemikian sehingga pengunjung dapat menemukan buku yang dicari?



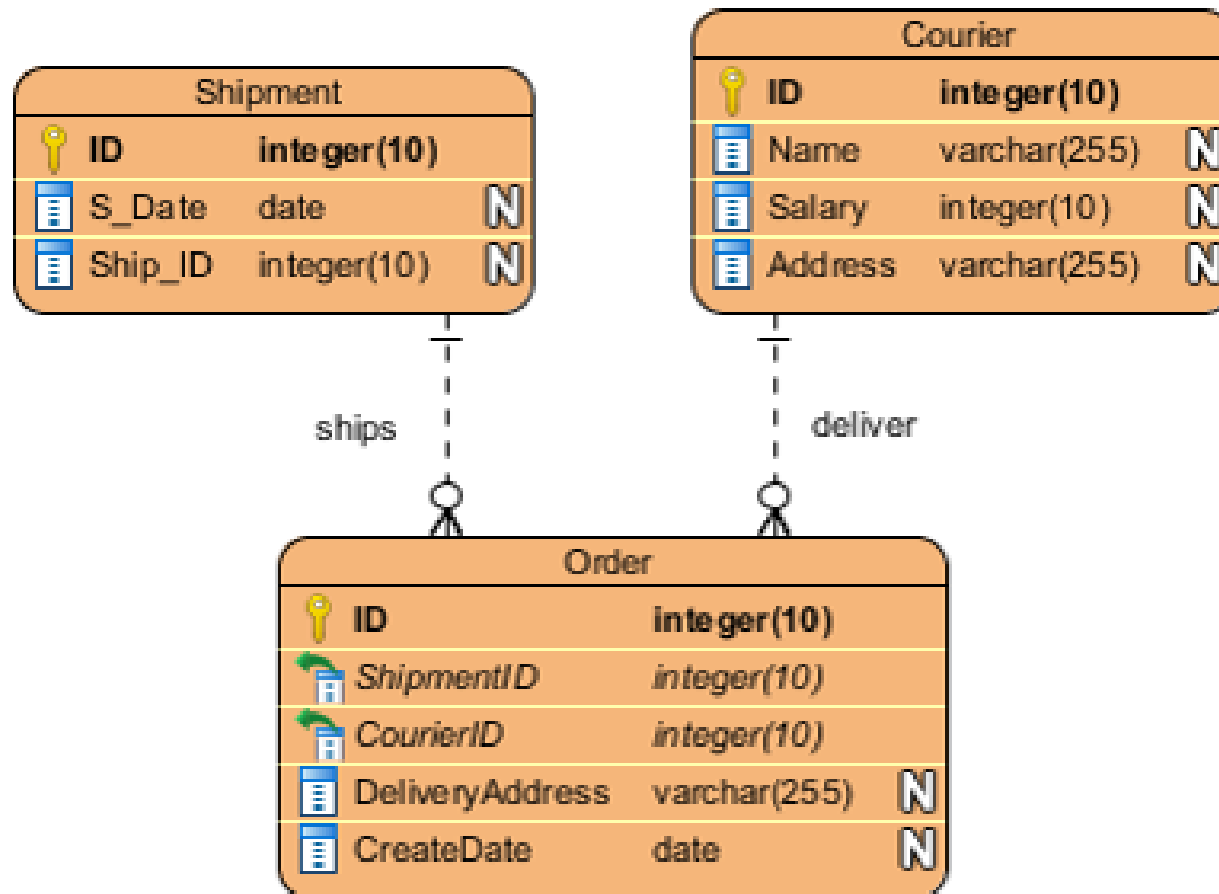
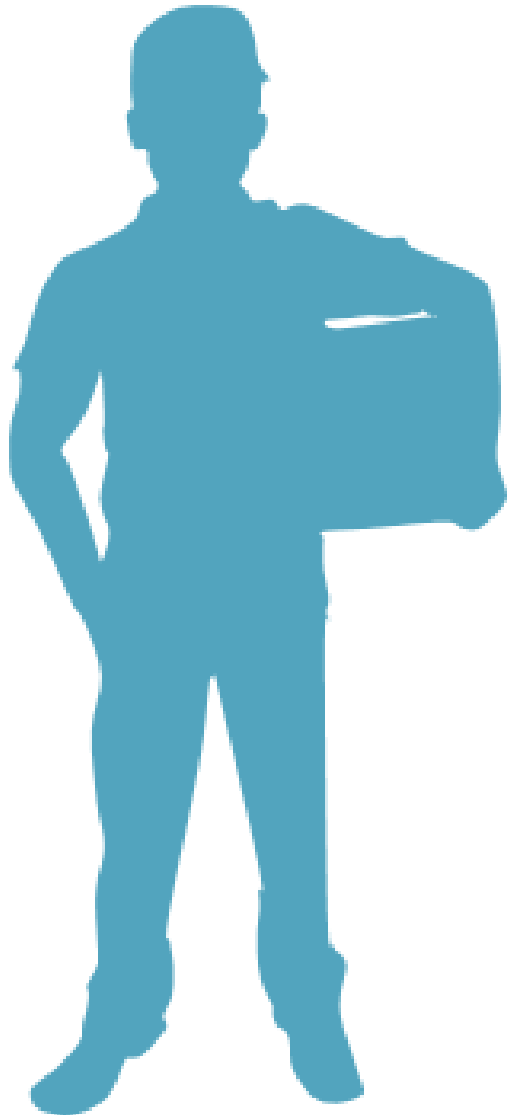
Pertanyaan (Kueri) pada sistem Perpustakaan

- Di lemari mana buku X berada?
- Buku yang ditulis oleh penulis Y diterbitkan oleh penerbit mana saja?
- Penulis A menulis buku dengan tema apa saja?
- Berapa jumlah buku yang ditulis di Yogyakarta dan diterbitkan oleh penulis X setelah tahun 2011?

Database adalah MODEL Dunia Nyata



Database adalah MODEL Dunia Nyata



Entitas atau relasi menggambarkan objek yang saling berhubungan di dunia nyata

Database adalah MODEL Dunia Nyata

Table also called Relation

Tabel adalah blok dasar yang berupa record – record data dalam bentuk garis dengan beberapa atribut yang menyertai sebagai kolom

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CustomerID	CustomerName	Status
1	Google	Active
2	Amazon	Active
3	Apple	Inactive

Primary Key

Domain
Ex: NOT NULL

Tuple OR Row

Total # of rows is **Cardinality**

Column OR Attributes

Total # of column is **Degree**

Contoh Skenario

Tabel Data Desa

Nomor Induk Desa	Nama Desa	Kecamatan	Kabupaten	Jumlah penduduk	Luas Wilayah (m ²)
10007	Sukaluyu	Nanggung	Bogor	7970	4353824
10008	Hambaro	Nanggung	Bogor	5947	3248530
10009	Kalong Liud	Nanggung	Bogor	6468	3531915
20001	Purasari	Leuwiliang	Bogor	47553	25944353
20002	Puraseda	Leuwiliang	Bogor	23941	13061263

'Dari mana saja asal pengungsi di Posko A?'

Tabel Posko Pengungsi

No Registrasi Posko	Nama Posko	Kapasitas posko	Jumlah relawan
12912	A	2300 orang	72
12913	B	320 orang	23
12914	C	500 orang	29
12915	D	1200 orang	40

Tabel Asal Pengungsi

ID	Posko	Asal Pengungsi
001	12912	10007
002	12912	10009
003	12912	20002
004	12913	20001

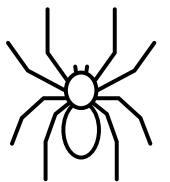
Tugas Praktikum MANDIRI



Buatlah sebuah diagram sederhana yang menyatakan **entitas dunia nyata** di sekeliling Anda (minimal 5 entitas)



Gambarkan bagaimana entitas-entitas tersebut saling **terhubung**, serta **kolom** apa saja yang menyusun tiap entitas tersebut





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TERIMA KASIH

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